An empirical evaluation of total quality management in port operations

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DECLARATION

I hereby confirm that this research has not been previously accepted for any degree and is not being currently submitted in candidature for any degree.

I declare that this Dissertation contains my own work, except where specifically acknowledged.

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ABSTRACT

The Durban RORO Terminal (DRT) is of strategic importance to the achievement of Transnet, KwaZulu-Natal Government and the National Governments' investments and developmental goals. As a handler of Pure Car Carriers (PCTC), Medium sized container vessels and Break-Bulk vessels the Terminal offers a facility for handling a mixture of commodities which contributes to making the Durban Port a strategic gateway for cargo destined for South Africa as well as for Sub-Saharan Africa. It is therefore of crucial importance that best total quality management practices are followed at DRT.

Transnet DRT regularly receives complaints on service quality and efficiencies through media publications, there is generally a perception that Transnet's DRT is inefficient and has low quality standards. As its objectives, this study evaluated the level of TQM implementation at DRT. The study also established the impact of current TQM practices on three aspects of company performance, i.e. Safety and security, efficiency and profitability. The level of TQM adoption and support by employees within the business was also evaluated. The study used a structured, self-administered questionnaire as a tool to collect all the data. Questionnaires were administered to a sample of 86 employees, 57 responses were received constituting a 66% response rate. Data collected was analysed using Excel statistical analysis functionality. Conclusions and recommendations are presented in chapter 5 of the study; areas for further study were also identified.

The results of the study indicate that there is some level of TQM implementation within the organization but there are areas where significant improvements are required. From the study, a conclusion is drawn that the level of TQM implementation at DRT is low and requires improvement; that there is a good level of employee adoption of TQM; and that implementation of TQM at DRT has a positive impact on safety and security, efficiency and profitability.

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LIST OF ABBREVIATIONS

ASGIZA   Accelerated and Shared Growth Initiative-South Africa

DRT   Durban RORO Terminal, the Transnet Roll on Roll off terminal
              Situated in the Port of Durban

E-mail   Electronic mail

GDP   Gross Domestic Product

IMF   International monetary fund

ISO   International Organization of Standards

Mean   The average or expected outcome

PCTC   Pure Car Carriers vessels

TEU   Ton equivalent unit

TQM   Total quality management

CHAPTER 1: STATEMENT OF THE PROBLEM AND RESEARCH DESIGN

1.1   INTRODUCTION

The Durban RORO Terminal (DRT) is one of 14 Cargo Handling Terminals that falls within Transnet Port Terminals, a division of Transnet SOE (LTD). Transnet Port Terminals operates in 7 South African Ports namely Richards Bay, Durban, East London, Port Elizabeth, Nqurha, Cape Town and Sadhana (Ports & Ships, 2014). Each of the Operating divisions of Transnet operate as an independent business unit with its own executive structure, all Terminals within Transnet Port Terminals are managed by a regional general manager who reports direct to the divisions Chief Executive.

Transnet has committed itself to continuing to invest in infrastructure in order to support government goals of promoting economic growth through ASGIZA (DED, 2006). The committed investment for the three years beginning in 2013 is R300 billion (Nicolson,2012), a portion of this investment will go to the improvement of Cargo Handling Equipment and Cargo Handling equipment facilities at DRT. After the global recession of 2008/09 the global economy has begun to improve. According to the IMF South Africa is projected to grow between 1.4% and 3.4% for 2014 to 2016 respectively (IMF,2014); South African Ports, as an access and exit point for goods and services into and out of the country, remain an integral support mechanism for enabling this projected growth and trade in general. The DRT handles 480 000 cars, 255 000 TEU's of containerised cargo and 350 000 tons of break-bulk cargo per annum.

Quality has become an important prerequisite for consumers around the world, port users are no different. Quality is generally defined as "the ability of a product or service to consistently meet or exceed customer expectations", according to (Oakland,1993) quality is simply meeting the customer's requirements; and it is important for an organization to adopt TQM organization wide and at all levels in order to be successful. (Chase, Aquilano and Jacobs, 2001) refer to continuous improvement as "a philosophy that entails the improvement of all factors related to the process of converting inputs into outputs on an ongoing basis".

1.2   MOTIVATION

Given the strategic importance and substantial investments that are being made, it is important that Transnet and particularly DRT fully adopt and implement total quality management in order to eliminate waste, improve business performance and improve customer satisfaction. As such an evaluation of current levels of TQM implementation, employee support and adoption for TQM, as well as the impact of current TQM practices on overall business performance is required.

1.3   RATIONALE FOR THE RESEARCH

As a State owned entity, Transnet has a primary mandate of contributing to the improvement of the South African Economy by developing Port, Rail and Road infrastructure; providing capacity ahead of demand and reducing the cost of doing business in South Africa. To this end Transnet is consistently embarking on substantial capital investments in order to maintain existing assets, increase existing capacity and improve overall company performance. Low implementation of total quality management in the organization would open the company to the risk of operating inefficient, having dissatisfied customers and becoming unprofitable. The company would also face further risks of not realizing the full required return on its investments and reneging on its shareholder mandates.

Evaluating the current TQM implementation at DRT will enable terminal management to understand where the business needs to improve, to capitalise on areas of excellence and begin work on areas requiring improvements in order to improve business performance and customer satisfaction.

1.4   PROBLEM STATEMENT

Transnet DRT regularly receives complaints on service quality and efficiencies through media publications such as Freight & Trading weekly, the Business day, etc. and through direct customer feedback. Identified issues include damages to customer cargo, slow cargo handling process, congestion in the port, disregard of customer queries, etc. (Peat: 2012).

The intention of the study is to establish the level of TQM implementation at Transnet's Durban RORO terminal, ascertain the impact that current TQM practices have on business performance and assess the level of support that TQM enjoys in the organization.

1.5   RESEARCH QUESTIONS

Undertaking this study will enable the business to address some of the questions that are critical for management of DRT to understand:

- Whether Total Quality Management principles are applied adequately at Transnet's Durban RORO Terminal?

- Whether TQM principles adopted at Durban RORO Terminal have an impact on business performance i.e. efficiency, safety & security and profitability?

- Whether customers' complaints and feedback is taken into consideration when determining customer requirements in order to ensure improvements in customer satisfaction? By managing the customer complaint process correctly, the organization will be able to identify areas where quality is lacking and put measures to correct and improve on these areas and achieve customer satisfaction.

- Whether employees have accepted and embraced total quality management? Employee buy-in and support in total quality management implementation is very important to ensure successful execution of operations.

- Whether continuous improvement, people involvement and customer satisfaction have reached appropriate levels? People involvement, continuous improvement and customer satisfaction form part of the key principles of total quality management that must be firmly in place for effective total quality management to take place, it is therefore important to establish the levels which these principles have reached within Transnet's Durban RORO terminal.

- Whether employees are adequately involved, engaged and empowered to do their jobs? Employee engagement and empowerment are central to successful total quality management as it creates a sense of process

ownership and belonging, which allows employees to fully participate and support total quality management practices.

1.6   OBJECTIVES OF THE RESEARCH

The specific objectives are to:

- Investigate the extent to which total quality management has been implemented within Transnet's Durban RORO Terminal.
- Establish the impact of current total quality management practices on overall company performance.
- Investigate the extent to which employees have adopted and support the concept of total quality management at Transnet's Durban RORO Terminal

1.7 DELINEATION OF THE STUDY

In order to address the first objective of the study "to investigate the extent to which total quality management has been implemented within Transnet's Durban RORO Terminal" a research questionnaire was designed with specific question directed toward accessing the level to which the eight principles of effective TQM implementation as identified through literature review, have been adopted in the organization. The questions range from 1 to 30 and address the following eight principles:

- Top management support;
- Customer satisfaction;
- Employee engagement;
- Employee empowerment;
- Employee development;
- Reward end Remuneration;
- Decision Making and
- Communication.

With regards to the addressing the second objective "to establish the impact of current total quality management practices on overall company performance" the study focused only on three areas of company performance, namely:

- Efficiency;
- Safety and security and
- Profitability.

Questions directed towards investigating the above three areas of company performance were covered from questions 31 to 36 and 40 to 42 of the questionnaire.

The study also addresses the level of employee adoption and support for TQM in the organization. This area is addressed in questions 37 to 39 of the questionnaire.

1.8   SIGNIFICANCE OF THE STUDY

The research conducted will assist in the identification of any shortfalls in TQM adoption and implementation at DRT, recommendations made will contribute towards development of measures to improve processes and practices. Specific gaps identified can be mitigated through various action plans; these may include training and skills development, employee involvement, improvement in leadership commitment, etc.

The net contribution to DRT would be improved quality management, customer satisfaction and improvements in overall company performance.

1.9   OUTLINE OF THE STUDY

Chapter 2

Chapter 2 presents the Literature Review. This chapter covers all theoretical aspects of the study as highlighted above.

Chapter 3

The research methodology of the study is covered in chapter 3. This specifically explores, amongst others, the rationale of the research, the structure of the questions, rationale of the questions and the problems experienced in conducting the research.

Chapter 4

Chapter 4 presents the data analysis and results. The research findings focus on the extent to which TQM has been implemented at DRT, the level that employees have adopted TQM and the overall impact of TQM on business performance.

Chapter 5

Chapter 5 concludes the findings of the analysis performed in chapter 4 and makes recommendations to address shortfalls identified.

1.10   Summary

Quality is generally accepted as a products'/services ability to meet the customers' expectation consistently. This is one of the reasons why TQM has become so important for organizations around the world as they try to gain and retain customers. By using TQM to ensuring that all human and capital resources are used effectively to achieving company objectives, a company is liable to succeed in achieving customer satisfaction and business growth.

The next chapter provides the literature review on TQM.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

Chapter 1 provided an introduction to the study, reasons for conducting the study were given, objectives of the study were outlined and a brief overview of the methodology adopted to conduct the study was also presented. In this chapter a review of literature on TQM is given.

2.2 INTRODUCTION TO QUALITY

All over the world quality has become very important for customers. The word quality is generally synonymous with the "excellence" of a product. Consumers sometimes refer to a "Rolls-Royce" quality to imply the best quality. The perceived quality of a product or a brand influences the consumers purchasing decision. Quality has long been used as a differentiation strategy for companies around the word, Winer and Dhar (2011, 46) describes quality as some point of difference that customers value and for which they are willing to pay a price premium. The chartered institute of quality refers to quality as "an outcome – a characteristic of a product or service provided to a customer, and the hallmark of an organization which has satisfied all of its stakeholders".

Gitlow (1989, 5) describes three types of quality that management must consider in order to improve quality in a process:

- Design/redesign quality which begins with consumer research, follows with service calls data analysis and leads defining a product/service concept that will best satisfy the requirements of the customers;
- Conformance quality which refers to the extent to which an organization together with its suppliers is able to go beyond the design specifications required for a service of a product in order to serve the customer;
- Performance quality which refers to the determination of how an organizations' product or service performs in the market place.

According to Wan Edura Wan Rashid (2009, 471) quality can be divided into functional and technical quality, functional quality being the manner through which the organization delivers services to the end customer; technical quality is concerned with the technical aspects of providing the service, i.e. accuracy and procedures that are involved in providing the service.

2.2.1 Definition

According to Oakland (1993, 5) quality is equitant to simply meeting the customers' requirements. Gitlow, et al. (2005:17) described quality as "conformance to valid customer requirements".

As explained by Sahney, Banwet and Karunes (2004, 145) the word "quality" has been derived from the Latin word "quails" which means "what kind of".

Oakland (1993, 5) mentions a number of ways that quality has been defined by different leading authors in the field of quality management, these include:

Deming

"Quality should be aimed at the needs of the customer, present and future";

Juran

"Fitness for purpose or use";

Crosby

"Conformance to requirements";

Feigenbaum

"The total composite and service characteristics of marketing, engineering, manufacture and maintenance through which the product and service in use will meet the expectation by the customer".

Gitlow, et al. (2005, 37) outlines the studies conducted by W.E. Deming, a statistician, who identified 14 points for leadership success in improving quality in organizations. These principles were:

- Creating a "constancy of purpose towards improvement of a service, with the aim to become competitive, stay in business, and provide jobs";

- Adopting the improved philosophy;

- "Cease dependence on inspection to achieve quality. Eliminating the need for inspection on a mass basis by building quality into the product in the first place";

- End the practice of awarding business on the basis of price tag. Instead, minimise total cost. Move towards single supplier for any one item and create a long-term relationship;

- Continuous improvement: Improve constantly the production system in order to achieve reduction in costs;

- Implement of the job training;

- Embed leadership;

- Discourage fear so that all employees can work better for the company;

- Breakdown silos that exists amongst departments;

- Eradicate themes and targets that requires zero-defect and increased productivity without providing methods for achieving it;

- Eliminate management by objective;

- Breakdown barriers that may lead to the hourly worker, and management alike being deprived of their right to pride of their work;

- Establish a robust employee education and self-improvement/development programme; and

- Take action to achieve the transformation;

In his study Tari (2005, 182) outlines a number of research conducted by other leaders in total quality management, they are as follows:

- Juran, a teacher improving quality of goods at Japanese firms, identified the importance of both "technical" and "managerial" aspects, as well as three core functions of the quality management process (planning, organising and control) as critical stages of quality improvement.

- Ishikawa, who "stressed the importance of training, created the cause and effect diagram for problem solving, and designed quality circles as a way to sustain continuous improvement".

- Crosby, who identified 14 steps for quality improvement which evolved around "top and intermediate management commitment, quality measurement, evaluation of quality costs, corrective action, training, a zero-defect philosophy, objective setting and employee recognition".

- Fiegenbaum who defined the idea of TQM as one that is based on "leadership and an understanding of the aspects of quality improvements, a commitment to incorporate quality in the firm's practices, and the participation of the entire workforce, the objective being the reduction of quality costs".

Rosander (1989, 179) explains that quality can be described in terms of eight aspects, namely management, supervision, statistics, psychology, economics, time, process and subject matter. The author argues that no program that aims to improve quality would succeed effectively without all of these elements having been adequately provided for.

According to Zeng, Jonathan and Shi (2005, 396) the ISO 9000 quality management systems standards are aimed at ensuring that companies meet their customer needs in line with applicable statute and product quality standards. The year 2000 review of the ISO 9001 quality standards list the following eight management principles for quality (ISO, 2014):

- Customer focus;
- Leadership;
- Involving people;
- Process approach;
- System approach to management;
- Continual improvement;
- Factual approach to making decisions; and
- Close relationship with suppliers.

2.2.2 Importance of quality

According to Gitlow (1989, 13) improvements in quality lead to a number of business benefits, including the following:

- Rise in productivity;
- Decrease in cost per unit;
- Flexibility in determining a price;
- Improvement in workers morale as they would no longer be seen as a problem by the organization.

The authors further explain that when employee morale is improved further benefits such as lower absenteeism, low poor health, concentration on the work and impetus to progress on work standards, etc. are realised by the organization.

Stevenson (2002, 403) identified four determinants for the level to which a product or a service is able to positively fulfil its envisioned purpose, these are:

- The design of the product/service;
- How well the product/service conforms to the design;
- How easy it is to use the product/service;
- Availability and effectiveness of after sales services.

2.2.3 Relevance of quality

Peters (1999, 6) states that quality management originated from two different ideologies concerning how an organization can be run. One of these being customer focus or orientation which refers to determining the customer's likes and dislikes and delivering the same way every time. The expectation was that the customer would come back for the same service and spread the word to others about the service "word of mouth". The other is the necessity for companies to focus of efficiency, the more a company can figure out how to produce or offer a service efficiently with minimum defects is the more successful that company would be.

2.3 TOTAL QUALITY MANAGEMENT (TQM)

According to Demirbag et al. (2006,830) total quality management can be defined as "a comprehensive and universal management philosophy that is aimed at continuous improvement in all functions of an organization and satisfying customer's needs and requirements by providing quality services under the leadership of top management". The authors argue that "the role of TQM is generally accepted as being a critical determinant in the success and survival of both manufacturing and service organizations in today's competitive environment". The authors further argue that TQM practices may impact on financial performance indirectly and also incidentally impact overall business performance through increasing innovation, changing organizational culture, increasing market competitiveness, grow market share, improving staff self-esteem and output.

Ross (1995, 1) describes TQM as "the integration of all functions and processes within an organization with the objective of achieving continuous improvement in the quality of its goods and or services".

2.3.1 History

2.3.1.1 TQM practices

According to Bemett and Nentl (2010, 27) the main stated goal of continuous improvement initiatives in organizations is the enhancement of quality through greater operational efficiencies; this has led to continuous improvement being viewed as necessary and a positive step by organizations. In their survey of Deming's TQM implementation philosophy, Lee et al. (1999, 137) outlined that Deming and Juran alike stressed heavily on management responsibility and commitment and that both these TQM Gurus fundamental principles are similar with one providing the philosophy whilst the other provides the specific structure that can help the principles to materialise in an organization. The authors identify a number of principles advocated as critical for successful TQM implementation, these are:

- "The important role of top management;
- The importance of customers;

- The importance of quality;

- The importance of continuous improvement;

- The need for problem-solving tools and techniques;

- The importance of training and education; and

- The need for active participation in the efforts towards the solution of problems".

According to Lau and Anderson (1998, 87) letters TQM can be expressed through the following three theories:

- The T-component of TQM

  This component stands for "total company wide commitment to quality". This is supported mainly by the work of Juran (1988, 12) who identified three reasons for the success of the company-wide quality control effort in Japan, namely "(1) strong leadership of top management in leading the quality revolution; (2) proper training in quality management for employees at all levels; and (3) an emphasis on gradual, continuous improvement".

- The Q-component of TQM

  This element refers to the part that the consumer plays in judging quality as acknowledged by other TQM innovators such as Deming and Juran, and how this redirects the goal of quality management to being that of meeting and exceeding customer expectation.

- The M-component of TQM

  This element is concerned with the required strong commitment of the top management team to TQM implementation. As it is management's responsibility to create a clear vision and values and to bring these into the overall strategy of the business.

Lau and Anderson (1998,91) determined that TQM has three dimensions, i.e. "the philosophical, the strategic and the measurement dimension". The philosophical dimension is concerned with the definition and understanding of TQM as a concept, the strategic dimension of TQM deals with the specific goals and actions needed to be put in place to satisfy customer needs through provision of a quality product and service; and the measurement dimension is involved with collection and communication of quantifiable data on the company-specific aspects of quality in order to meet customer requirements.

Meeting customer requirements

Oakland (1993, 9) argues that the ability to meet customer requirements is vital not only between two separate organizations but within the same organization as well. The author contends that ensuring that customer requirements are met at every stage and every time leads to increased competitiveness and market share, reduced costs, improved productivity and delivery performance, and elimination of waste "muda". He also states that the exchange of information on customer information, internally within the organization and externally to suppliers, to consistently meeting customer requirements. According to Ishikawa (1985), understanding the customer requirements, studying their requirements and then incorporating them into the design of your product/service are critical to successful quality control implementation.

According to Lau and Anderson (1998, 90) a company that views quality from the customer satisfaction perspective will plan strategically around quality. He argues that the key to the successful design of TQM programs depends on extending the analysis from the philosophical ideas about TQM into specific quality programs that are designed for the industry, product and or service involved.

Sahney, Banwet and Karunes, (2004, 145) supports the view that delighting or making the customer happy is in the heart of TQM practices. Customer satisfaction also related to customer loyalty in that highly satisfied customers are likely to come back and make more purchases, and customer loyalty is closely related to profitability and business growth, Lau (2000, 427).

Reducing re-work

In their study of Japanese manufacturing firms in China Miyagawa and Yoshida (2010,745) found that adopting TQM strategy "related significantly to external performance issues such as competitiveness and an increasing market share. Both quality information and process control related to quality performance issues such as reducing rework, warranty cost and scrap".

According to Phelps (1998,466) an organization must strive to reduce dependence on mass inspection, the author argues that companies typically inspect a product as it comes off the line or at major stages in production with defective products either

being thrown out or reworked; he argues that both practices are not necessary and are expensive to the business because the company is paying employees to make defects and then correct them. Quality comes less from inspection, and more from process-improvement. He concludes that with instruction, workers can be enlisted in the improvement process.

Long range thinking

The first point of Deming's 14 Points of management is constancy of purpose for improvement of quality, Gitlow, et al. (2005, 37). Lee, et al. (1999, 137) explains that in line with Deming's point 1, organizations must put in place a long term strategy, with clear goals in order to stay in business. This requires allocation of resources research, training and education to in order to achieve the goals. The authors argue that Management must demonstrate their commitment to the customers, suppliers and employees constantly; there must also means to measure management commitment and benchmarking of performance against other companies performing the same service.

Increased employee involvement and teamwork

According to Ishiwaka (1985, 285) total quality control means that everyone in the organization must learn and practice quality control, not just a few professionals or a single department. It is companywide, and managed with facts, puts quality first, and is consumer orientated.

Process design, competitive leverage

According to Gitlow, et al. (2005, 3) a process can be defined as a collection of interacting components that transform some input into outputs towards an aim, that aim becomes a mission statement. To succeed in quality improvement company's cannot depend on technology and or labour replacements, rather redesigning the processes is critical, Ross (1995, 303).

Team based problem solving

According to Atkinson (1995, 32) a business is a multi-team operation with each team interacting with other and providing support to other teams. The authors argue that using teams of volunteers in an organization opens the door for team ownership

to develop in the workplace, this then releasing release the frustrated initiatives and improvement ideas that may have remained undiscovered. This approach also said to break down the isolating barriers between workers in an organization and provides opportunity for self-development and self-esteem improvement. Atkinson argues that teams in a TQM environment must consistently look for opportunities to improve with the approach that there is always room for improvement. Figure 2.1 below illustrates the teams at every level of the organization.

Figure 2.1 Teams at each level of the organization

Source: The total teamwork way, Atkinson (1995, 35)

Atkinson (1995, 35) concludes by stating that everyone in an organization is personally managing and continuously improving their own process, and working together in teams to improve their service to the customer.

Continuous monitoring and results

According to Rosander (1989, 267) quality improvement implies that people work not only smarter but that they also utilise their time better. The author argues that quality measurement, as advocated by Crosby, could be used as a starting point for a quality improvement programme. The process would include collection of data, showing of trends or progress and identifying problem areas.

According to Linder (1995, 91) monitoring is a process of observing or inspecting what is or what has happened; and management's ability to monitor progress towards determined business objectives is identified as a critical success factor in redirecting a process is.

Russel and Regal (1989, 57) also explain that once quality improvement goals are determined, key process measures must be identified and put in place in order to provide up-to-date performance information to those responsible for process improvement.

Closer relationships with suppliers

According to Jacobs and Chase (2012, 291), a supplier network in the context of lean management refers to cooperative association of suppliers and customers working over a long term. Organizations must ensure that they deal with existing suppliers in a mutually beneficial manner, in other words the price that organizations are willing to pay to their suppliers must not put the suppliers at a disadvantage as the supplier network may be unravelled should the benefits not flow to all the members that are part thereof. The author also argues that the most cost effective way for an organization to improve quality is through ensuring quality at the source as this will guarantee first time production of consistent and uniform products and services, the supplier forms part of the source of production.

2.4 ORGANIZATIONAL CULTURE

Ross (1995, 42) argues that top management commitment and support for a new process such as TQM does not automatically guarantee that employees will accept and embed the new process into the organization. This requires a total change in the culture of the organization. The author explains that embedding an organizational culture involves a teaching process through which desired behaviours and activities are learned through experiences, symbols, and specific behaviours; Table 2.1 below illustrates the categories of behaviour for embedding organizational culture change as identified by Ross (1995, 42):

Table 2.1 Cultural change mechanism

Focus	From traditional	To quality
Plan	Short-range budgets	Future strategic issues
Organise	Hierarchy-chain of command	Participation/empowerment
Control	Variance reporting	Quality measures and information for self-control
Communication	Top down	Top down and bottom up
Decisions	Ad hoc/crisis management	Planned change
Functional Management	Parochial, competitive	Cross functions, integrative
Quality Management	Fixing/one-shot manufacturing	Preventive/continuous, all functions and processes

Source: Total quality management: Text, Cases and Readings, Ross (1995: 42)

2.5 BUSINESS PROCESS ENGINEERING

According to Jacobs and Chase (2012, 289), "the only cost effective way to improve quality is to achieve quality at the source as this guarantees production of consistent and uniform products and services at the first time''. To achieve this business needs to re-engineer its processes to ensure a quality output.

According to Hintzen, et al. (2013), efficiency can be increased in a hospital environment through use of dispensing redesign, order management, and patient movement data to determine the optimal times for preparing smaller and more frequent deliveries for medications.

According to Gitlow, et al. (1989, 493) total quality improvements include product and process design with the leader in this field being Dr Genichi Taguchi. They explain that process engineering methodology now provides a system to develop specifications, design those specifications into a product or process, and produce products that continuously surpass the determined specifications. The Authors outline the seven aspects to "offline quality control" as established by Taguchi:

- The quality of a product is measured by the total loss to society created by that product;
- Emphasis on continuous improvement and cost reduction;
- Continued reduction in variation in process or product;
- Product and or parameter setting that reduces performance variation can be identified with statistically designed instruments;
- The importance of product or service design and its impact on product quality and cost.

2.6 MEASUREMENT OF TQM EFFECTIVENESS

According to Lau and Anderson (1998, 97) the level of effectiveness of the quality improvement process being implemented by a firm depends on availability of information, the information must be relevant and reliable, the communication strategy used is also critical. Only once adequate measurement and feedback mechanisms are put in place will management be able to identify focus areas for enhancing quality performance. Therefore, development of a comprehensive quality information system becomes critical for successful implementation of quality improvements. The author identified that all management in the organization need to adopt and embrace the TQM philosophy, and ensure that TQM measures that best fit the organizations overall strategy are developed and that the measurement system adopted adequately measures the quality that the organization are provides to its customers.

2.7 HUMAN RESOURCE ASPECTS OF TQM

2.7.1 Employee involvement

According to Sun, Hui, Tam and Frick (2000, 350), the process of employee involvement is designed to empower members of an organization to make decisions and to solve problems appropriate to their level with the organization. Employee involvement is based on the premise that the people that are closest to a problem or opportunity are best positioned to make decisions for improvement if they have some

control of the improvement process itself. The authors explain that the concept of motivation-involvement is at the heart of TQM.

It is generally accepted that the people differentiates a company from others. The product, service offerings, processes, etc. can eventually be copied and duplicated, but its people are what would ultimately set it apart. According to Zakuan (2012, 28) employee involvement entails empowering employees to participate in managerial decision-making and improvement activities that are appropriate to their levels in the organization. In their study Miyagawa and Yoshida (2010, 745) found that adopting TQM strategy and employee involvement in Japanese-owned manufacturers based in the USA had a significant effect on external performance in the areas of increased productivity, market share, profit and competitiveness. Phelps (1998, 466) describes how leadership and management can avoid the reduction in competence associated with employees being long in the job because when people become well integrated into a company the expertise for which they were hired has been observed to diminish over time. The author identifies the following reasons for this erosion in output of permanently employed employees:

• They must assume many administrative chores which reduces the available time to engage in skill-maintenance;

• They may redirect their energies toward organizational politicking focussed on maintaining job-security/self-perpetuation; and/or

• They may simply become too busy doing the job for which they were originally hired to engage in competence enhancing activities.

The author argues that management has to seriously consider these reasons and mitigate accordingly in order to successful implement processes.

2.7.2 Empowerment

According to Faull (2011) a correct approach to operational management can influence the role in changing service delivery and by applying lean processes and methodologies will lead to increased organizational performance and improved staff utilisation. Pillay (2011) states that when an organization operates under lean methodologies the morale of its staff will improve because the staff feel more

empowered in performing their jobs, this is also one of the emphases of a lean approach as identified by Robbins et al. (2011)

According to Gitlow (2005, 43) employee empowerment in a quality management perspective has a very different meaning to empowerment as generally referred by mangers, with the aim of empowerment in quality management being to increase joy for all employees in the workplace. According to the author empowerment must be described to translate the organizations aim into realistic objectives, and the process of employment provides employees with the following:

- The opportunity to define and document key systems;
- The opportunity to learn about systems through training and development;
- The opportunity to improve and innovate best practices;
- The latitude to use their own judgement to make own decisions within the context of best known standards;
- An environment of trust between supervisors and employees.

2.7.3 Teamwork

Procter and Mueller (2000, 63) defines team working as "group of people that has between eight and fifteen members responsible for producing a well-defined output within a recognised territory, where members rotate from job to job, under a flexible allocation of tasks".

Weaver (1995, 106) identified two types of teams for effective TQM implementation and continuous improvement, the first is the process improvement team who are responsible for cross functional processes or "a series of repeated steps (or actions) that extend across two or more functional areas, departments, etc.".

2.7.4 Leadership and Top management commitment

Robins et al. (2011, 323) explains leadership as the ability to influence a group toward the achievement of a vision or a set of goals. Covey (2004, 5) also defines leadership as communicating to people their worth and potential so clearly that they come to see it in themselves.

According to Sajjad and Amjad (2011, 322) the success of an organization in the global market depends on the abilities of quality leaders or managers in terms of teamwork, knowledge, skills and problem solving. Oakland and Tanner (2007, 580) support the view that leadership is critical for successful total quality management implementation. The authors state that leaders should set a clear direction and manage risks mange associated risks, even though alternatives are evaluated before making the decision in the end leaders make a definite decision to change something and stick with it, whilst accepting that there were risks associated with any decision. Talib, Zillur and Qureshi (2010, 165) list top-management commitment as the top Critical Success Factor for successful total quality management implementation, closely followed by customer focus and satisfaction. Beer (2003) states that top management team at corporate level should start a TQM transformation with a clear understanding of why TQM is important to the objectives and strategy of the organization; He argues that unless the management team thinks that TQM is the core strategic capability that the corporation needs in order to succeed, the initiative will fail. The author identifies a number of open discussion questions that top management should ask, e.g. "Is TQM essential to our success as a corporation and why?, How does TQM fit our values and style as the management team?, etc.". Rosander (1989, 180) argues that top management holds a critical role in quality management because they have to make a total commitment to quality if there is to be a quality improvement, and they have to support and push the quality improvement program on a daily basis to achieve continuity, and correct the common causes that exist in the system that are identified as causing the poor performance.

2.7.5 Training and development

According to Phelps (1998, 468) organizations should strive to institutionalise training as too often workers have learned their job from other workers who were not trained properly themselves in this leads employees experiencing difficulty in properly performing their jobs.

Chiu (1999) states that employee involvement, participation, and empowerment form the cornerstones of TQM, yet the idea of involvement is not universally embraced, especially in the Chinese management culture as many Chinese business owners

and top managers feel threatened by the idea of delegating authority and therefore empowering employees. Authority is not delegated, changes are not supported, communication is not channelled, and information is not shared.

2.7.6 Culture change

Hough, et.al (2011, 297) describes a culture of an organization as its shared values and beliefs that interact with the organizational structures and control systems to produce behaviours and norms, thus dictating how an organization makes its decisions, interact with its customers, solves problems, etc. The author explains that an effective organizational culture will serve quality assurance and corrective actions or interventions when needed.

According to Bahri, Hamzah and Yusuf (2012, 21), a common reason for the failure of TQM is a culture that is inhibited by the company, and that cultural change and behavioural change management is a key factor in the successful implementation of TQM.

According to Oakland and Tanner (2007, 577), besides leadership support for change programmes, of equal importance is the need for project teams and the inclusion of employees. This emphasis the balance that must be maintained between "Project Hierarchy" and "Functional Hierarchy" when managing change in an organization. The authors also contend that for change to be successful in organizations it must be affected through a process-centred approach and that successful change requires leaders to continually negotiate all aspects of the change approach "including challenging the priorities, structure and programme metrics to ensure they are driving the desired behaviours and delivering the required benefits".

2.7.7 Customer satisfaction

Winer and Dhar (2011, 420) argues that one of the requirements for customer retention is satisfaction, the authors state that satisfied customer are much more likely to repurchase and become good customers than dissatisfied customers. According to findings by Miyagawa and Yoshida (2010, 745) the strategy of attending to customer focus and satisfaction significantly affected quality performance issues such as reducing warranty costs and scrap in US based

Japanese manufacturing firms. Ishikawa (1985) states that a business should strive to satisfy the true requirements of the customer, not the notional requirements.

2.7.8 Quality management

Linder (1995, 2) defines management as the skill of attaining predetermined objectives with and through the voluntary cooperation of others; and the art of management as being the ability to clearly communicate and diligently monitor tasks and goals, and to fairly reward the people who achieve them.

Quality management systems, as described by Ross (1995, 43), are vehicles for change that must be designed to integrate all areas of the business and should not be limited to quality assurance departments only, the author identified 4 processes for ensuring that quality management systems are directed toward achievement and commitment to the organizations purpose, these are:

- The specialisation of task responsibilities through structure;
- The provision of information systems that enable employees to know what they need to do in order to achieve goals;
- The necessary achievement of results through action plans and projects, and
- Control through the establishment of bench-marks, standards and feedback.

According to the Chattered Quality Institute (2014), quality management offers the benefits of protecting reputation, enhancing reputation, improved profitability / value-for-money and facilitating a culture of evaluation and improvement.

2.7.8.1 History and evolution of continuous improvement

According to Weaver (1995, 37) there exists a traditional understanding of what improvement is, when a product breaks or shows a defect management puts a lot of energy into fixing it and putting it back into its original state which wasn't perfect to begin with. The author argues that management needs to have a change in mind-set in the way that management looks at improvement, he suggest that management should keep in mind that at the aim of every process is to make the customers life better and in the end it must meet and exceed the customers ever increasing expectations. Deming describes continuous improvement as "Improving constantly the system of production and service", Weaver (1995, 105), this clearly does not

refer to fixing something to get it back to its usual state but rather to continuously strive to make it better. A number of continuous improvement methodologies have been developed over time and have become worldwide acceptable standards, these are some of them:

- Lean manufacturing;
- Six sigma;
- Balanced scorecard;

2.7.8.2 Lean manufacturing

According to Atmaca and Girenes (2011) Six Sigma principles generally implemented by organizations focus mainly on quality of the product or service rather speed; the authors argue that by introducing Lean Management to the process a company will be able to achieve both the improved quality and the higher speed of production or service delivery.

According to Jacobs and Chase (2012, 273) "lean refers to the focus on eliminating as much waste as possible; where moves that are not needed, unnecessary processing steps, and excess inventory in the supply chain are targets for improvement during the learning process". The author states that when a process has been streamlined and waste is removed from it through lean practices, increased production/throughput is achieved. Gupta and Kundra (2012) argues that lean management is continuously undergoing a process of evolution because it's entrenched on the principle of continuous improvement.

Cil and Turkan (2013), explains that lean is "an overarching philosophy of creating value in an efficient manner. That it is about continuously improving the manner in which an enterprise operates". The authors argue that lean should be an organization wide initiative and not only be limited to the plant; that when all elements and departments of the organization can be dependent upon to deliver their respective responsibilities reliably and timeously the organizations' overall reliability will be improved and customers will be assured of a delivery of goods and services at the right time and quality.

According to Rajenthirakumar, Sridhar and Janani (2013), when they argue that lean manufacturing is an applied methodology of scientific, objective techniques that cause work tasks in a process to be performed with a minimum of non-value adding activities resulting in greatly reduced wait time, queue time, move time, administrative time, and other delays. This result in increased reliability, increased productivity and improved operational efficiency.

2.7.8.3 Six Sigma

According to Brue, et al. (2006, 47) Six Sigma is a methodology of using tools in business that achieves reduced variations and defects in both production and service delivery processes in order to attain customer requirements. The authors specifications continue to explain that six sigma can be broken down into 3 components:

- Quality- which is achieved through use of statistical measure of variation in the production or service delivery process;
- Methodology– by providing a process that eliminates root causes of defects thereby achieving reduced costs.
- Customer– a customer based management philosophy that recognizes that defects reduce customer satisfaction and loyalty.

The authors conclude that Six Sigma can be applied to any process that uses any repetitive action in production, service or even in the supply chain environment.

According to Morgan et.al (2009, 21) there are six key principles of Six Sigma implementation:
- Focus on the customer,
- Improve and manage the process flow,
- Removing non-value adding steps,
- Use facts to manage and reduce variation,
- People and equipment involvement are vital,
- The systematic improvement of the activities.

2.7.8.4 Balanced Score card

Oakland and Tanner (2007, 582) argue that performance measurement has a key role in supporting change. The authors identified four sub-themes for implementing change; these are: processes at the centre of the change, organization and resource, systems and controls, and behaviours.

According to Hough, et al. (2011, 225) the balanced score card is important as a model of performance because it articulates the links between inputs (including human and physical), processes, and lagging outcomes and focuses on the importance of managing all these components to achieve the goals of the organization. The authors identified seven benefits of a balanced score card, namely:

- Map the strategy and goals of the organization;
- Integrate goals company-wide;
- Align strategy and goals with performance and ensure consistent benchmarks ,and good reporting
- Ensure line-of sight;
- Communicate objectives and goals;
- Focus everybody on the objectives, and
- Confirm corrective action when needed.

2.7.9 Reward and Remuneration

The thinking around reward and remuneration structures under TQM focused organizations presents a shift from the traditional compensation methods predominantly based on pay for performance and pay for responsibility, according to Ross (1995, 126) this traditional compensation methodology creates compensation amongst employees and ma deter team working as a critical pillar of effective TQM implementation. Ross recommends that under TQM companies should move toward team compensation rather than individual based compensation. Robbins, et al. (2009, 177) supports the view that reward and remuneration can be used to motivate employees in order to perform better in organizations.

2.7.10 Organizational Communication

According to Rosander (1989, 184) Management and all other employees alike cannot function unless they are adequately informed of what is going on. Talib, Zillur and Qureshi (2010, 165) argue that to successfully implement TQM, it is of critical importance that top-management of an organization communicate and describe quality goals and policies to internal employees. It is important for communication channels in an organization to be open and transparent, according to Beer (2003, 628) the public nature of an organization in so far as it allows employees to speak to those in power openly and safely is key to breaking silence within the organization and motivating management to act timeously.

According to Robbins, Judge, Odendaal and Roodt (2009, 268) when management communicates effectively employees will believe in the future direction of the business, effective communication is also widely recognised as one of the key requirements for successful strategy implementation.

2.7.11 Organizational Learning

Robbins, Judge, Odendaal and Roodt (2009, 294) describes a learning organization as an organization within which learning is no longer limited to an individual experience, but rather to a team and an organization wide process where the people strive to attain the results that they desire and new and innovative ways of thinking are encouraged. The authors expand by saying that in a learning organization there is a culture of continuously sharing information and growing the knowledge base. Team work and open communication is also prevalent in a learning organization.

2.8 OBSTACLES TO IMPLEMENTING TQM

According to Russel and Regel (1996, 3) some organizations fall into the trap of confusing corrective action, i.e. an action taken to eliminate the cause of existing problems in order to prevent it from re-occurring, with preventive action, i.e. a process of eliminating the cause of potential problems in order to prevent occurrence. The author argues that continuous correcting is not continuous improvement and will therefore not assist in successful implementation of TQM.

Phelps (1998, 467) identifies the need to constantly improve the production and service systems, that improvement should not be a one-time effort. Management is obligated to continually look for ways to reduce waste and improve quality. Should management fail in this regard, TQM implementation will also fail.

According to Lau and Anderson (1998, 89) employee commitment is one of the most critical success factors for TQM implementation; should top management fail to demonstrate the priority by creating a vision of quality and developing broad but concrete goals to achieve it, there will be no employee commitment to both the TQM program and the company's strategy.

2.9 CRITICISM OF TQM

According to Sahney, Banwet and Karunes (2004, 155) "one of the pertinent problems is that whilst TQM is widely used, there is no agreement on what it actually means as a single and homogenous theory of TQM is still lacking".

Some of the generally known criticism if TQM includes:

- Unquestioning and blind pursuit of TQM programmes by organizations;
- Lack of alignment between organizational strategy and TQM programme objectives and goals;
- An established link and course and effect relationship between quality related decisions and market performance/customer needs; and
- Lack of adequate planning before embarking on TQM resulting in employee confusion and dissatisfaction and unconstructive results.

2.10 CONCLUSION

As Lau and Anderson (1998, 89) explains, there is no right or wrong way to generate quality, just as there is no single correct TQM format. Instead it is the responsibility of TQM implementers to analyse TQM programs in the context of the different definitions of quality as each of which may be the most appropriate given the specific circumstances of that organization.

In this chapter a literature review on total quality management was presented. An introduction to quality and total quality management was presented. The best total quality management practices were outlined, and key implementation principles were defined. In the next chapter the research methodology adopted in this study will be presented

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

In this chapter an overview of the research methodology followed in order to conduct the study is presented. A review of literature on TQM conducted in Chapter 2 provided understanding of the principles of TQM and relevant impact on companywide performance. In this chapter the research methodology, sample for the questionnaire survey, procedure and tools for collecting and analysing data are described.

The objective of this research is to investigate the extent to which TQM has been implemented within Transnet's Durban RORO Terminal, to establish the impact of current TQM practices on overall company performance and to investigate the extent to which employees have embraced the concept of TQM at Transnet's Durban RORO Terminal. Understanding the extent of TQM implementation, its impact on company performance and extent to which employees have embraced TQM within DRT can only be achieved through engagement with individuals who are employees in the company and who are responsible for carrying out the day to day operational activities, this engagement was accomplished through a staff survey.

3.2 REACH METHODOLOGY

3.2.1 Literature Survey

A review of the relevant literature on total quality management was conducted in order to establish principles of implementation. Recommendations are compiled for management considerations. Areas for further study in this area are identified.

The Literature survey was conducted through a review of information contained in a variety of sources, including the following key ones:
- University of Natal library search engines providing access to a variety of peer reviewed journals, scholarly works and Industry publications. The foremost sources for information will be SABINET, EBSCohost and Proquest;

- Subject matter specific books;

- Consulting subject matter specific websites e.g., Chattered quality institute, etc.;

- Use of public search engines, such as Goole and Google Scholar to obtain further subject matter related information.

3.2.2 Empirical research

The study uses a descriptive and inferential approach in order to provide a quantitative analysis to evaluate the characteristics of total quality management implementation and adoption at Transnet's Durban RORO terminal, and to establish the impact of current total quality management practices on overall business performance.

3.2.2.1 The survey instrument

A structured, self-administered questionnaire was used as a tool to collect all the data. The five-point Likert-scale as a measuring system was adopted for use throughout, and had the following scores: strongly agree (1), somewhat agree (2), unsure (3), somewhat disagree (4) and strongly disagree (5).

The questionnaire was self-administered to employees who work on the quay-side and have no access to emails, and e-mailed to office based employees. Respondents either responded via return e-mail or personal delivery of hard copies.

3.2.2.2 Rationale for use of questionnaire

According to (Sekaran and Bougie, 2013), "questionnaires are an efficient data collection mechanism when a study is descriptive or explanatory in nature". (Saunders, Lewis and Thornhill, 2003) state that questionnaires "work best with standard questions that you can be confident will be interpreted the same way by all respondents."

(Sekaran and Bougie, 2013) identified key attributes of personally administered, mail and electronic administered questionnaires (e-mail and internet), these are as follows:

Self-administered

- It is easier for the researcher to collect all responses that have been completed, this can be done within a short time period;

- The researcher is in a position to address any uncertainty that the respondents may have about the questions;

- The researcher has the opportunity to introduce the subject being investigated and encourage respondents to be truthful in their responses;

- Questionnaires can be administering to a large number of individuals simultaneously lead to saving of costs.

Mail and internet questionnaires

- A large geographical area can be covered;

- Where e-mail is used, there is a high confidence level that the correct (target) respondents have been reached;

- There is low probability of the respondents answer being contamination when email and the internet are used;

- For on line, postal and delivery / collection questionnaires it is important for the researcher to ensure questions are not open-ended, are not complex and that are of interest to the respondent.

(Sekaran and Bougie, 2013) also identified the following disadvantages of using a questionnaire:

- The length of time taken to complete collection is high (2-6 weeks from distribution)

- The response rate is fairly low (30% within organizations and 10% or lower with the use of the internet)

The targeted respondents for the survey are employees of different grades (incl. management), years of experience, work skill, races, ages and gender groups who are responsible for the daily execution of operations at DRT as they will have a thorough understanding of business processes and TQM implementation levels within the organization. The advantages of adopting a questionnaire, as previously highlighted, have resulted in accurate responses from the right people being obtained. Permission to conduct research within the organization was obtained from the terminal manager. The support from terminal management has had a positive impact of reducing the risk of a low response rate.

3.2.2.3 Structure of questionnaire

The questionnaire can be divided into thirteen broad categories, which have differing objectives:

Demographic Information

Demographic questions relate to respondents age, gender, years of experience, work skill, and grade level. When data is analysed in conjunction with other gathered information, it presents opportunities for in-depth understanding of DRTs' TQM level of implementation.

Top management Support

These questions attempt to gain insight into the respondent's perceptions of leadership support in TQM implementation.

Customer Satisfaction

These questions seek to explore employee's awareness of the customers' quality standards and their perception of the businesses' focus on customer satisfaction.

Employee engagement

The objective of obtaining this kind of information is to assess if the respondents feel that they are adequately engaged in decision making processes and if their suggestions are appropriately considered.

Employee Empowerment

The reason for asking these questions is to ascertain the level that employees feel empowered to perform their allocated duties and carry out their responsibilities.

Employee Development

The objective of obtaining this information is to ascertain the respondents' perception of the level of employee development that is available within the company.

Reward and Recognition

These questions attempt to determine if respondents feel that there is adequate reward and recognition for innovation and quality improvements or not in the organization.

Team work

These questions seek to explore the respondent's perceptions of the level of team work that exists within the company.

Decision making

The objective for asking these questions is to ascertain the respondents perception of their level of involvement in decision making processes, and if they feel that their suggestion are taken into consideration when decisions are made in the organization.

Communication

The questions seek to determine the perceived level of communication in the organization.

Cleanliness and Organization

These questions attempt to gain insight into the respondent's perceptions of cleanliness and organization at the terminal.

Efficiency, Safety and Security

The objective for asking these questions is to attain understanding of the respondent's perception of the level of efficiency, safety and security within the organization.

Level of support for total quality management

The reason for asking these questions is to gain insight into the employee's perception of their level of buy-in and support for total quality management in the terminal.

The questions required a simple ranking between 1(strongly agree) to 5(strongly disagree). The simplicity of the questionnaire allowed for ease of answering, leading to frank responses to questions.

3.3.   AUTHORITY TO CONDUCT SURVEY

Permission to conduct research was requested from Transnet DRT management. Written permission has been granted by the terminal manager. Permission was granted on the understanding that a copy of the final report would be made available to terminal management.

3.4.   POPULATION AND SAMPLE SIZE

The study was conducted at Transnet's RORO terminal situated in the Port of Durban. The current Transnet employee data base was be used. There are 110 employees in the Durban RORO Terminal (Transnet database as at 31 October 2014). A sample size of 86 employees is used for the study. The respondents consist of management, operations and administration employees. These selected elements provided reliable data for generalization and recommendations.

3.5.   PROBLEMS EXPERIENCED IN DATA COLLECTION

Transnet's Durban RORO terminal is an operations focused business with majority of staff members not having electronic access (e-mail, internet). This necessitated that questionnaires be self-administered in order to reach all targeted respondents.
The terminal operates a three shift system with hot seat change overs; this that access to employees was limited during shift hours and questionnaires had to be administered during the night requiring the researcher to be present at odd and varying hours.

In some instances the respondents were new recruits within the organization (between 3 to 5 years); this presented a risk that they may not be fully abreast with current processes and procedures. However, this shortcoming is compensated for by

the fact that these employees would provide an impartial view of the current state thus adding to the credibility of the survey.

3.6.   DATA ANALYSIS

The data analysis was accomplished through the following steps:

- By using the Microsoft Excel statistical functionality to analyse data collected via the questionnaire
- A database-structured template was created on Excel to facilitate recording of data collected
- Data e captured from questionnaires directly onto the Excel template
- Captured data reviewed by an independent party for accuracy and completeness
- Microsoft – Excel statistical analytical functionality utilised to assess the respondents' views on the categories of questions asked.
- The results of the above analysis are presented in the form of tables and graphs in chapter 4 of this thesis.
- Results are interpreted, findings are reported and recommendations are made in chapter 5 of this thesis.

3.7.   SUMMARY

The main objectives of the data collection was to assess the perception of the extent to which total quality management has been implemented within Transnet's Durban RORO Terminal, to establish the impact of current total quality management practices on overall company performance and to investigate to what extent the employees have embraced the concept of total quality management at Transnet's Durban RORO Terminal. Permission was requested from DRT management to conduct research within the business. The total population of potential respondents within the business equates to 110 individuals. A 78% survey was conducted with a 66% response rate achieved.

The actual collection of data was characterised by a number of problems, and all arising problems were adequately addressed. The prominent problems included the lack of electronic access for operations staff (no access to email & internet) which required that questionnaires be self-administered, and employees being on a three shift system which required that the researcher be at the Terminal during the night in order to reach all intended respondents.

The next chapter will give an analysis and results of the study conducted in line with the research methodology detailed as per this chapter.

CHAPTER 4: DATA PRESENTATION AND RESULTS

4.1 INTRODUCTION

The literature review conducted in chapter 2 outlined the most critical principles of TQM that must be adopted by organizations in order to achieve successful TQM implementation. Where these principles are implemented adequately, TQM programmes have been proven to succeed within organizations; associated benefits of TQM which include improved profitability, efficiency, employee satisfaction, etc. have also been observed in organizations that have successfully implemented TQM. Having drafted 42 questions that are aimed at soliciting employee views on the level of TQM implementation, the impact of current TQM practices on overall organizational performance and the level of TQM adoption and support by employees at Transnet's Durban RORO terminal a survey on a sample of 86 employees was conducted, and 57 responses were received, this constitutes a 66% response rate.

This chapter aims to present the results of the employee survey conducted through the research methodology as outlined in chapter 3 of this study.

4.2 STUDY RESULTS

4.2.1. Demographic information

Before detailed analysis of the discussion questions it is critical for us to analyse and understand the correlations between the profiles of respondents including their gender, age group, level of experience and functional areas as all these aspects contribute to the outcome of the research.

In total 57 responses were received, this represents a response rate of 66%. There were more male respondents than female respondents as shown in figure 4.3 (ration of 56:44). Figure 4.1 shows that majority of the respondents, about 47%, have been in service longest with 11 years and above; 29% of respondents have been with the company between 3 to 5 years, and about 22% have been with the company for

between 6 to 10 years. As shown in figure 4.2 the majority of respondents are junior officers, about 82%, 14% were at supervisory level and only 4% at management level. The majority of respondents (about 69%), as shown in figure 4.4, are 31 years old and above. None of the respondents was younger than 20 years old.

Figure 4.1 Years of employment at the company

Years in Service
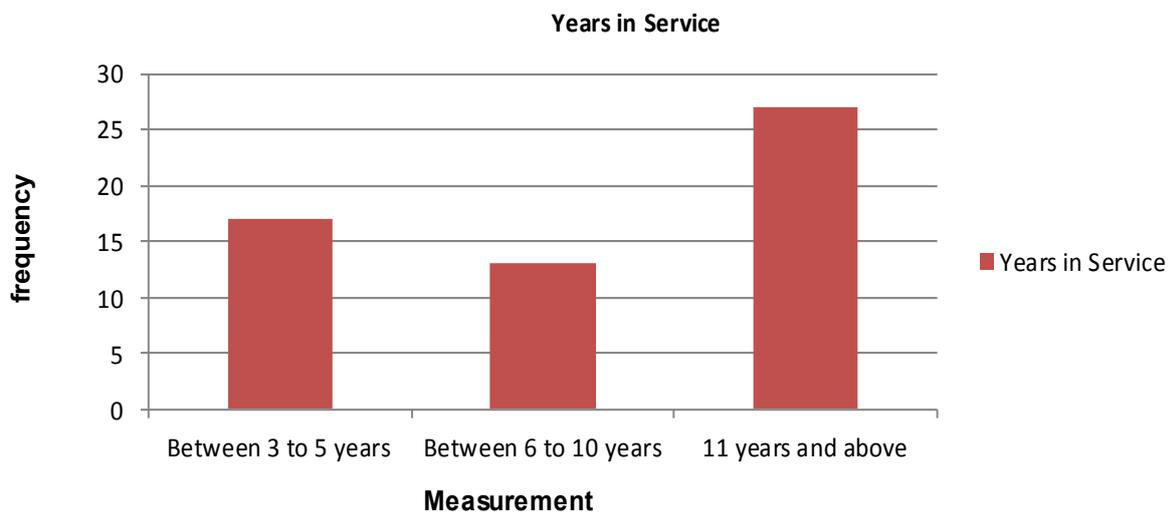
Figure 4.2 Level of respondents in the organization
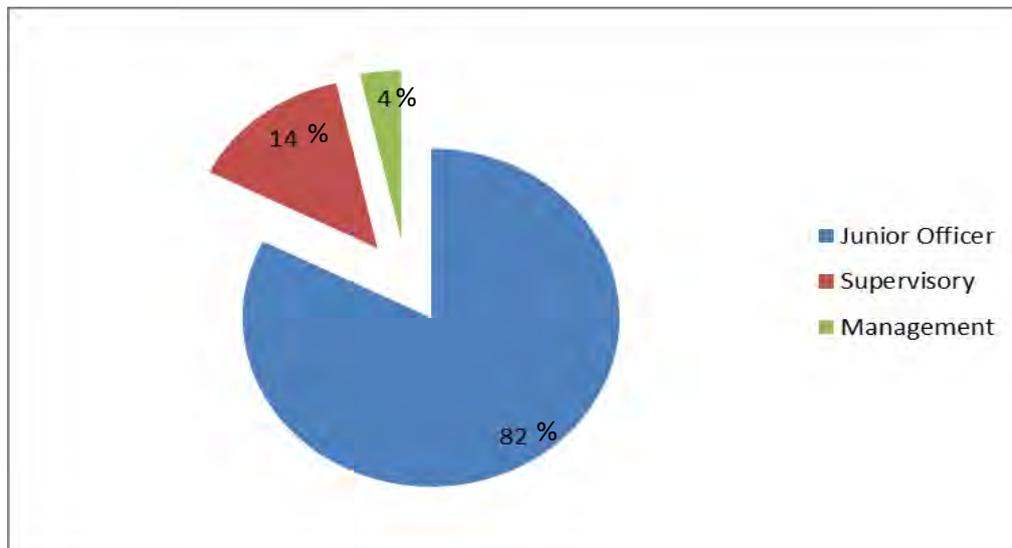
Figure 4.2 shows that 82% of respondents were junior officers, 14% were in a supervisory level while 4% were in some kind of management role. None of the respondents were trainees.

Figure 4.3 Ratio of male to female respondents
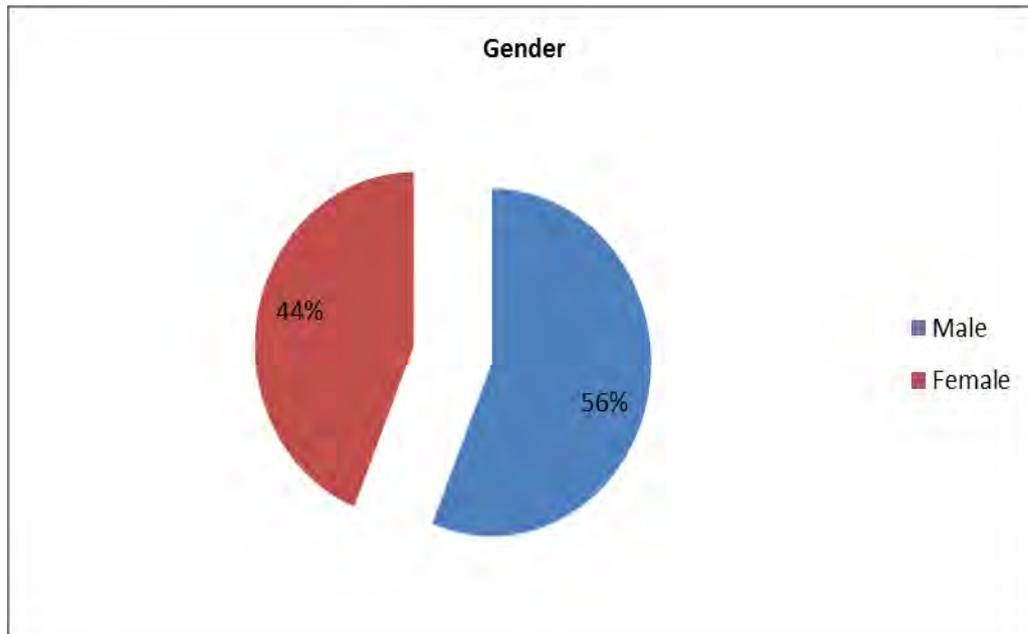
Figure 4.3 clearly shows that there were a higher number of male respondents than female respondents. The male respondents were 56% while female respondents were 44%.

Figure 4.4 Age Group of respondents
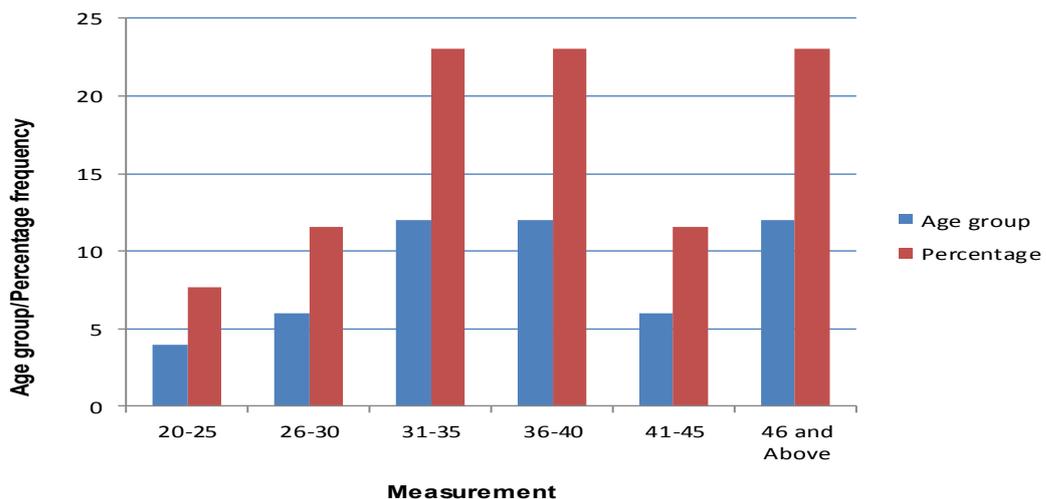
	20 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 and above
Frequency	4	6	12	12	6	12
Percentage	8	12	23	23	12	23

Figure 4.5 indicates that there are an equal number of respondents between those that are 31 to 35 years old, 36 to 40 years old and 46 and above. This is evidence that at least 69% of the respondents in the organization are over 31 years old.

Figure 4.5 Work skill of respondents
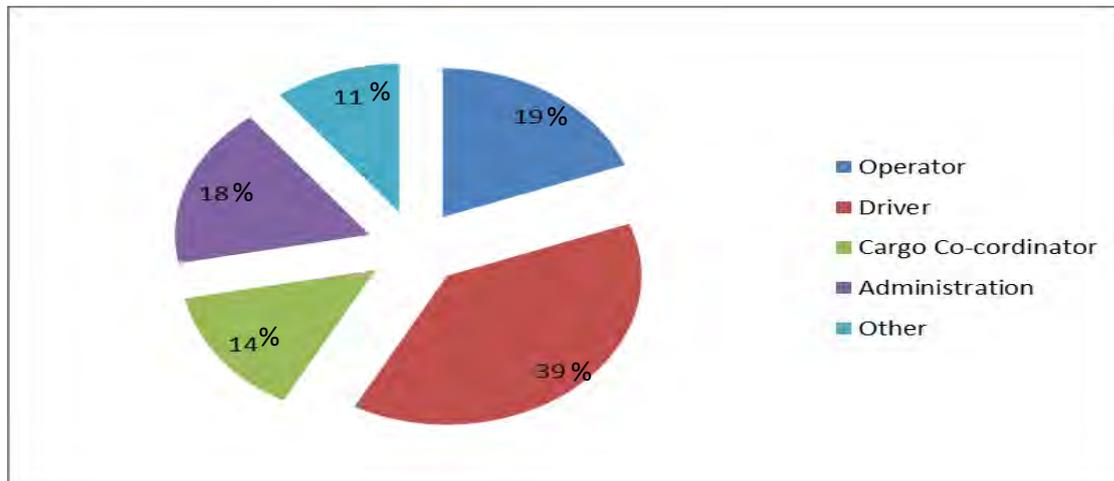
From figure 4.5 above it is clear to see that the majority of respondents work as drivers, 19% is operators, and 18% worked in a supportive or administrative role, there was also 14% who work as cargo coordinators in the terminal, a small portion of employees work in "other" supportive roles.

4.2.2 Discussion of results

4.2.2.1 Top management support

The literature review conducted identified top management support as a critical element to ensuring effective TQM implementation in an organization. As part of the study, it is paramount to investigate the level of top management support at Transnet's DRT. The average mean, as shown in table 4.1, for questions answered under top management support is 3.03. This represents 61% of employees not agreeing that top management support to TQM programmes is visible at the terminal.

Table 4.1 Top management support calculated mean

	Top management support calculated mean		
Question No.	**Questions**	**Mean**	**Gap**
1	**There are clearly identified quality goals by top management**	*3.00*	-0.03
2	**Top management often holds discussions on the importance of quality**	*2.96*	-0.06
3	**There is visible management drive to promote efficiency, quality and safety in operations**	*3.12*	0.09
	Top management Support average mean	*3.03*	

Table 4.2 Response percentage on Top management support

	Scales	1	2	3	4	5
Question No.	**Percentage**	**Strongly Agree**	**Somewhat agree**	**Neutral**	**Somewhat disagree**	**Strongly disagree**
1	Percentage	16	26	16	26	16
2	Percentage	9	39	12	28	12
3	Percentage	11	26	18	32	14

Table 4.2 and Figure 4.5 show individual response results as analysed from the questionnaire administered to respondents. Responses on the question "There are clearly identified quality goals by top management" showed an even split between those who agree and those who do not agree (about 42% each) while 16% was unsure. On the question, "Top management often holds discussions on the importance of quality ", it was observed that 48% of respondents agreed while 12% were unsure and 40% disagreed. The 57 responses received from the question "there is visible management drive to promote efficiency, quality and safety in operations" show that 46% of responses do not agreed while 37% agreed, there was also a significant percentage, about 18%, of respondents who were not sure. On

average, there seem to be some level of top management commitment and support within the organization, but there is room for improvement.

Figure 4.5 Top management support
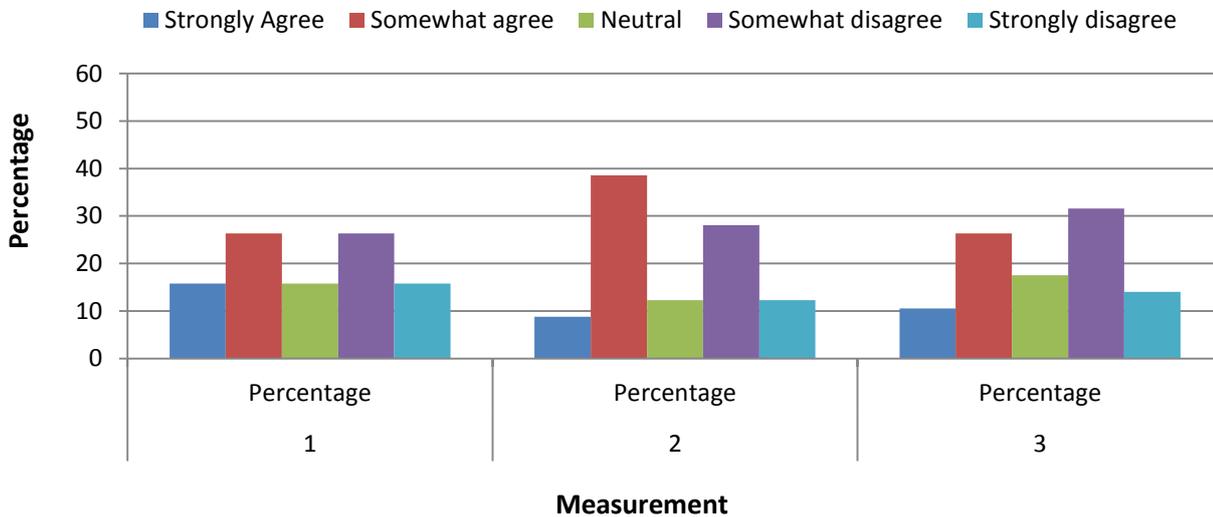
4.2.2.2 Customer Satisfaction

Customer satisfaction, as established through literature review, is paramount to the success of an organization, and should be the primary focus of any quality management programme. The average mean, as shown in table 4.3, which addresses all the questions focusing on customer satisfaction, is 2.97, which represents 59% of employees not disagreeing that there is some degree of customer focus displayed in the organization. There is about 62% disagreement with the question "customer feedback is used to determine customer requirements", 52% of the respondents agreed that they are aware of customer quality standards, and about 67% of the respondents disagree with the statement that terminal operating procedures are focused on providing a quality service to the customer.

Table 4.3 Customer Satisfaction calculated mean

Question No.	Questions	Mean	Gap
	Customer satisfaction calculated mean		
4	**I am aware of our customers quality standards**	*2.42*	-0.55
5	**Customer feedback is used to determine customer requirements**	*3.12*	0.15
6	**Terminal operating processes are focused on providing a quality service to customers**	*3.37*	0.40
	Customer satisfaction average mean	*2.97*	

Table 4.4 Response percentage on customer satisfaction

	Scales	1	2	3	4	5
Question No.	Percentage	Strongly Agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
4	Percentage	21	53	4	9	14
5	Percentage	23	14	12	30	21
6	Percentage	14	16	14	32	25

Individual responses for customer satisfaction shown in Table 4.4 and Figure 4.6 indicated that 74% of respondents agreed that they are aware of customer quality standards while 23% disagreed and 4% were neutral. On the question "Customer feedback is used to determine customer requirements" 51% of respondents disagreed, with 37% agreeing and 12% staying neutral. On whether the respondents thought that terminal operating processes are focused on providing a quality service to customers, a majority (about 57%) did not agree, 30% agreed and 14% were neutral. On average it appears that there is inadequate focus on customer satisfaction for the organization.

Figure 4.6 Customer Satisfaction
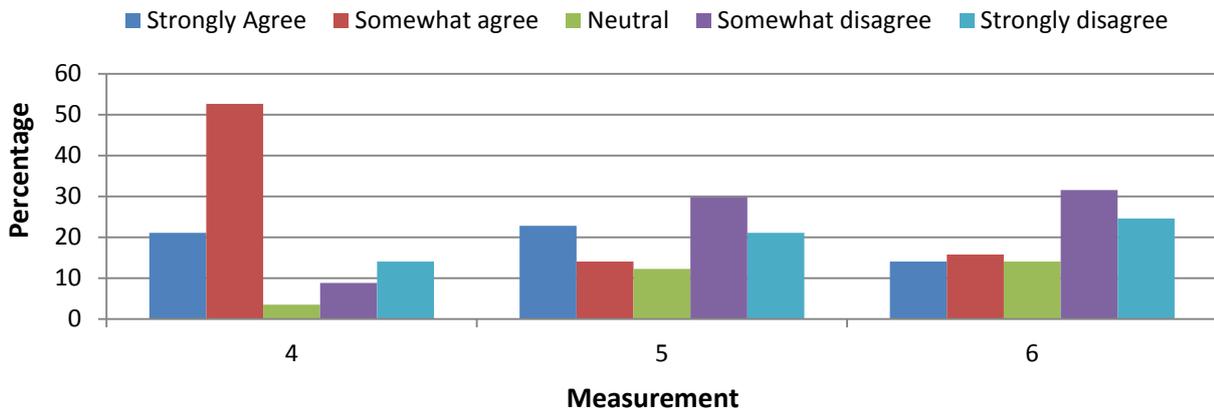
4.2.2.3 Employee Engagement

Employee engagement forms part of the human resources aspect of TQM, these are generally referred to as the "soft issues" of TQM but are critical to the success of TQM programmes. The average mean for employee engagement responses, as shown in table 4.5, was found to be 3.51 representing about 70% not agreeing that there is sufficient employee engagement at DRT.

Table 4.5 Employee Engagement calculated mean

Employee engagement calculated mean			
Question No.	**Questions**	**Mean**	**Gap**
7	There are sufficient channels for employee participation in decision making processes	3.39	-0.13
8	All suggestions coming from employees are evaluated	3.47	-0.04
9	Most suggestions by employees are implemented	3.68	0.17
	Employee engagement average mean	3.51	

Table 4.6 Response percentage on Employee engagement

Question No.	Scales	1	2	3	4	5
	Percentage	Strongly Agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
7	Percentage	9	16	14	51	11
8	Percentage	14	11	11	44	21
9	Percentage	12	11	7	37	33

Table 4.6 and Figure 4.7 show individual response results as analysed from the questionnaire administered to respondents regarding employee engagement at DRT. Responses on the question "There are sufficient channels for employee participation in decision making processes" showed a majority (about 62%) disagreeing, with 25% agreeing and 14% neutral. On the question "All suggestions coming from employees are evaluated" it was observed that 65% of respondents disagreed while 11% were unsure and 25% agreed. The 57 responses received from the statement "Most suggestions by employees are implemented" show that 70% of responses did not agree while 23% agreed and 7% were neutral. On average employee engagement seems to be poor in the organization.

Figure 4.7 Employee engagement
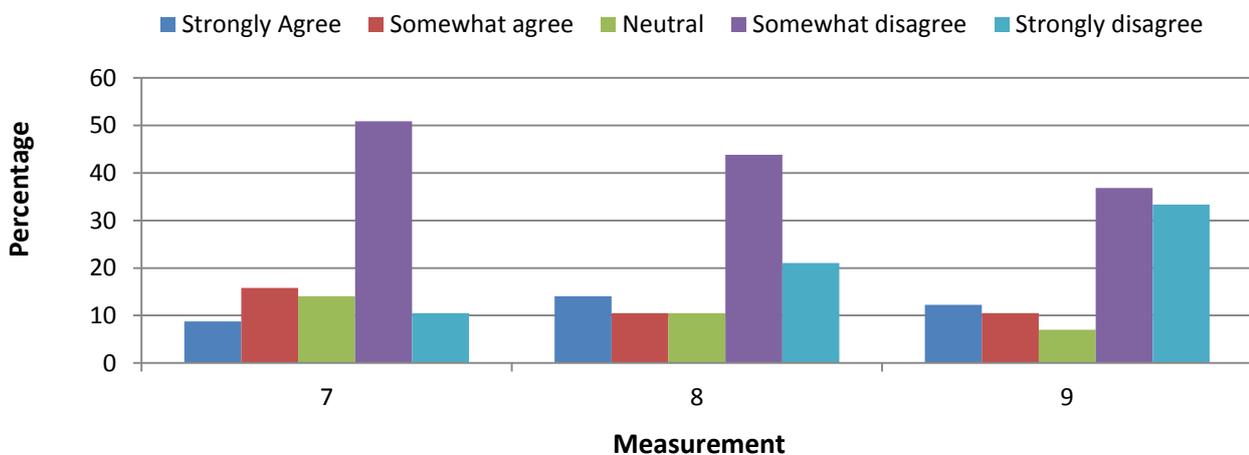
4.2.2.4 Employee empowerment

Employee empowerment is another one of the "soft issues" of TQM. As a critical element to successful TQM implementation it is important that we investigate its presence in the organization under study. The average mean for employee empowerment responses, as shown in table 4.7, was found to be 2.89 representing about 58% not agreeing that there is employee empowerment in the organization.

Table 4.7 Employee empowerment calculated mean

Question No.	Questions	Mean	Gap
	Employee empowerment calculated mean		
10	**My company always encourages me to offer ideas about workplace improvements**	*2.91*	0.02
11	**Manager trusts me in performing my duties**	*2.54*	-0.35
12	**Management has made available all the resources required for me to execute my job properly**	*3.21*	0.32
	Employee empowerment average mean	*2.89*	

Table 4.8 Response percentage on Employee empowerment

Question No.	Scales Percentage	1 Strongly Agree	2 Somewhat agree	3 Neutral	4 Somewhat disagree	5 Strongly disagree
10	Percentage	14	35	11	26	14
11	Percentage	35	25	2	28	11
12	Percentage	19	18	4	42	18

Individual responses on employee empowerment are shown in Table 4.8 and Figure 4.8. Responses on whether the respondents feel that the company always encourages them to offer ideas about workplace improvements show that about 49% agreed, 40% disagreed while 11% were unsure. On whether "Managers trusts me in

performing my duties" a majority (about 60%) agreed, with 39% disagreeing and 2% neutral. It was also found that 60% of respondents disagree that management has made available all the resources required for them to execute their jobs properly, 37% agreed and 4% were neutral. Overall, there seems to be inadequate employee empowerment in the organization at present.

Figure 4.8 Employee empowerment
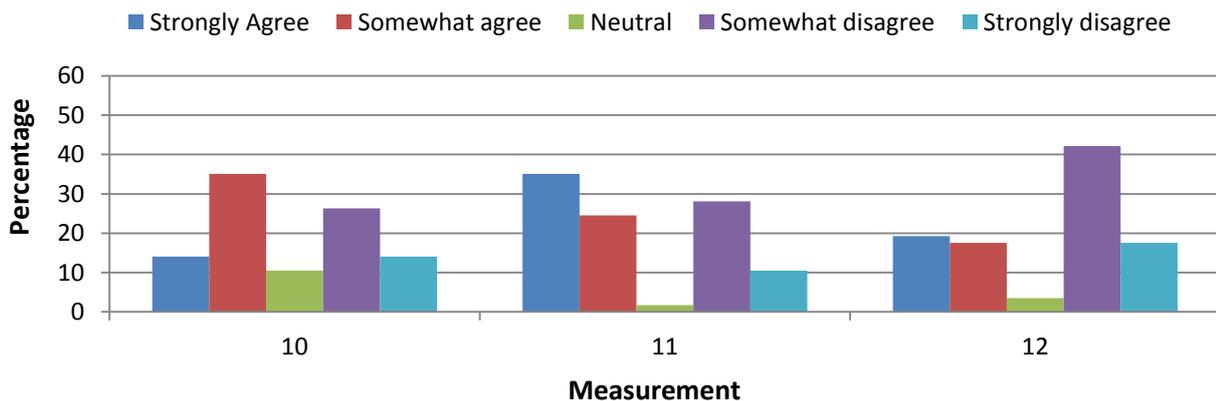
4.2.2.5 Employee development

Another one of the critical elements of human resources in TQM is employee development. As such it is important that we investigate this element in the organization under study. The average mean for employee development responses, as shown in table 4.9, was found to be 2.82 representing about 56% not agreeing that there is employee development in the organization. About 64% of the employees disagreed that quality principles training is provided to all employees and that there is sufficient training provided to employees in order to be able to carry out their jobs efficiently. On the other hand, about 58% of the respondents agreed that employees are encouraged to participate in education and training within the company.

Table 4.9 Employee development calculated mean

Question No.	Questions	Mean	Gap
	Employee development calculated mean		
13	**Employees are encouraged to participate in education and training within the company**	*2.12*	-0.70
14	**Quality principles training is provided to all employees**	*3.18*	0.35
15	**There is sufficient training provided to employee in order to be able to carry out their jobs effectively**	*3.18*	0.35
	Employee development average mean	*2.82*	

Table 4.10 Response percentage on employee development

Question No.	Scales / Percentage	1 Strongly Agree	2 Somewhat agree	3 Neutral	4 Somewhat disagree	5 Strongly disagree
13	Percentage	32	46	9	7	7
14	Percentage	11	26	14	33	16
15	Percentage	11	28	16	25	21

Table 4.10 and Figure 4.9 show individual response results as analysed from the questionnaire administered to respondents regarding employee development at DRT. Responses on the question "Employees are encouraged to participate in education and training within the company" showed a majority (about 78%) agreeing, with only 14% disagreeing and 9% neutral. On the question "Quality principles training are provided to all employees" it was observed that 49% of respondents disagreed while 37% agreed and 14% were unsure. The 57 responses received from the question "There is sufficient training provided to employee in order to be able to carry out their jobs effectively" show that 39% of responses agreed while 46% did not agreed and 16% were neutral. On average it appears that the company provides

opportunities for training and development, however, the primary focus of these programmes appears to be less on quality management.

Figure 4.9 Employee development
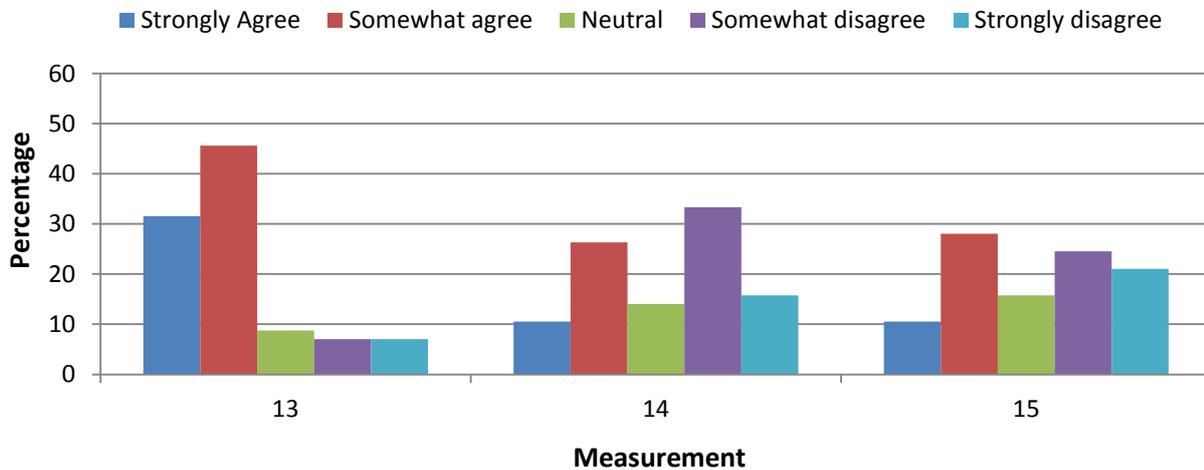
4.2.2.6 Reward and recognition

Reward and recognition has been found to promote employee satisfaction and encourage employee buy-in into processes. It is also a critical human resources element of TQM, as such it is important to study its existence in the organization under study. The average mean for reward and recoginition responses, as shown in table 4.11, was found to be 2.64 representing about 53% not agreeing that there is financial reward in the organization. About 55% of the respondents agree that innovation and continuous improvement is encouraged and rewarded, whilst 67% of respondents disagree that non-financial incentives are used to reward improvements. It was also found that 46% of respondents agreed that financial incentives are used to reward quality improvements.

Table 4.11 Reward and recognition calculated mean

Question No.	Reward and recognition calculated mean		
	Questions	Mean	Gap
16	Innovation and continuous improvement is encouraged and rewarded	*2.26*	-0.37
17	Financial incentives are used to reward quality improvements	*2.28*	-0.36
16	Non-financial incentives are used to reward quality improvements	*3.37*	0.73
	Reward and Recognition average mean	*2.64*	

Table 4.12 Response percentage on Reward and recognition

Question No.	Scales	1	2	3	4	5
	Percentage	Strongly Agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
16	Percentage	40	25	12	14	9
17	Percentage	40	25	11	16	9
16	Percentage	12	9	28	32	19

Individual responses on employee reward and recognition are shown in Table 4.12 and Figure 4.10. Responses on the question "Innovation and continuous improvement is encouraged and rewarded" showed that about 65% of respondents agree, with 23% disagreeing and 12% neutral. On the question "Financial incentives are used to reward quality improvements" 65% agreed while 25% disagreed and 11% was neutral. It was also found that on the question on whether respondents felt that "non-financial incentives are used to reward quality improvements" 51% of respondents disagreed, 21% agreed and 9% were neutral. On average there seems to be focus on reward and remuneration in the organization, however there seems to be more focus on financial rewards than on non-financial rewards.

Figure 4.10 Reward and recognition
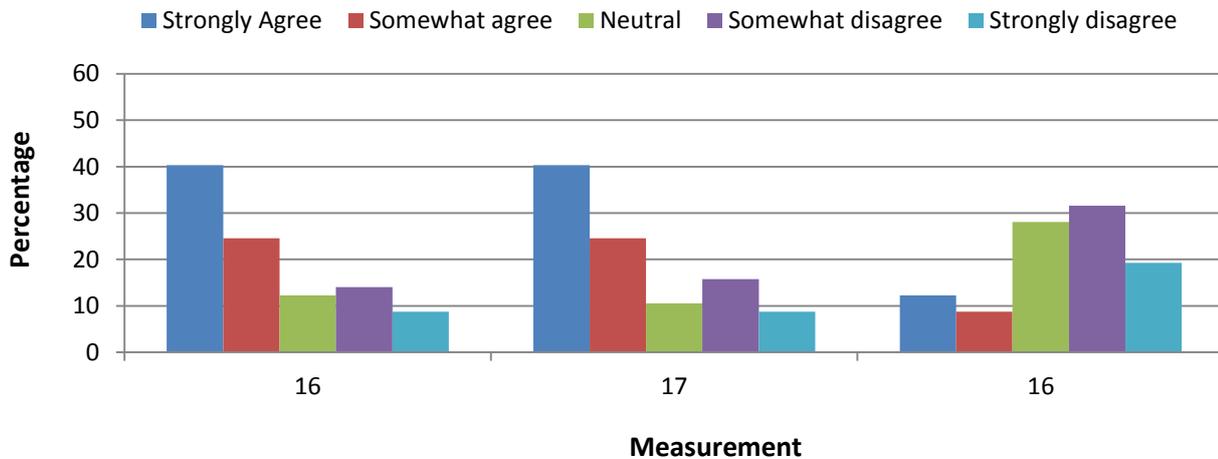
4.2.2.7 Team work

The average mean for employee engagement responses, as shown in table 4.13, was found to be 2.74 representing about 55% not agreeing that team work and a culture of team work exists in the organization under study. The Gap between the means was found to be high in some cases, being 0.75, 0.23 and -0.51, this was due to many respondents being neutral in their responses.

Table 4.13 Teamwork calculated mean

Question No.	Questions	Mean	Gap
	Team work calculated mean		
19	**A culture of team-work exists within the organization**	*2.51*	-0.23
20	**I am more comfortable working a group environment rather than as an individual**	*2.23*	-0.51
21	**Work related decisions are made through a consensus process**	*3.49*	0.75
	Team work average mean	*2.74*	

Table 4.14 Response percentage on teamwork

	Scales	1	2	3	4	5
Question No.	Percentage	Strongly Agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
19	Percentage	21	39	14	21	5
20	Percentage	39	32	11	7	12
21	Percentage	5	19	14	44	18

Table 4.14 and Figure 4.11 show individual response results as analysed from the questionnaire administered to respondents regarding teamwork at DRT. Responses on the question "A culture of team-work exists within the organization" showed a majority (about 60%) agreeing, with 26% disagreeing and 14% who were neutral. On whether respondents felt comfortable working in a group environment rather than as individuals it was observed that 71% of respondents agreed while only 19% disagreed and 11% were unsure. Responses received from the question "Work related decisions are made through a consensus process" show that 62% of responses disagreed while 24% agree and 14% were neutral. Although a culture of teamwork exists, and the majority of respondents seem comfortable working in a group environment, it seems that work related decisions are not always made through a consensus process in the organization.

Figure 4.11 Teamwork
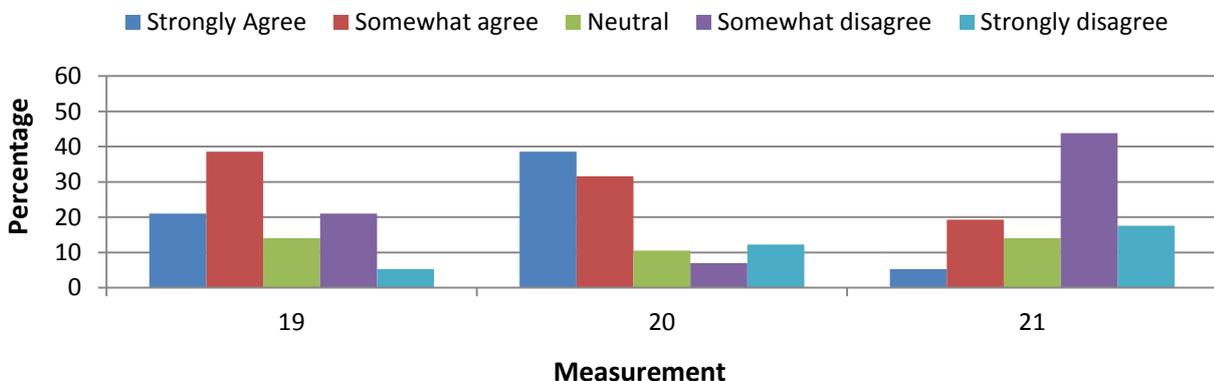
4.2.2.8 Decision making

Decision making is a critical element of successful TQM implementation, it is therefore important that we evaluate it in the organization under study. The average mean for decision making responses, as shown in table 4.15, was found to be 3.80 representing about 76% of employees not agreeing that adequate decision making and implementation procedures are in place at DRT.

Table 4.15 Decision making calculated mean

Question No.	Questions	Mean	Gap
	Decision making calculated mean		
22	**We use statistical control charts to control processes**	3.75	-0.05
23	**Decisions affecting operations are made timeously**	3.82	0.02
24	**Decisions affecting operations are implemented timeously**	3.82	0.02
	Decision making average mean	3.80	

Table 4.16 Response percentage on decision making

Question No.	Scales / Percentage	1 Strongly Agree	2 Somewhat agree	3 Neutral	4 Somewhat disagree	5 Strongly disagree
22	Percentage	9	14	19	9	49
23	Percentage	5	19	11	18	47
24	Percentage	12	11	9	19	49

Individual responses on decision making are shown in Table 4.16 and Figure 4.12. Responses on the question "We use statistical control charts to control processes" showed that 58% of respondents disagreed, while 23% agreed and 19% neutral. On the question "Decisions affecting operations are made timeously" 65% of the

responses disagreed, 24% agreed and 11% were neutral. It was also found on the question "Decisions affecting operations are implemented timeously" that 68% of respondents disagreed, while 23% agreed and 9% were neutral. On average it appears that there is no adequate decision making processes in place and that decisions affecting the business are not made and/or implemented with adequate speed and urgency.

Figure 4.12 Decision making
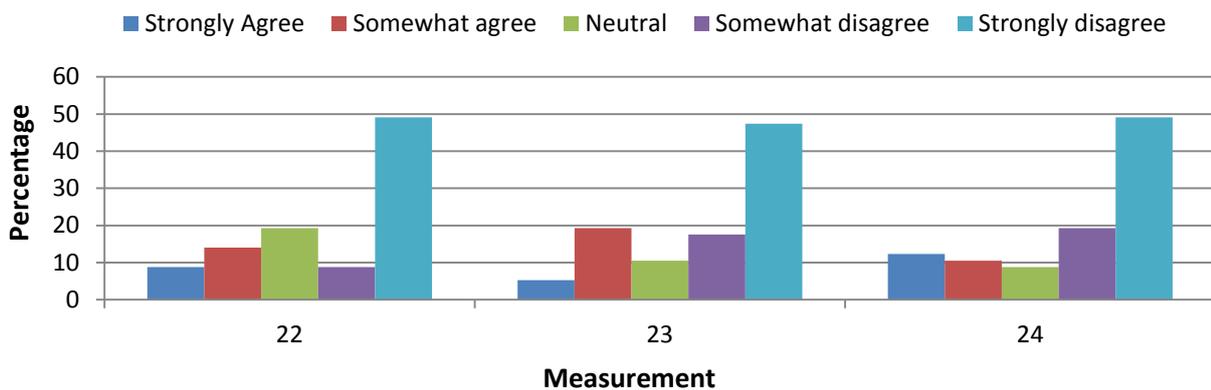
4.2.2.9 Communication

As established through the literature review, communication is critical for organizational success. Adequate communication enables transfer of information to all levels within the organization and foresters transparency which in turn bolsters trust. Communication is also critical for the success of TQM programmes, it is therefore important to evaluate it at the organization under study. The average mean for communication responses, as shown in table 4.17, was found to be 3.68 representing about 74% of employees not agreeing that there is adequate communication taking place at DRT.

Table 4.17 Communication calculated mean

	Communication calculated mean		
Question No.	**Questions**	**Mean**	**Gap**
25	Management provide regular industry, customer and supplier feedback	*3.89*	0.21
26	Quality operating standards are clearly communicated to all employees	*3.39*	-0.30
27	The company practices continuous improvement in communication between employees and managers	*3.77*	0.09
	Communication average mean	*3.68*	

Table 4.18 Response percentage on communication

	Scales	1	2	3	4	5
Question No.	**Percentage**	**Strongly Agree**	**Somewhat agree**	**Neutral**	**Somewhat disagree**	**Strongly disagree**
25	Percentage	5	11	12	33	39
26	Percentage	12	21	9	32	26
27	Percentage	7	11	14	35	33

Table 4.18 and Figure 4.13 show individual response results as analysed from the questionnaire administered to respondents regarding communication at DRT. Responses on the question "Management provide regular industry, customer and supplier feedback" showed a majority (about 72%) disagreeing, with 16% agreeing and 12% neutral. On whether respondents felt that "Quality operating standards are clearly communicated to all employees" it was observed that 58% of respondents did not agree while 33% disagreed and 9% were unsure. Responses received from the question "The Company practices continuous improvement in communication between employees and managers" show that 68% of responses disagreed while 18% agreed and 14% were neutral. On average it appears that there is a significant lack of adequate communication in the organization.

Figure 4.13 Communication
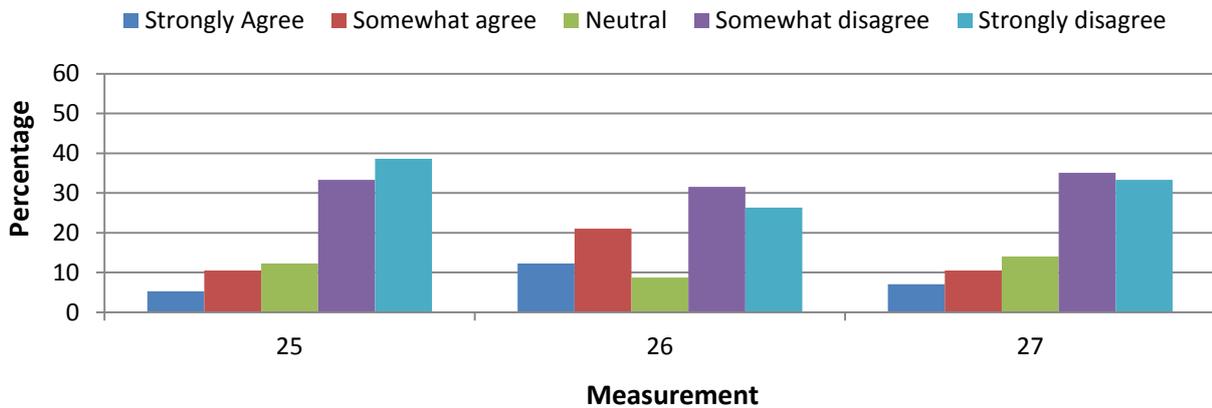
4.2.2.10 Cleanliness and Organization

The average mean for cleanliness and organization responses, as shown in table 4.19, was found to be 2.29 representing about 54% of employees agreeing that cleanliness and organization is observed in the organization under study.

Table 4.19 Cleanliness and organization calculated mean

Question No.	Questions	Mean	Gap
	Cleanliness and Organization calculated mean		
28	**Our company emphasizes putting all equipment and tools in the right place**	1.81	-0.48
29	**We take pride in keeping our workplace clean and neat**	1.81	-0.48
30	**Employees often have no trouble finding what they need in order to perform their job**	3.25	0.96
	Cleanliness and Organization average mean	2.29	

Table 4.20 Response percentage on cleanliness and organization

Question No.	Scales Percentage	1 Strongly Agree	2 Somewhat agree	3 Neutral	4 Somewhat disagree	5 Strongly disagree
28	Percentage	49	35	5	7	4
29	Percentage	53	28	9	7	4
30	Percentage	19	19	14	12	35

Individual responses on cleanliness and organization are shown in Table 4.20 and Figure 4.14. Responses on the question "Our Company emphasizes putting all equipment and tools in the right place" showed that 84% of respondents agreed, while 11% disagreed and 5% were neutral. On the question "We take pride in keeping our workplace clean and neat" 81% of the responses agreed, 11% disagreed and 9% were neutral. It was also found on the question "Employees often have no trouble finding what they need in order to perform their job" 47% of respondents disagreed, while 38% agreed and 14% were neutral. Overall it appears that there is adequate emphasis on cleanliness and organization at DRT.

Figure 4.14 Cleanliness and organization
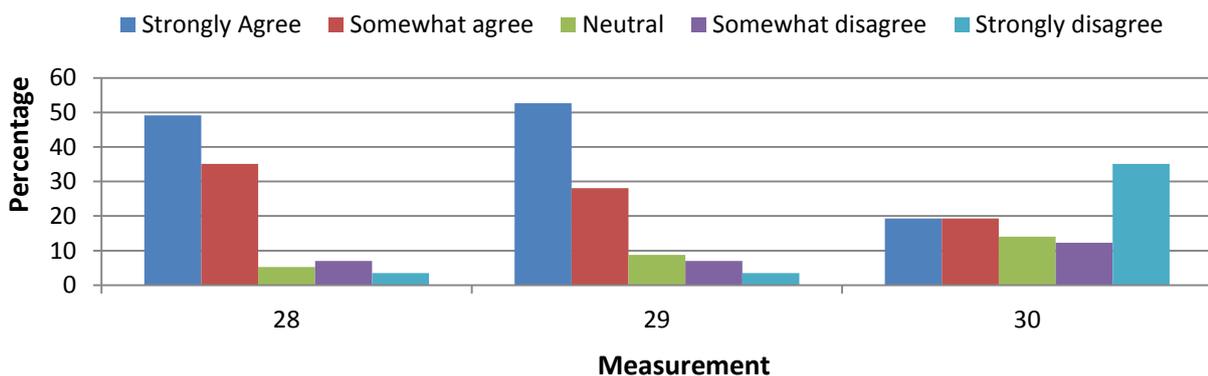
4.2.2.11 Efficiency

Implementation of TQM leads to improvements' in efficiency, amongst other aspects of the business. It is important to study the impact of TQM on efficiency in the organization under study. The average mean for efficiency responses, as shown in

table 4.21, was found to be 2.32 representing about 54% of employees agreeing that efficiency is important for DRT.

About 66% of respondents agreed that changing some of the quality management practices will improve efficiency at the Terminal, whilst about 58% of respondents agreed that improvements in efficiency will lead to improved profitability.

It was also found that about 64% of respondents do not agree that DRT currently operates in an efficient manner.

Table 4.21 Efficiency calculated mean

	Efficiency calculated mean		
Question No.	Questions	Mean	Gap
31	**The Durban RORO Terminal operates in an efficient manner**	*3.18*	0.85
32	**Changing some of the quality management practices at the terminal will improve efficiency and reliability**	*1.68*	-0.64
33	**Improvement in efficiency will lead to improved profitability**	*2.11*	-0.22
	Efficiency average mean	*2.32*	

Table 4.22 Response percentage on Efficiency

	Scales	1	2	3	4	5
Question No.	**Percentage**	**Strongly Agree**	**Somewhat agree**	**Neutral**	**Somewhat disagree**	**Strongly disagree**
31	Percentage	12	21	16	39	12
32	Percentage	63	19	7	7	4
33	Percentage	54	11	18	5	12

Table 4.22 and Figure 4.15 show individual response results as analysed from the questionnaire administered to respondents regarding efficiency at DRT. Responses on the question "The Durban RORO Terminal operates in an efficient manner"

showed that 51% disagreed, with 33% agreeing and 16% neutral. On the question "Changing some of the quality management practices at the terminal will improve efficiency and reliability" it was observed that 82% of respondents agreed, while 11% disagreed and 7% were unsure. Responses received from the question "Improvement in efficiency will lead to improved profitability" showed that 65% of responses agreed while 17% disagreed and 18% were neutral. On average it appears that a strong focus on improving efficiency is required for the organization.

Figure 4.15 Efficiency
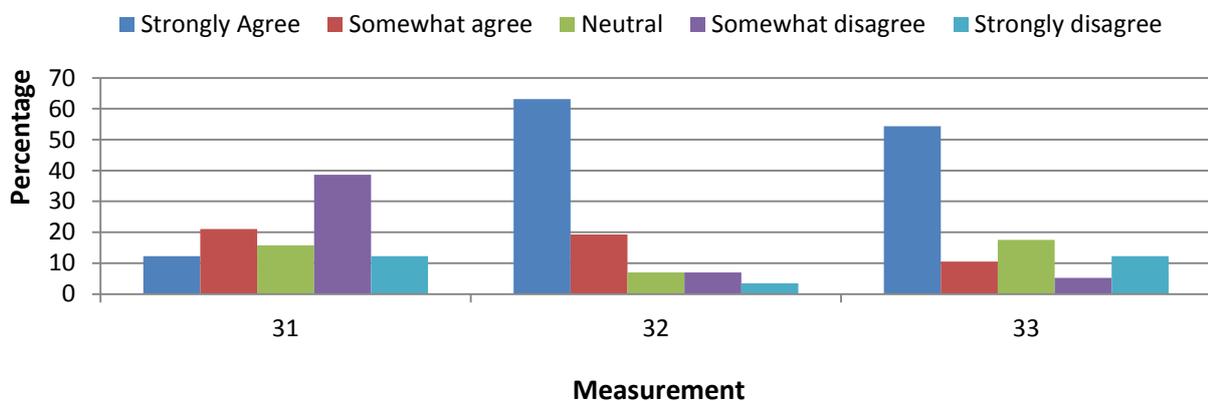
4.2.2.12 Safety and Security

The average mean for safety and security responses, as shown in table 4.23, was found to be 2.57 representing about 51% of employees not agreeing that there is focus on safety and security at DRT.

Table 4.23 Safety and security calculated mean

Safety and security calculated mean			
Question No.	Questions	Mean	Gap
34	The current operating processes ensures safety in the work environment	2.79	0.22
35	The current operating processes promote security of customer cargo and employees	3.04	0.47
36	Safety and security is very important for the company	1.88	-0.69
	Safety and Security average mean	2.57	

Table 4.24 Response percentage on safety and security

Question No.	Scales Percentage	1 Strongly Agree	2 Somewhat agree	3 Neutral	4 Somewhat disagree	5 Strongly disagree
34	Percentage	19	30	11	33	7
35	Percentage	11	39	9	21	21
36	Percentage	58	23	4	5	11

Individual responses on safety and security are shown in Table 4.24 and Figure 4.16. Responses on the question "The current operating processes ensure safety in the work environment" showed that 49% of respondents agreed, while 40% disagreed and 11% neutral. On the question "The current operating processes promote security of customer cargo and employees" 50% of the responses agreed, 42% disagree and 9% was neutral. It was also found on the question "Safety and security is very important for the company" that a majority, 81%, of respondents agreed, while 16% disagreed and 4% were neutral. On average it appears that employees understand that safety and security is important for the organization. There also appears to be a need for the organization to place more focus and emphasis on safety and security.

Figure 4.16 Safety and security
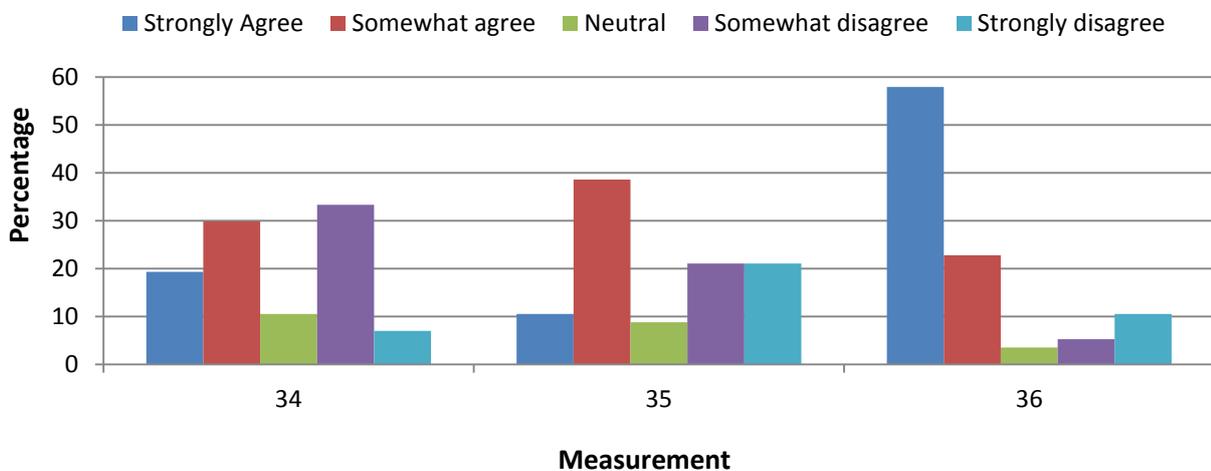
4.2.2.13 Level of Total Quality management support

The level of employee support has been identified as critical for successful TQM implementation. Without employees standing behind the process and supporting it, it would not succeed. The average mean for the level of TQM support responses, as shown in table 4.25, was found to be 2.10 representing about 58% of employees agreeing that there is employee support for TQM at the organization under study.

Table 4.25 Level of Total Quality Management support calculated mean

Level of total quality management support calculated mean			
Question No.	Questions	Mean	Gap
37	I have fully embraced the concept of total quality management	*2.05*	-0.05
38	Total quality management initiatives are understood and supported by most employees	*2.70*	0.60
39	I believe that total quality management is necessary for my organization	*1.54*	-0.56
	Level of support for total quality management average mean	*2.10*	

Table 4.26 Response percentage on level of TQM support

	Scales	1	2	3	4	5
Question No.	Percentage	Strongly Agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
37	Percentage	40	33	9	16	2
38	Percentage	16	37	12	32	4
39	Percentage	68	21	2	5	4

Table 4.26 and Figure 4.17 show individual response results as analysed from the questionnaire administered to respondents regarding their level of support for TQM at DRT. Responses on the question "I have fully embraced the concept of total quality management" showed that a majority (about 73%) agreed, while 18% disagree and 9% were neutral. On the question "Total quality management initiatives

are understood and supported by most employees" it was observed that only 52% of respondents agreed, with 36% who disagree and 12% who were unsure. Responses received from the question "I believe that total quality management is necessary for my organization" showed that 89% of responses agreed while 9% disagreed and 2% were neutral. Overall it appears that there is sufficient employee support for TQM at DRT; however it seems that the organization must focus more on ensuring that TQM initiatives are understood by all employees.

Figure 4.17 Level of TQM support
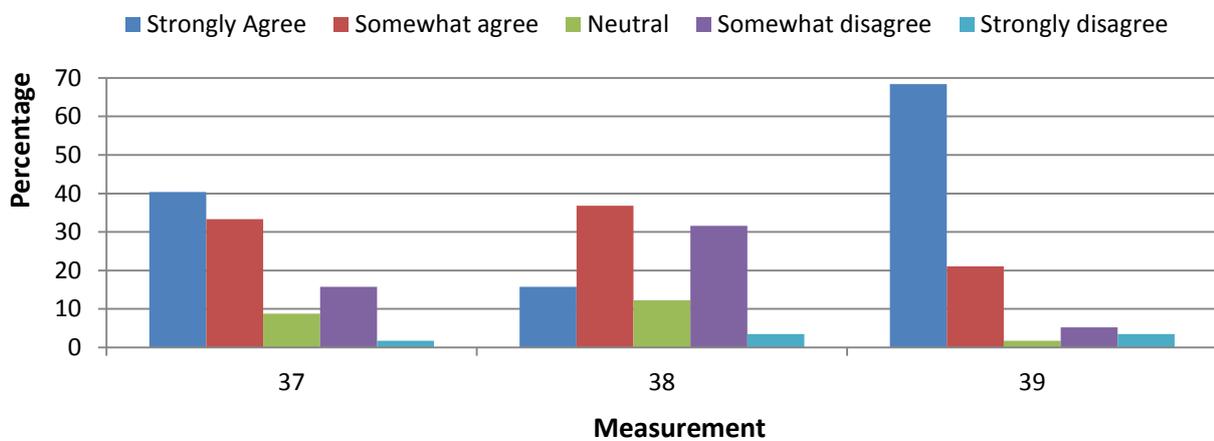
4.2.2.14 Profitability

The average mean for profitability responses, as shown in table 4.27, was found to be 1.54 representing about 69% of employees agreeing that improvements in quality will result in improvements in profitability at DRT.

Table 4.27 Profitability calculated mean

Question No.	Questions	Mean	Gap
	Profitability calculated mean		
40	**Improved quality management will lead to increased output**	*1.49*	-0.1
41	**Increasing output is very important for the Terminal**	*1.42*	-0.1
42	**An increase in output will lead to an increase in profitability**	*1.72*	0.2
	Profitability average mean	*1.54*	

Table 4.28 Response percentage on profitability

Question No.	Scales / Percentage	1 Strongly Agree	2 Somewhat agree	3 Neutral	4 Somewhat disagree	5 Strongly disagree
40	Percentage	77	11	4	4	5
41	Percentage	77	14	2	4	4
42	Percentage	56	23	14	7	0

Individual responses on profitability are shown in Table 4.28 and Figure 4.18. Responses on the question "Improved quality management will lead to increased output" showed that 88% of respondents agreed, while 9% disagreed and 4% were neutral. On the question "Increasing output is very important for the Terminal" 91% of the responses agreed, 8% disagree and 2% was neutral. It was also found on the question "An increase in output will lead to an increase in profitability" 79% of respondents agree, while 7% disagree and 14% were neutral. There seems to be a general consensus within the organization that quality improvements and increased productivity will lead to improved profitability.

Figure 4.18 Profitability
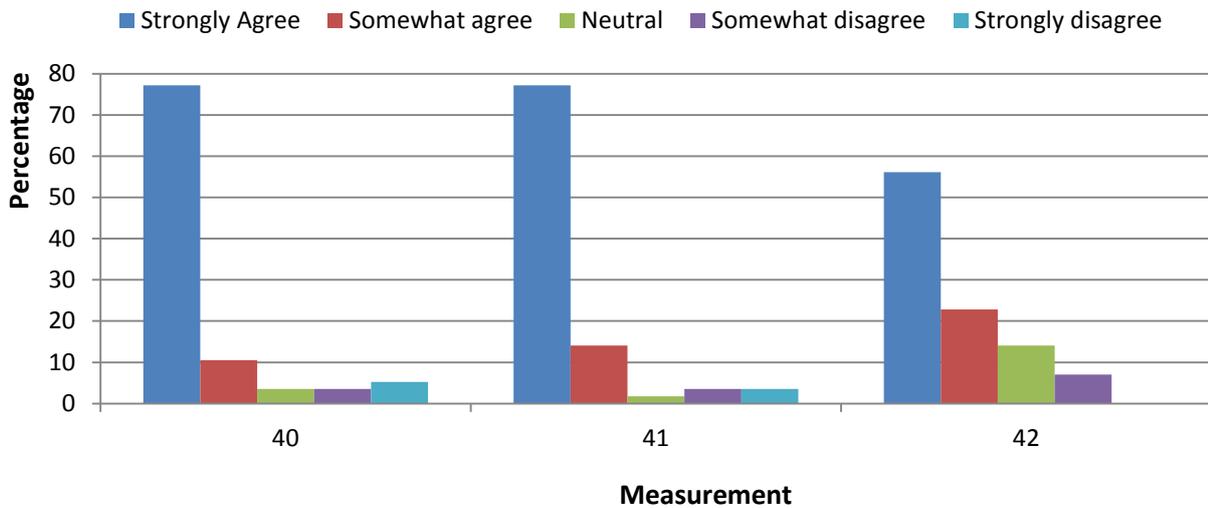
4.3 SUMMARY

Chapter 4 presented the results of the empirical study conducted on TQM at DRT. The study included an analysis of the demographic information of employees surveyed; a detailed analysis of employee responses to the 42 questions asked in order to gain insight on the level of TQM implementation, adoption and support at Transnet Durban RORO terminal was also presented.

Chapter 5 will provide a conclusion and recommendations, as well as outline areas identified for future studies.

CHAPTER 5: RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

This chapter provides a summary of the results of the analysis conducted in chapter 4. Chapter 4 comprises a presentation and analysis of data collected and analysed in accordance with research methodology outlined in chapter 3. This chapter starts with a summary of the entire dissertation and provides conclusions based on the objectives of the study. Implications and recommendations are outlined for management considerations; areas for further study and limitations form part of the conclusion to this study.

5.2 SUMMARY AND CONCLUSIONS TO THE STUDY

5.2.1 Summary of the Study

The aim of the study was to examine the existing level of Total Quality Management implementation, evaluate the level of employee adoption and support for TQM and to evaluate the impact of current TQM practices on organization wide performance, three elements of company performance were addressed, namely: Efficiency, Safety & Security, and profitability. The study used a qualitative approach. A structured, self-administered questionnaire was used as a tool to collect all the data. The five-point Likert-scale as a measuring system was adopted for use throughout the questionnaire and had the following scores: strongly agree (1), somewhat agree (2), unsure (3), somewhat disagree (4) and strongly disagree (5). A random sample of 86 employees was used; the sample was selected using the Transnet RORO terminal employee data base as at the end of October 2014. Data obtained was analyzed using a descriptive and inferential approach in order to provide a quantitative analysis to evaluate the characteristics of total quality management implementation and adoption at Transnet's Durban RORO terminal, and to establish the impact of current total quality management practices on overall business performance. The mean scores were used to identify shortfalls that could require re-engineering and to highlight areas of excellent. Data was also analyzed and presented graphically to

show respondents' level of agreement and disagreement towards the questions posed.

5.2.1 Conclusions of the Study

5.2.1.1 The extent to which total quality management has been implemented within Transnet's Durban RORO Terminal:

The first objective of the study was to access the extent to which total quality management has been implemented at DRT. The questionnaire was designed to address eight key principles of successful TQM implementation as identified through literature review. The conclusion drawn against each principle evaluated is outlined below:

- Top management support and commitment

  Top management support and commitment is crucial in order to provide employees with direction and ensure that adequate resources are allocated to support TQM programmes. The study showed an average mean score of 3.03 for top management support and commitment; this indicated that respondents did not feel that there is adequate top management support and commitment to TQM in the organization. It was found that about 42% of employees believe that there are clearly identified quality management goals set by management, an equal number seem to disagree. The majority of respondents also did not think that there is a visible drive by management to promote quality and efficiency. Overall, according to the survey done, top management support (which is the key principle for successful TQM programmes) is lacking at the terminal, this is supported by 61% of respondents feeling this way. This is an area that requires improvement.

- Customer satisfaction

  From the study it is clear that employees generally understand customer requirements for quality, but the results show that 51% of respondents do not think that customer feedback is adequately used to address quality issues and that the current operating model is not customer focused. About 57% of

respondents did not agree that terminal operating procedures are customer focused. There does not appear to be adequate mechanisms in place to ensure that customer feedback (including complaints) is collected, analysed and utilised effectively in order to identify and address customer requirements.

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- Employee involvement

  Employee involvement is concerned with empowering employees in order to be able to make decisions and solve problems within their own functional areas. As a human aspect of TQM it is also very important. From the study conducted at DRT it was found that some elements of employee involvement, engagement and development are not adequately represented in the organization, the average mean score was 2.89. Where employee involvement is effectively handled, companies can gain the rewards of employee satisfaction, improved profitability, etc.

- Employee development

  The observed average mean score for employee was 2.82. On average the findings indicate support for the statement that employee development is encouraged within the business; however more quality focused training is required in order to support TQM programmes, this is supported by 49% of respondents who felt that quality principles training is not provided in the organization.

- Reward and recognition

  The average mean score observed was 2.64. It was found that there exist good levels of reward and recognition, but this was mainly through monitory rewards. There seem to be a lack of non-monetary rewards and this represents an area where management needs to increase focus.

- Cleanliness and organization

  When it came to cleanliness and organization, most respondents rated this high indicating that there is good house-keeping in the organization. The mean score observed was 2.29, this area should form a focus for

management to study learnings from it in order to replicate elsewhere. Management should also celebrate achievements in this area openly and together with employees in order to forester pride and gunner more support.

- Communication

  Communication was found to be lacking in critical aspects such as giving feedback on industry developments and requirements, communication enjoyed an average disagreement score of 3.68 (as measured by average mean). It is concluded that improvement in communication channels is required.

- Team work

  While there seem to be belief and willingness by respondents to work as a team, teamwork does not seem to play a part when it comes to making final decisions.

- Decision making: The average mean score for decision making was 3.80. This indicates that the majority of respondents felt that decisions affecting the business are not made and implemented timeously. Delays in making and implementing business decisions can negatively impact the quality of the service and the impair customer satisfaction.

The second objective of the study was to establish the impact of current total quality management practices on three aspects of company performance, namely: safety and security, efficiency and profitability. The conclusion drawn is as follows:

- Efficiency

  It was found that there is general understanding that effective TQM will lead to increased efficiency, the average mean score fore efficiency was 2.32 reflecting agreement that there are significant levels of efficiency in the organization.

- Safety and security

  While there appears to be general agreement that safety and security is important to the company, a number of respondents indicated that the current operating model does not necessarily promote safety and security, this is a recommended area of improvement for management. The study also showed substantial support of TQM by employees, this is seen as good because employee support is critical to the successful of TQM.

- Profitability

  The observed average mean score for profitability was 1.54. This is a very good finding for the company as it indicates that employees generally agree that implementing TQM has a positive impact on profitability.

The third and last objective of the study was to investigate the extent to which employees have adopted and support the concept of total quality management at Transnet's Durban RORO Terminal. Conclusions with respect to this objective are detailed below:

- Work experience

  There is a great level of experience in the organization with about 47% of employees having been with the organization for 11 years and above, managing this talent pool is critical for the organization to ensure skills transfer and sustainability. Having experienced employees also ensures that changes in processes which have a potential to hamper progress are identified and dealt with accordingly.

- Adoption and support for TQM

  The average mean score for employee adoption and support for TQM was 2.10. This indicates that there is general understanding and support for TQM in the organization; this is seen as positive because employee support and buy in is critical for TQM to succeed

It is the conclusion drawn from the results of the study that there is a sound foundation for TQM being practiced by the organization, however a number of areas require urgent attention by management in order for TQM to be successful. The research conducted, therefore, supports the null hypothesis.

5.3 IMPLICATIONS AND RECOMMENDATIONS

The findings of the study reveal that the level of TQM implementation is low at DRT and that improvements are required. The implications for management are that reengineering is required in order to strengthen all areas that require improvement as identified. Specific gaps identified can be mitigated through various action plans e.g. training and skills development, employee involvement, improvement in leadership commitment, etc. It is recommended that management proactively develop and implement measures to improve the level of implementation in the organization, the net impact of improvement to DRT would be improved quality management, customer satisfaction and improvements in overall company performance.

First and foremost is the requirement for a more visible top management support, drive and commitment for TQM principles in order to attain employee buy in and support for the initiatives. A proper mechanism to solicit, analyse and address customer feedback must be developed in order to ensure that customer requirements and inculcated into the core of the service that the organization provides. Communication channels must be opened up to ensure a free flow of information from top to bottom, bottom to top and across all levels of the organization. More emphasis must be placed on ensuring that suggestions coming from employees are evaluated and implemented timeously. Management also needs to ensure that there are sufficient channels for employees to put forward their innovative suggestions, and that adequate rewards are put in place to support innovation. Reward and remuneration enjoys strong support from management as observed from the survey results, however non-financial rewards should be

considered in order to incentivise employees. The organization should look at various options including paid holidays, cruises, hotel stays, etc. as reward to employees. With respect to teamwork management must endeavour to instil a culture of team based decision making where all employees who are part of a team will feel that their input has been taken into account when making a decision; this will ensure ownership and support for decisions made. Management should put measures in place to ensure that decisions affecting the business are made timeously and implemented timeously and effectively.

There are small pockets of excellence that have been identified, management should adequately analyse and understand these areas in order to leverage the learnings attained from them and to replicate these to other areas of the organization.

5.4 AREAS FOR FUTURE RESEARCH

This study can be replicated in the future to determine if the current TQM practices that exist are maintained and to also identify any subsequent improvements that have taken place after the recommendations of the study are put in place. Replicating the study in other ports within Transnet will help to determine if adequate TQM practices exists within those areas of the business and inform improvements, if any are required. Further studies are recommended in order to analyse the full impact of TQM in other aspects of the business including:

- Reliability;
- Employee satisfaction;
- Sustainability, and
- Environmental impact.

5.5 SUMMARY

In chapter the study was introduced, the research objectives were stated and the hypothesis presented. Chapter 2 provided an extensive literature review that has been done in the area of TQM. Previous studies provided an analysis of TQM and

detailed the impact of TQM on the business and the value that it creates for the end customer. From the literature review it was evident that implementing TQM improves the quality of services/products, improves business performance, business productivity and profitability. Through the literature review key principles that are critical for the success of TQM programmes were identified.

Chapter 3 gave an overview of the research methodology that has been followed to conduct this study. In Chapter 4 the results of the study were provided. This chapter, which is also the last chapter of the study, provides the conclusions and recommendations. Overall the results indicate that some level of TOM application exists within the company but there are areas where significant improvements are required, it is therefore concluded that the level of TQM implementation at DRT is low and requires improvement; that there is a good level of employee adoption of TQM; and that TQM implementation at DRT has a positive impact on safety and security, efficiency and profitability. This chapter also provided recommendations and identified areas for future study.

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