CHAPTER 2

LITERATURE REVIEW - A CONCEPTUAL ANALYSIS OF TOTAL QUALITY MANAGEMENT

2.1   INTRODUCTION

The constituent parts of the concept of TQM have been part of human endeavours for a very long time, and have been contemplated throughout history. Its currency as a topic of immense interest lies in the combination of these parts into the concept of TQM, a philosophy and approach that has been widely used internationally in different sectors of the economy. However, the concept is not always well understood and is often ineffectually used. The major reason this is the lack of both a universally accepted definition and a clear-cut understanding of the concept and what it entails. There is widespread ambiguity about what is exactly meant by the concept. This is clear in literature where researchers and managers have attributed various meanings to the concept. The failure to find a definition that could apply universally and the lack of understanding of TQM terminology may well explain many of the problems experienced by managers in its implementation. Understanding the meaning of TQM is vital as TQM is a long-term cost and effort-intensive initiative.

The purpose of this chapter is to explore the variety of definitions provided by several researchers worldwide in literature available in the public domain for the concept quality and that of TQM in order to arrive at an understanding of theory on TQM, which forms the foundation for the implementation of TQM by organisations and institutions. This is followed by a review of the factors that influence TQM. Several international self-assessment models to evaluate the TQM effort are also discussed. Finally, a review is given of the International Organization for Standardization (ISO 9000:2000), which represents a system as a common denominator for what business quality entails internationally, and the Six Sigma, which is a logical, and methodical process improvement methodology to achieve TQM.

2.2   THE MEANING OF QUALITY

The need for quality as a fundamental component in the formulation of strategies for institutions to implement TQM is clearly outlined by Bilich & Neto (2000:5) who state that quality, as a macro function of institutions, must be present in the day-to-day running of an institution, in aspects such as establishment of policies, the decision process, selection of personnel, allocation of resources, definition of priorities and service delivery to satisfy customer requirements. The two authors continue and state that the quality approach, as a strategic element, has brought to institutions a new manner of conceiving quality, as it engages the top decision-makers of the institution in the effort for better performance in service delivery. According to Djerdjour & Patel (2000:26), quality is no longer an optional extra; it is an essential strategy to survive. TQM is therefore a solution for improving the quality of products and services. Before one can discuss the concept of TQM, one first needs to discuss, understand and analyse the concept of 'quality' itself.

According to Dale (2003:12) and Evans & Dean (2003:11) quality, reliability, delivery and price build the reputation enjoyed by an institution. Quality is the most important of these competitive weapons and is an extremely difficult concept to define in a few words in order to agree on a consensus definition; a trait it shares with many phenomena in business and social sciences (Hoyer & Hoyer 2001:54). Quality does not only refer to goods and services but includes qualiy of time, place, equipment and tools, processes, people, the environment and safety, information and measurement (Dale 2003:5; Schonberger 1990:9). Quality is an ongoing process that has to be so persasive throughout the institution, that it becomes the philosophy and culture of the whole institution. All institutions and each department within the institution need to adopt the same strategy, to serve the customer with even better quality, lower cost, quicker response and greater flexibility (Schonberger 1990:11).

There appears to be no uniform understanding and definition of the meaning of the term quality and even well-known authors seem to have different perspectives on this issue. According to Reeves & Bednar (1994:419), a search for the definition of quality has yielded inconsistent results. The two researchers emphasise that regardless of the time period or context in which quality is examined, the concept has had multiple and

often muddled definitions and has been used to describe a wide variety of phenomena. The strategies and tools for assuring quality may have changed, but the basic customer expectations have been fairly constant for a long time (Hoyer & Hoyer 2001:54).

From a holistic perspective, all institutions produce and sell products and services, with varying proportions of both; as a result the management of quality must pay attention to both product and service quality and the synergy effects between them. Although many definitions of quality exist, it is prudent to create a deeper insight into the definitions of researchers such as the quality gurus, Deming, Crosby, Feigenbaum, Ishikawa and Juran. These gurus claim that their definitions, prescriptions, conclusions and recommendations work equally well for producing products and delivering services (see paragraph 2.3.1). From the various definitions of quality indicated by these gurus in literature, there seem to be two levels in the concept of quality (Hoyer & Hoyer 2001:54), namely:

- level one, by producing products or delivering services whose measurable characteristics satisfy a fixed set of specifications; and
- level two, products and services that satisfy customer expectations for their use or consumption.

In short, level one quality means conformance of specifications and level two means satisfy the customer. Evans & Dean (2003:11), Garvin (1993:16) and Reeves & Bednar (1994:420) note that quality is much more than that stated at level one, namely conformance to specifications. They identify eight attributes for category one, namely: (1) performance, (2) features, (3) reliability, (4) conformance, (5) durability, (6) serviceability, (7) aesthetics, and (8) perceived quality.

Coupled to the two types of quality levels, quality is defined differently by each of the five gurus on quality, namely (Hoyer & Hoyer 2001:55-59):

- Crosby's definition of quality is "conformance to requirements", which is a level one formulation. Crosby's essential points in his definition of quality are (1) it is necessary to define quality, (2) one must know what the requirements are and be able to translate these requirements into measurable product or service

characteristics, and (3) it is necessary to measure the characteristics of a product or service to determine whether it is of high quality (Crosby 1979:7). It is clear from Crosby's definition that he concentrates on two levels – acceptable and unacceptable.

- Deming's perspective of quality is based on a level two definition and he defines quality as ", namely "Quality is multidimensional to produce a product and/or deliver a service that meets the customer's expectations to ensure constumer satisfaction." Through this definition he equates high quality and customer satisfaction. His essential arguments are (1) that quality must be defined in terms of customer satisfaction, (2) quality is multidimensional where it is impossible to define the quality of a product or service in terms of a single characteristic or agent, and (3) there are different degrees of quality, because quality is essentially equated with customer satisfaction (Deming 1988:54).

- Feigenbaum's definition of quality is a level two definition and he defines quality as "The total composite product and service characteristics of marketing, engineering, manufacturing and maintenance through which the product and service in use will meet the expectations of the customer." Feigenbaum's essential points are (1) that quality must be defined in terms of customer satisfaction, (2) quality is multidimensional and it must be defined comprehensively, and (3) as customers have changing needs and expectations, quality is dynamic. In this regard, Feigenbaum writes, "A crucial quality role of top management is to recognise this evolution in the customer's definition of quality at different stages of product growth" (Feigenbaum 1983:7).

- Ishikawa's definition of quality is a level two definition, namely "We engage in quality control in order to manufacture products with the quality which can satisfy the requirements of consumers." Ishikawa makes it clear that high quality is essential to satisfy the ever-changing consumer expectations. Ishikawa's essential points are (1) that quality is equivalent to consumer satisfaction, (2) quality must be defined comprehensively, (3) consumers' needs and requirements change continuously, therefore, the definition of quality is ever changing, and (4) the price of a product or service is an important part of its quality (Ishikawa 1985:44).

- Juran's definition of quality is simultaneous attempts to be a level one and level two definition. He defines quality based on a multiple meaning, namely (1) "Quality consists of those product features which meet the needs of customers and thereby provide product satisfaction," (2) "Quality consists of freedom from deficiencies." Juran's essential points are (1) a practical definition of quality is probably not possible, and (2) quality is apparently associated with customers' requirements, and fitness suggests conformance to measurable product characteristics (Juran 1988:2.2).

Aksu (2003:591) defines quality as: "the conformance to a set of customer requirements that, if met, result in a product or service that is fit for its intended use." Wiele, Dale & Williams (2003:20) presents a slightly different perspective with their emphasis on the artistic and energetic properties of quality: "Quality is what surprises and delights the customer." Pycraft, Singh & Phihlela (2000:613) and Stamatis (2003:11) try to reconcile some of these different views in their definition of quality: "Quality is consistent conformance to customers' expectations." With reference to Pycraft and Stamatis's definition of quality, the use of the word "conformance" implies that there is a need to meet a clear specification (the manufacturing approach). The definitions of Crosby (1979:7) on page 32 and Aksu (2003:591) on page 34 (see first paragraph) support this viewpoint of quality. The use of "customers' expectations" attempts to combine the user- and value based approaches. The definitions of Feigenbaum (1983:7) and Ishikawa (1985:44) on page 33 support this viewpoint of quality. It recognises that the product or service must meet the expectations of customers, which may be influenced by price. By consistently meeting customer requirements, the definition can move to a different plane of satisfaction – delighting the customer.

Goodman, O'Brein & Segal (2000:49) support the aforementioned viewpoints by defining quality as consistently producing what the customer wants, while reducing errors before and after delivery to the customer. The quality definition of fulfilling or exceeding customers' needs has become an ideological trailblazer driving the pursuit of customer satisfaction. In the embedding of quality thinking this ideological core plays an important role. More importantly, however, quality is not so much an outcome as a

never-ending *process* of continually improving the quality of what an institution produces. There is no doubt that many institutions have so well ordered their capability to meet their customers' requirements, time and time again, that this has created a reputation for "excellence". Institutions must "delight" the customer by consistently meeting customer requirements, and then achieve a reputation of "excellence". Quality should be viewed from the perspective of the customers and potential customers. The aim of institutions should be to satisfy existing needs of customers with quality products or services, and to identify, anticipate and create new needs. This requires the cultivation of a close relationship between the institution and its customers.

Dervitsiotis (2003b:511) takes a more systematic approach to quality, and specifically the customer, with the following definition: "Quality is meeting or exceeding the needs and expectations of the business *stakeholders*." Stakeholders are those individuals and groups with a stake in the business, including customers, shareholders, employees, suppliers and communities (Dervitsiotis 2003b:511). To this list of stakeholders the public in general, the government, unions, the media and any other special interest groups can also be added. All of these stakeholders may have different needs and expectations of the institution and the quality challenge lies in addressing all these needs and expectations. Successful institutions and their leaders will be those who achieve it. Throughout all institutions there are also a series of internal suppliers and customers. These form the so-called "quality chains", the core of the institutional-wide quality improvement (Oakland 2000:17). The internal customer/supplier relationship must be managed by interrogation, i.e. using a set of questions at every interface.

Ackoff (1992:3-7), Henshall (1990:356) and Savolainen (2000:213) argue that it is critical for TQM to have a definition of quality other than the normal "Quality is meeting or exceeding the expectations of the customer". Their criticism is based on two factors, namely:

- The customer is not always the customer and between the institution and the ultimate user, there exists a chain of customers and other stakeholders who are all equally important. Ackoff therefore proposes a definition of quality as "meeting or exceeding the expectations of all the stakeholders".

- Traditional ways of discovering the expectations of customers are ineffective, whether it includes asking them directly or via surveys, as the stakeholders often don't know what they want and may, for a variety of reasons, provide the wrong answer. Henshall argues that people discover what they want by designing what they want, which he demonstrates with his experience as an architect where he found that many differences exist between the house a potential house owner says he wants and the one he eventually gets after all his design changes have been introduced.

Although Ackoff, Henshall and Savolainen do not conclude with a final definition, Grib (1993:16) interprets Ackoff, Henshall and Savolainen's comments into a definition of quality as "meeting or exceeding the expectations of all stakeholders through a process of interactive planning and design". Although the latter provides, in Grib's (1993:16) opinion, the most comprehensive definition, institutions will have to define quality in terms of what it means to them within the context of their specific circumstances. The choice of a "definition", i.e. what quality means to them, will depend on the specific environment and objectives of an institution. An aircraft parts manufacturer might choose a definition of quality more oriented towards conformance to aviation specifications, whereas an income taxes office might put more emphasis on meeting customer expectations. However, just as important as the contents of the definition, is the way in which quality is communicated in unambiguous terms and understood by all personnel in an institution.

According to Fortuna (quoted by Grib 1993:16), "quality and satisfaction are determined ultimately by the customer's perception of a total product's value or service relative to its competition". Therefore, from a systemic point of view, quality will be determined by the stakeholder's perception of the total institution, its products and services, and its actions relative to its particular requirements. From the above it is clear that institutions can no longer afford to ignore any of its stakeholders.

Smith (1993:243) argues that institutions require a balanced approach to quality, one that considers their interests and the needs of their customers, as well as the legitimate concerns of other societal stakeholders. The proposed conceptualisation, with its explicit recognition of producer and other stakeholders' views, provides such a

balanced, sustainable perspective. It also encourages institutional members to regard all aspects of the institution - what it creates and what it consists of - as opportunities for improvement, things that can be made excellent.

According to Evans & Dean (2003:12), Reeves & Bednar (1994:420), Wood (1997:181), Savolainen (2000:213) and Yong & Wilkinson (2002:102), the roots of quality definitions can be divided into four categories, namely:

- Quality is excellence.
- Quality is value.
- Quality is conformance to specifications.
- Quality is meeting and /or exceeding customer expectations.

With reference to the two levels in the concept of quality on page 32, and the four categories of quality, each quality definition has strengths and weaknesses in relation to measurement and generalisability, managerial usefulness to managers and consumer relevance. From the four categories, quality is measured most precisely when defined as conformance to specifications and is most difficult to measure when defined as excellence. Current efforts to develop a generic service quality instrument make it likely that the meeting-and/or-exceeding expectations definition of quality will guide future researchers who attempt to generalise across industries (Parasuraman, Berry & Zeithaml 1993:140).

The definitions of quality also vary in their usefulness to managers. Quality defined as excellence can provide powerful motivation to a workforce and quality defined as value or conformance to specifications can lead an institution to focus on efficiency, whereas quality defined as meeting and/or exceeding expectations compels management to keep abreast of changes in consumer demands. Each of these definitions has drawbacks for managers when implementing TQM: excellence provides limited practical guidance, value and quality typically represent different concepts, conformance to specifications may cause managers to focus on internal efficiency while neglecting external effectiveness, and understanding and measuring consumer expectations is problematic. For consumers, meeting and/or exceeding expectations are the most relevant definition of quality. When notions of excellence, value or

conformance to specifications dominate consumers' expectations, any of these quality definitions may apply. (Reeves & Bednar 1994:420.)

A common definition of quality however is needed to prevent confusion among staff and help to resolve any arguments, which may arise from time to time within and between departments in an institution. Based on the above-mentioned analysis of quality definitions by different authors, the following definition of quality was developed for this research, namely:

"Quality is the degree to added *value* to products and/or service delivery *as perceived by all the stakeholders* through *conformance to specifications* and the degree to added *excellence* to products and/or service delivery through a *motivated workforce*, to *meeting customer satisfaction*."

The definition provided places conformance to specifications as the starting point with customer satisfaction at the centre of the institution's purpose and focus. Defining quality in these terms emphasises two important aspects. Firstly, it reminds managers of their institution's purpose ("conformance to specifications" as the top priority) and secondly, of the methods to follow in order to achieve customer satisfaction.

As no definition of quality is best in every situation, managers and researchers must examine the strengths and weaknesses of each definition before adopting a definition to guide their work. By explicitly identifying the quality definition managers are using, and recognising its strengths and weaknesses, managers are better able to move institutions toward achievement of quality, and researchers can make progress toward assessing the impact of quality on institutional performance and other variables of interest. Reeves & Bednar (1994:436-439), Pycraft, Singh & Phihlela (2000:48) and Rao, Carr, Dambolena, Kopp, Martin, Rafii & Schlesinger (1996:11) propose that the concept quality needs five performance objectives, namely:

- Quality objective - Good quality performance in an operation not only leads to external customer satisfaction, it makes life easier inside the operation as well. Satisfying internal customers can be as important as satisfying external customers. The important point here is that the performance objective of quality has both an

external aspect to it, which leads to customer satisfaction, and an internal aspect, which leads to a stable and efficient institution.

- Speed objective – Speed is concerned with how long customers have to wait to receive their products or services. The main benefit of speedy delivery of goods and services lies in the way it enhances the operation's offering to the customer.

- Dependability objective – Dependability means doing things in time for customers to receive their goods or services as promised. Inside the operation dependability has a similar effect. Internal customers will judge each other's performance partly by how reliable the other micro-operations are in delivering material or information on time. Operations where internal dependability is high are more effective than those, which are not for a number of reasons, like (1) dependability saves time, (2) dependability saves money and (3) dependability gives stability.

- Flexibility objective – Flexibility means being able to change the operation if so required. This may be changing what the operation does, how it is doing it, or when it is doing it, but change is the key idea. Most operations need to be able to change in order to satisfy their customers' requirements.

- Cost objective – This study distinguishes between the value of each performance objective to external customers and inside the operation. Each of the various performance objectives has several internal effects, but all of them affect cost. High-quality operations do not waste time or effort having to re-do things nor are their internal customers inconvenienced by flawed service. In other words, high quality can mean low costs. Fast operations reduce the level of in-process inventory between micro-operations and reduce administrative overheads. Both these effects can reduce the overall cost of the operation.

To support the five performance objectives, Pycraft, Singh & Phihlela (2000:616) argue that there are four actions required to ensure high quality, namely:

- Ensure that there is consistency between the internal quality specification of the product or service and the expectations of customers.

- Ensure that the internal specification of the product or service meets its intended concept or design.
- Ensure that the actual product or service conforms to its internally specified quality level.
- Ensure that the promises made to customers concerning the product or service can be delivered by the institution.

Quality should be regarded as an important performance objective to achieve TQM as it directly affects internal and external customers, and leads to both increased revenues and reduced costs. According to Hradesky (1995:631), the leader D.T. Kearns, chairman and Chief Executive Officer (hereinafter referred to as the CEO) of Xerox, said the following about the value of quality: "Quality has changed the way we manage our institution. We believe it has made us more competitive than anything else could have and that we would not exist today had we not changed." The chairman and CEO of Dupont comments as follows about the value of quality: "To compete and win, we must redouble our efforts … not only in the quality of our goods and services, but in the quality of our thinking, in the quality of our response to customers, in the quality of our decision making, in the quality of everything we do." It is thus interesting to note how leaders relate to the importance of quality to manage their institutions.

From the analysis of the concept 'quality', it is clear that institutions depend on their customers; in fact, customers are the livelihood of an institution. It is therefore of vital importance to any institution to understand what is meant by *service quality* and *customer service* in order to achieve *customer satisfaction* in the service context.

2.2.1   Service quality and customer service

The above indicates that the success of an institution depends on how effectively quality is managed at that institution. According to Sureshchandar, Rajendran, & Kamalanabhan (2001a:112), the aim of any institution is to create a *customer* and to retain such customer. To achieve this while at the same time providing exceptional service rendering to the customer, (1) total commitment to customer service is required from each employee, while (2) he/she is also required to realise the quality philosophy each minute of the day.

In the conceptual analysis of *quality* the importance of *customer service* and the *expectations of customers* came to the fore. It is important to fully understand all the dimensions (paragraphs 2.2.1.1 to 2.2.1.5) of the concept *customer service* as institutions have both internal and external customers. According to Brady & Cronin (2001:35) it is important to pay attention to both these customers: "Our belief is that every interaction with the ultimate customer (external) is the end of a chain of provider-customer miniprocesses involving internal employees." Bearing this in mind, it is expedient to shift the focus to *quality in the service context* as well as to *customer service.*

2.2.1.1   Service concepts

According to Fitzsimmons & Fitzsimmons (2001:20) and Wisniewski (2001:997) researchers and managers of service institutions concur that total service quality can be defined as the customers' judgment of the total superiority or excellence of the service. Service quality involves a comparison of customers' expectations with customers' perceptions of the actual service performance (Geralis & Terziovski 2003:47). Delivering quality service means conforming to customer expectations on a consistent basis." What does service mean? Service consists of all the support the customer expects, apart from the basic product or service, as well as the image and reputation of the institution involved. The service concept has two components, namely firstly the degree to which customer needs are satisfied and secondly, the added value that the customer receives (Dale 2003:13; Hsieh, Chou & Chen 2002:901). A service is intangible as in most cases it cannot be seen or touched. Customers only experience that the service has been rendered and therefore the customer's perception of service is of the utmost importance. Man is continuously striving for a better standard of life, accompanied by a better quality of life. The last aspect is closely related to the whole concept of customer service. Customers expect quality service that considers their needs and improve their quality of life (Geralis & Terziovski 2003:60). The fact that the auto bank could not succeed in completely replacing human tellers in a bank is proof of the fact that customers require personal service. As the customer as such becomes more important, the demand for services will increase and the institution's ability to provide for the demands of the customer will determine its viability.

In order to obtain an understanding of service quality, the three well-documented characteristics of service must be acknowledged (Morgan 1994:10; Parasuraman, Zeithaml, & Berry 1994:204; Rosen, Karwan & Scribner 2003:5), namely:

- Intangible. Service relates to performance and is not an object. Most services cannot be counted, measured, tested, stored or verified before being rendered.
- Heterogeneity. Customers have heterogeneous needs. Consumers of the same services do not all have the same priorities. Fighter pilots in the SAAF, for example, have different priorities with regard to the mission readiness state of their aircraft, pre-flight inspections, serviceability standards and administration of pre-flight documentation. In the same way the needs of a pilot in the cockpit of a fighter aircraft will differ from those of a pilot in the cockpit of a transport aircraft.
- Inseparability. For the purposes of determining quality, the production and consumption of services cannot be separated as in the case of manufacturing. This means that during production attention cannot be paid to quality before it is delivered to the customer, as is the case with manufacturing. Quality can therefore only be determined during the rendering of the service, usually during the interaction between the customer and the contact person of the service provider. The customer's input in respect of quality therefore only becomes important during the consumption of the service.

The relationship between the dimensions of service quality and the service quality model is illustrated in figure 2.1. Figure 2.1 shows perceived service quality representing the discrepancy between consumer expectations and perceptions. The key factors of personal needs, past experience and word-of-mouth communications influence consumer expectations with the nine dimensions representing the evaluative criteria consumers use to assess service quality.

Each dimension is viewed as being self-contained and distinct with a degree of overlap recognized. However, Parasuraman, Zeithaml & Berry, (1994:202), Schonberger & Knod (1997:48), Sureshchandar, Rajendran & Kamalanabhan, (2001a:113) and Van Riel, Semeijn & Janssen (2003:439) point out that research has shown that the above dimensions of service quality may be reduced to five general dimensions. These are: tangibles, reliability, responsiveness, assurance and empathy.

Figure 2.1: Determinants of perceived service quality
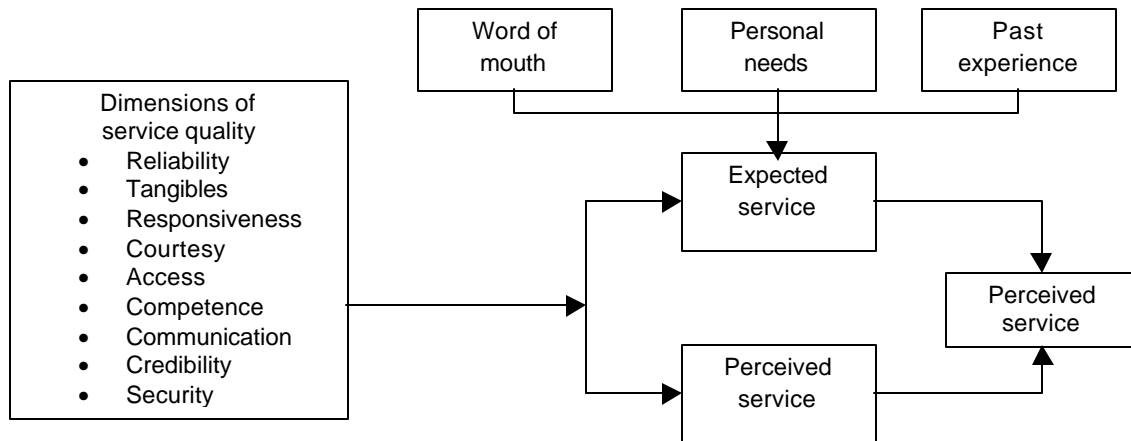
Source: Parasuraman, Zeithaml, & Berry (1994:201)

The purposes of the dimensions in figure 2.1 are:

- Reliability – This involves the ability of the service to perform the promised service dependably and accurately, which implies "right the first time" performance at the designated time.

- Tangibles – This includes the physical facilities, equipment, personnel and communications materials. Service facilities, documentation and personnel (technicians and support staff) should be presentable at all times. Unneatness of facilities and equipment, for example, will give customers the impression that repairs or services will be conducted in a similar fashion.

- Responsiveness – This concerns the willingness or readiness of the service provider's employees to provide service. It involves timeliness of service, for example, by initiating repairs quickly and calling the customer back promptly about the status repair or service.

- Courtesy – This pertains to the politeness, respect, consideration and friendliness of contact personnel, for example, a telephonist receiving service calls. It also includes consideration for the customer's property.

- Access – This involves approachability and ease of contact. Waiting time to receive service, convenient hours of operation and location of service facilities (workshop) are some of the features of access applicable to repairs.

- Competence – This implies possession of the required skills and knowledge to perform the required service. Qualifications and training of service, in repair of aircraft faults, and the knowledge and skill of operational support personnel are essential ingredients.

- Communication – This involves keeping customers informed in a language that they can understand and listening to customers. Language should not be too technical for the customer to understand and sufficiently technical for those customers who have the required knowledge. The technical content as well as the level of sophistication of the language used must, therefore, be adjusted for customers with differing levels of knowledge and education.

- Credibility – This includes trustworthiness and honesty. Contributing factors are the name and reputation of the service enterprise.

- Security – This involves freedom from danger, risk and doubt. Physical safety in obtaining service at the facilities of the service provider and safety of products use, after repair, is implied.

Further empirical scrutiny on service quality (Dale 2003:11; Kuo 2003:464; Sureshchandar, Rajendran & Kamalanabhan 2001a:113; Hsieh, Chou & Chen 2002:909) resulted in a 22-item scale, called 'Service Quality' (hereinafter referred to as the 'SERVQUAL'), which measures service quality based on five dimensions, viz. tangibles, reliability, responsiveness, assurance and empathy, with each statement used twice: once to measure expectations and once to measure perceptions. According to Wisniewski (2001:996) and Lin, Chiu & Hsieh (2001:59) the SERVQUAL model developed by Parasuraman has proven to be valid and reliable for measuring service quality which indicates that customers assess service quality by comparing their expectations of service with their perceptions of services received. Service quality thus occurs when these expectations are met (or exceeded). The entire approach was formulated on the tenet that customers entertain expectations of performance on the service dimensions, observe performance and later form performance perceptions. Sureshchandar, Rajendran, & Kamalanabhan (2001a:113) define service quality as the degree of discrepancy between customers' normative expectations for the service and their perceptions of the service performance. The SERVQUAL instrument captured the crux of what service quality might mean, i.e. a comparison to excellence in service by the customer. Wisniewski (2001:996) argue that, with minor modification, SERVQUAL

can be adapted to any service institution. Information on levels of customer expectations can help managers to understand what customers actually expect of a particular service. Similarly, information on service quality gaps can help managers identify where performance improvement can best be targeted. Service quality fails to be achieved when expectations are not met and hence a service gap materialises. It is only by explicitly assessing expectations as well as perceptions that one can assess whether there are any quality gaps in terms of services provided.

2.2.1.2   Service process

Hammer & Champy (2000:26) consider service to be a process that goes through various stages. In each stage certain inputs are required from the service provider. If the quality of the service is inferior at any stage, it will result in the end product that is the service, not meeting the customer's expectations. In each stage of the service cycle quality testing must be performed, as once delivered, the service cannot just be recalled as in the case of a physical product like an aircraft. According to Hammer & Champy (2000:26), the reason is that a typical service process includes a number of steps in which various people from various departments are involved. For example, if a 99,9% serviceable aircraft is approved for a sortie, the 0,1% that is unserviceable cannot be repaired during the sortie with possible catastrophical results.

The service process is in most cases the result of interaction between the provider of the service and the customer. Customers usually experience this interaction as extremely personal. The level of interaction will determine whether the customer will be satisfied or not. In the service interaction the customer plays a key role in the outcome of the service. The repair-the-problem service provided by aircraft technicians can therefore determine whether the fighter pilot, who is the customer, will be able to successfully complete his mission with the aircraft, or not. The same aircraft technicians can render value-adding service by doing more to satisfy the customer by providing expert advice on the problem experienced and the repair process followed so that the pilot can fully understand the extent of the problem experienced.

2.2.1.3   Service strategy

Chang, Yang & Sheu (2003:408) states that each institution that renders services must have a *service strategy*.   A service strategy provides a focus point for all in the institution according to which they can direct their efforts to render a customer-orientated service that will satisfy the customer.   Such a strategy must emphasise the fact that the customer is important.   Institutions must therefore clearly determine what the customer needs and what he or she expects of them.   The aim of a service strategy must be to develop a method according to which the institution can give to the customer exactly what he or she needs and what he or she expects to receive. (Chang, Yang & Sheu 2003:409.)

2.2.1.4   Service standards

According to Pycraft, Singh & Phihlela (2000:621), a quality standard is that level of quality which defines the boundary between acceptable and unacceptable.   Such standards may be constrained by factors such as the state of technology in an institution.   However, at the same time they need to be appropriate to the expectations of customers.   According to Evans & Dean (2003:148) service standards should serve as indicators of performance, as on the basis thereof it can be determined whether the service meets the customer's expectations or not.   They continue to state that a service strategy must be measurable and directly linked to the tasks that form part of the service rendering.   Therefore, service standards should be established in the entire institution on the basis of which measuring can be done.   For example, base members should know that all members of the base are internal customers of one another.   By setting service standards, service management is facilitated and employees can form a clear image of exactly what is expected of them.   Measuring a service should be a continuous process and each employee should accept responsibility for such a process.   It is also important to have a feedback system so that there can be immediate warning should there be any deviation from the set standard.   The quality component of a service is related to complying with certain requirements.   Once the customer's requirements have been determined, standards can be set according to which the service can be evaluated and measured (Kuo 2003:463).

In recent years the concept of zero defect (error-free work) has become popular as management pursues a climate in which all members of their institution will dedicate themselves to the idea of zero defect in service rendering. Even though zero defect is not always possible, an institution should cultivate a zero defect attitude and should discourage their employees from not complying with requirements, thereby deviating from set standards (Vroman & Luchsinger 1994:150).

2.2.1.5   Customer expectations

Satisfying customers and creating customer enthusiasm through understanding their needs and future requirements is the crux of TQM and all institutions are dependent on having satisfied customers (Dale 2003:10).   According to the latter, research has shown that institutions that do not meet their customers' expectations, have lost market shares to competitors who are customer-orientated. Stamatis (1996:54) developed a generic model for the implementation of customer service, for the very reason of complying with the expectations of the customer.   The generic model of Stamatis follows a six-step approach:

- Step 1: Identify the added value of service that is to be rendered to the customer.
- Step 2: Identify the customer and clearly determine his or her expectations.
- Step 3:   Identify the institution's critical needs that are required for customer satisfaction.
- Step 4: Define the process required to perform the work in order to ensure quality customer service.
- Step 5: Zero-defect the process and eliminate wasted efforts.
- Step 6: Ensure continuous improvement by obtaining continuous feedback from the customer, in order to produce continuous total quality results as output.

From the analysis of the concept of 'quality', it can be seen that product quality and service quality are critical for institutional success. A comprehensive plan to implement measurable quality standards must be developed and an uncompromising approach toward quality must be maintained (Selladurai 2002:616).   Quality performance objectives (internal and external) indicated by Reeves & Bednar (1994:436-439), Pycraft, Singh & Phihlela (2000:48) and Rao *et al*. (1996:11) (see page 38 to 39) are all

critical to institutional success to implement TQM as a philosophy. The basis for choosing pertinent definitions that can guide the development of frameworks and measurement methods is thus provided through exploring the roots of various definitions of quality, identifying strengths and weaknesses, and examining the trade-offs inherent in accepting one definition of quality over another.

Based on the analyses of "the meaning of quality" analysed the meaning of TQM will now be analysed in the following section.

2.3   THE MEANING OF TOTAL QUALITY MANAGEMENT

The aim of this section is to conduct a conceptual analysis of the concept Total Quality Management. Why is a conceptual analysis required within the context of this study? South Africa is currently threatened by a fast approaching cost growth owing to factors such as inflation and low productivity that have a negative influence on the operations of the SANDF, in particular the SA Air Force. Institutions who have maintained a rapid increase in customer expectations, while at the same time maintaining the competitive edge and who offer a diverse product range and service rendering, have adapted their management strategies in accordance with the demands of current times (Pycraft, Singh & Phihlela 2000:17). The latest strategies focus on achieving institutional prosperity and improvement in order to obtain service rendering results, financial results, customer results (customer satisfaction), marketing results, operational results, community results and employee results – all outputs that can be achieved with TQM (Yong & Wilkinson 2001:252).

TQM is one of the most durable management innovations of the past two decades. TQM has been globally recognised by the Japanese approach toward quality improvement (Mani, Murugan & Rajendran 2003a:396). Yet, in spite of thousands of articles in the business and trade press from 1984 to 2002, TQM remains a hazy, ambiguous concept (Korunka, Carayon, Sainfort, Scharitzer & Hoonakker 2003:538). The differences in the prescriptions proposed by the five total quality gurus as described in paragraph 2.3.1 have no doubt contributed to this confusion. TQM is arguably the most significant concept that has swept across institutions over the last few years. A review of the literature reveals that TQM encompasses a vast spectrum of

topics and perspectives. While TQM is widely practised, there is little agreement on what it actually means, despite assertions that "clear definitions are important" (Boaden 1997:153). In addition, it has been argued by Douglas & Judge (2001:159) that for an institution to realise the value of a TQM implementation, it must have an internal conceptual understanding of TQM in order to be capable of fully supporting TQM implementation. Many researchers, such as Boaden (1997:153), discuss TQM as a discourse and identify its "many ideas'", including TQM human resource management, marketing, business process management and a new management paradigm. Eng & Yusof (2003:64) support Boaden and highlighted that TQM integrates fundamental management techniques, existing improvement efforts and technical tools in a disciplined approach. The two researchers continue and mentioned that TQM is a collection of principles, techniques, processes and best practices that over time have been proven to be effective. This diversity of views may strengthen the subject area, but it has apparently not been discussed extensively. Most world-class institutions exhibit the majority of behaviours that are typically identified with TQM.

Eriksson, Johansson & Wiklund (2003:235) states that TQM brings together the constellation of productivity, ethics leadership and performance into a unique relationship. To support Eriksson, Johansson & Wiklund's (2003:235) statement, Steenkamp (2001:vi) argues that TQM is not a technique that can be applied artificially to improve the efficiency of an institution, but that (1) it is a way of life, a passion, something that everybody should do, (2) it is a culture, which should be lived by everybody in an institution, and (3) it should be modelled by those in positions of leadership, but should eventually be a matter of personal leadership, which is practised by all members of institutions. According to Dervitsiotis (2003a:252), TQM blurs the boundaries between the institution and the environment. Entities previously regarded as outsiders (e.g. suppliers, customers) are now considered part of institutional processes.

To support the latter, Pycraft, Singh & Phihlela (2000:17) and Yong & Wilkinson (2001:247) mention that in recent years TQM has been one of the most prominent ideas applied in the management milieu to reengineer institutions and bring about change. There are basically three reasons for this phenomenon. Firstly, the ideas of TQM currently have a major intuitive attraction for people, as they desire to maintain

high standards of quality. Secondly, TQM can result in a dramatic increase in an institution's effectiveness. A third reason, according to Hammer & Champy (2000:49), is that institutions like to centre all work around *processes*, an approach known as *process-based work,* that can assist institutions to obtain an advantage over their competitors who do not follow such an approach.

TQM is not only concerned with achieving certain levels of competitiveness and applying and developing new techniques, concepts and technologies, but also with a change in attitudes and behaviours in order to conduct business in accordance with the requirements set by customers. The management of quality is therefore the responsibility of each person within the institution and not just that of management. This idea clearly comes to the fore in Xerox's quality policy. In terms of the policy, Xerox is a quality institution and quality is the basic business principle. For Xerox, quality is the provision of innovative products and services that meet the needs of the customers. Improvement of quality is the responsibility of each employee at Xerox (George & Weimerskirch 1998:30).

According to Pun (2001:324), the following is necessary to achieve an intense understanding and transformation toward TQM: (1) a historical review of TQM based on the prescriptions of the quality gurus, (2) a historical evolution from quality to total quality, (3) the principles of TQM, (4) a definition of TQM, and (5) the importance of TQM (see paragraph 2.3.1 to 2.3.5). For this reason a conceptual analysis of TQM is required, starting with a historical review.

2.3.1 Historical review of Total Quality Management

Many of the recognised quality gurus did not actually use the term TQM, although their work has subsequently been recognised as being relevant and sometimes quoted as referring to TQM. TQM is an extension of the traditional approach to quality as discussed in paragraph 2.2. Although the origins of TQM go back to the 1940s and 1950s, Feigenbaum first used the term formally in 1957. More recently, TQM has been developed through a number of widely recognized approaches put forward by several "quality gurus" such as Crosby, Deming, Feigenbaum, Juran and Ishikawa. The emphasis placed on various aspects of TQM varies among the authorities, but the

general thrust of their arguments is similar. Therefore, to understand the origins of TQM, it is important to understand the contributions from these quality pioneers.

2.3.1.1   W. Edwards Deming

Deming, a prominent consultant, teacher and author on the subject of quality, is one of the best-known early pioneers, who is credited with popularising quality control in Japan in the early 1950s. His philosophy emphasises the systematic nature of institutions, the importance of leadership, and the need to reduce variation in institutional processes, but he maintains that an institution must adopt the fourteen points of his system at all levels (Anderson, Rungtusanatham & Schroeder 1994:472; Evans & Dean 2003:43). Deming also believes that quality is to be built into the product at all stages in order to achieve a high level of excellence. Deming included the managerial dimensions of planning, organising and controlling, and focused on the responsibility of management to achieve quality, as well as the need for setting goals (Boaden 1997:157). Deming developed what is known as the Deming chain reaction; as quality improves, costs will decrease and productivity will increase, resulting in more jobs, greater market share and long-term survival. Although it is the worker who will ultimately produce quality products, Deming stresses worker pride and satisfaction rather than the establishment of quantifiable goals (Anderson, Rungtusanatham & Schroeder 1994:474-475; Kanji 1990:4; Swift, Ross & Omachonu 1998:7).

According to Dale (2003:53), Deming maintains that his 14 points apply anywhere, to small institutions as well as large ones, to the service industry as well as to manufacturing. He also stressed that it is the system of work that determines how work is performed and it is only managers that can create the system. Deming summarized his foundation work in quality by identifying 14 points for institutions to follow, namely (Anderson, Rungtusanatham & Schroeder 1994:475; Capezio & Morehouse 1993:77; Dale 2003:54; Evans & Dean 2003:50; Kelada 1996:21; Lindsay & Petrick 1998:33; Neave 1990:293; Spigener & Angelo 2001:61; Sarkar 1991:239; Swift, Ross & Omachonu 1998:8; Waldman 1994:511):

- Create constancy of purpose toward improvement of product and service with the aim to become competitive and to stay in business, and to provide jobs.

- Adopt the new philosophy of quality and do not tolerate commonly accepted levels of errors and defects.

- Stop depending on mass inspection to improve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.

- End the practice of awarding business and choosing suppliers based on price. Minimize total cost by working with a single supplier.

- Constantly improve the system of production and service by continually improving test methods and identification of problems, from the very first planning stages right up to distribution to customers, and thus constantly decrease costs.

- Adopt modern methods of training-on-the-job by teaching employees the best methods of achieving quality in their jobs and the use of tools such as statistical quality control.

- Adopt and institute leadership. The aim of supervision should be to help people and machines to do a better job.

- Drive out fear, so that everyone may work effectively for the institution. No one can perform unless he or she feels secure.

- Break down barriers between departments and staff areas. Create teams of members coming from all areas and sectors of the institution to prevent and solve problems.

- Eliminate slogans and exhortations for the workforce asking for zero defects and new levels of productivity.

- Eliminate work standards (quotas) for the workforce and substitute it with leadership. Eliminate management by objectives; eliminate management by numbers, numerical goals. Substitute leadership.

- Remove barriers that rob people of the pride of workmanship. Eliminate the annual rating or merit system.

- Institute a vigorous programme of education and self-improvement for everyone.

- Put everybody in the institution to work to accomplish the transformation. The transformation is everybody's job.

The cornerstone of Deming's philosophy is based on statistical process control, which must be implemented where corrective action can be successfully instituted. Top management involvement is a key requirement with proper delegation of quality responsibilities at all levels in an institution. The recognition of training and leadership

skills is vital in adopting Deming's philosophy with continuous improvements never ending.

2.3.1.2   Joseph M. Juran

Juran, Joseph M. specializing in managing for quality. According to Capezio & Morehouse (1993:90), Lindsay & Petrick (1998:74), Rao *et al.* (1996:40) and Waldman (1994:511), the Juran Trilogy (a trademark of the Juran Institute, Inc) identifies three areas for quality conversion within an institution, namely:

- Financial planning becomes quality planning (developing the products and processes required to meet customer needs).
- Financial control becomes quality control (meeting product and process goals).
- Financial improvement becomes quality improvement (achieving unprecedented levels of performance).

Due to the parallels between finance and quality, Juran often uses his "Trilogy" to explain the approach required to manage quality (Juran 1986:21). From the above Trilogy, Juran developed a ten-step approach to quality improvement, namely (Dale 2003:57; Swift, Ross & Omachonu 1998:9):

- Build awareness for the need and opportunity for improvement.
- Set goals for improvement.
- Organize people to reach the goals.
- Provide training throughout the institution.
- Carry out projects to solve problems.
- Report progress.
- Give recognition.
- Communicate results.
- Keep score and assess overall progress.
- Maintain momentum by making annual improvement part of the regular systems and processes of the institution.

Juran has extended his principles to consider business processes, and has recently developed a concept entitled managing business process quality, which is a technique for executing cross-functional quality improvement. Another cornerstone of Deming's philosophy is based on project management (Dale 1994:9).

2.3.1.3   Armand Feigenbaum

Feigenbaum was the first recognized quality guru to use the term "total quality control." Since then the idea has come to mean an approach to quality that is institution-wide, involving all aspects of the control or management of quality (Dale 2003:55). The activities from a quality standpoint, or the jobs of quality control as Feigenbaum (1986:64) calls it, can be grouped into four categories: new design control, incoming material control, product control and special process studies. To be successful, these activities require the cooperation of all the institutional departments with responsibilities clearly defined using elaborate matrices. Feigenbaum (1986:78) augments his total quality control theory to a concept of a total quality system which not only recognizes the importance of the four quality activities working individually, but also how well they are required to work together. The total quality system is seen as the foundation of total quality control providing the proper channels for product quality related activities to flow.

Feigenbaum (1986:12) developed the approach that the responsibility for quality extended well beyond the manufacturing department. He also developed the concept that quality could not be achieved if products were poorly designed, inefficiently distributed, incorrectly marketed and improperly serviced and supported. Feigenbaum's approach to quality is a whole approach and was largely credited with the concept of Total Quality Control (Kathawala 1989:11). Feigenbaum's book, Total Quality Control, can be considered as a model for a quality management system. Feigenbaum's philosophy, however, can be reduced to four simple steps (Capezio & Morehouse 1993:100; Dale 2003:56; Feigenbaum 1986:10), namely:

- Setting a quality standard.
- Appraising conformance to these standards.
- Acting when standards are exceeded.

- Planning for improvements in the standards.

Feigenbaum (1986:59) establishes nine fundamental factors affecting quality, that is, markets, money, management, men, motivation, materials, machines and mechanization, modern information methods and mounting product requirements. Lindsay & Petrick (1998:76), however, reduces these factors to two distinct categories, namely (1) technological factors (including processes) and (2) human factors. Of these two groupings, the human is of greater importance by far. Feigenbaum's total approach to quality is a major strength in eliminating uncoordinated quality activities. The emphasis on management and human participation is seen as strengths in generating motivation and creativity, which are absent from Deming and Juran's approaches.

2.3.1.4   Philip B. Crosby

The philosophy of Crosby focused on reducing cost through quality improvement and stressed that both high and low-end products can have high quality (Dean & Bowen 1994:394). His philosophy is based on five fundamental principles he calls absolutes, namely (Capezio & Morehouse 1993:103; Crosby 1979:4; Evans & Dean 2003:55; Johnson 2001:25; Kelada 1996:23; Lindsay & Petrick 1998:77; Rao *et al*. 1996:43):

- Quality has to be defined as conformance to requirements, not as goodness.
- The system for causing quality is prevention, not appraisal.
- The performance standard for quality must be zero defects, not that's close enough.
- The measurement of quality is the process of non-conformance, not indexes.
- There is no such thing as a quality problem.

Crosby stresses motivation and planning and does not dwell on statistical process control and the problem-solving techniques of Deming and Juran. Crosby's 14 points are action steps for institutions to help them implement TQM. Crosby takes a very pragmatic approach in making each of these points value producing for the institutions that practise them. Crosby's 14 points (Dale 2003:52; Swift, Ross & Omachonu 1998:11) are:

- Management commitment – Top management must be convinced of the need for quality and must clearly communicate this to the entire institution by written policy.
- Quality improvement teams – Form a team composed of department heads to oversee improvements in their departments and in the institution as a whole.
- Quality measurement – Establish measurements appropriate to every activity in order to identify areas in need of improvement.
- Cost of quality – Estimate the costs of quality in order to identify areas where improvements would be profitable.
- Quality awareness – Raise quality awareness among employees.
- Corrective action – Take corrective action because of steps 3 and 4.
- Zero defect planning and zero defects day (error-free work days) – Form a committee to plan a programme appropriate to the institution and its culture.
- Supervisor training – All levels of management must be trained in how to implement their part of the quality improvement plan.
- Employee education – Define the type of training all employees need in order to carry out their role in the quality improvement process. All levels of management must be trained in how to implement their part of the quality improvement programme.
- Goal setting – Establish improvement goals for individuals and their groups.
- Error cause removal – Employees should be encouraged to inform management of any problems that prevent them from performing error-free work.
- Recognition – Give public, non-financial appreciation to those who meet their quality goals or perform outstandingly.
- Quality councils – Composed of quality professionals and team chairpersons, quality councils should meet regularly to share experiences, problems and ideas.
- Do it all over again – Repeat steps 1 to 13 in order to emphasize the never-ending process of quality improvement.

Crosby's approach is easier to grasp than those of Deming, Juran and Feigenbaum, for he treats quality problems as tangible issues to be solved and rejects the idea that problems are persistent and unsolvable. The strong management and goal orientation of his zero defect approach can lead workers to become disenchanted as most problems are systemic rather than worker created. The Crosby approach emphasizes the ongoing management of quality, but the fourteen points do not have the same

amount of emphasis on the principles of breakthrough and control or handling variation with statistical process control that is found with Deming and Juran.

2.3.1.5   Karou Ishikawa

Ishikawa, a pioneer in quality control activities in Japan, bases his work on that of Deming, Juran and Feigenbaum. Dale (2003:59) says that Ishikawa has been credited with originating the concept of quality circles and cause-and-effect diagrams (see chapter 4, paragraph 4.6.4.1). Ishikawa published many works, including "W*hat is Total Quality Control? The Japanese Way, Quality Control Circles at Work,* and *Guide to Quality Control.*" Ishikawa claimed that there had been a period of over-emphasis on statistical quality control (in Japan), and as a result, people disliked quality control. They saw it as something unpleasant because they were given complex and difficult tools rather than simple ones. Furthermore, the resulting standardization of products and processes and the creation of rigid specification of standards became a burden that not only made change difficult, but made people feel bound by regulations. Ishikawa saw worker participation as the key to the successful implementation of TQM. Quality circles, he believed, were an important vehicle to achieve this (Pycraft, Singh & Phihlela 2000:733). Ishikawa took the concepts proposed by people like Deming and Juran and brought them to the level of the common worker (Rao *et al*. 1996:49).

2.3.1.6   Common themes of the five quality gurus

All of these pioneers believe that management and the system, rather than the workers, are the cause of poor quality. These and other trailblazers have largely absorbed and synthesized each other's ideas, but generally speaking they belong to two schools of thought: those who focus on technical processes and tools, and those who focus on the managerial dimensions. Deming provides manufacturers with methods to measure the variation in a production process in order to determine the causes of poor quality. Juran emphasizes setting specific annual goals and establishing teams to work on them. Feigenbaum teaches total quality control aimed at managing by applying statistical and engineering methods throughout the institution, Crosby stresses a programme of zero defects and Ishikawa stresses the use of quality

circles (Djerdjour & Patel 2000:26; Swift, Ross & Omachonu 1998:12). Table 2.1 summarizes the strengths and weaknesses of each guru's approach.

Table 2.1: The relative strengths and weaknesses of Crosby, Deming, Feigenbaum, Juran, and Ishikawa's approaches.

Quality guru	Strengths of approach	Weakness of approach
Deming	• Emphasises removal of barriers to employee participation. • Provides a systematic and functional logic, which identifies stages in quality improvement. • Stresses that management comes before technology. • Leaders and motivation are recognized as important. • Emphasizes role of statistical and quantitative methods. • Recognizes the different contexts of Japan and North America.	• Action plan and methodological principles are sometimes vague. • The approach to leadership and motivation is seen by some as idiosyncratic. • Does not treat situations that are political or coercive.
Juran	• Emphasis to orientate quality managers toward both suppliers and customers. • Emphasizes the need to move away from quality hype and slogans. • Stresses the role of the customer, both internal and external. • Management involvement and commitment are stressed.	• Does not relate to other work on leadership and motivation. • Seen by some as undervaluing the contribution of the worker by rejecting bottom-up initiatives. • Seen as being stronger on control systems than the human dimension in institutions.
Feigenbaum	• A clear customer-oriented quality management process required. • Provides a total system approach to quality control. • Places the emphasis on the importance of management. • Includes socio-technical systems thinking.	• Does not discriminate between different kinds of quality context. • Does not bring together the different theories into one coherent whole.

Quality guru	Strengths of approach	Weakness of approach
Crosby	- Strong focus on institutional factors such as cultural change, training, leadership and ongoing calculation of quality costs. - Strong emphasis on institutional-wide motivation. - Provides clear methods, which are easy to follow. - Worker participation is recognized as important. - Strong on explaining the realities of quality and motivating people to start the quality process.	- Seen by some as implying that workers are to blame for quality problems. - Zero defects sometimes seen as risk avoidance. - Insufficient attention given to statistical methods.
Ishikawa	- Strong emphasis on the importance of people and participation in the problem-solving process. - A blend of statistical and people-oriented techniques. - Introduces the idea of quality control circles.	- Some of his problem-solving methods seen as simplistic. - Does not deal adequately with moving quality circles from ideas to action.

Source: Adapted by Waldman (1994:511) and Yong & Wilkinson (2001:248)

Despite the differences among these experts, a number of common themes arise, namely:

- Inspection is never the answer to quality improvement, nor is "policing."
- Involvement of and leadership by top management are essential to the necessary culture of commitment to quality.
- A programme for quality requires institution-wide efforts and long-term commitments, accompanied by the necessary investment in training.
- Quality is first and schedules are secondary.
- Quality is a system of continuous ongoing improvement.
- The benefits of quality far outweigh the costs of quality.

- Their concepts are equally applicable to the service and manufacturing industry.
- Quality improvement requires careful planning and a philosophy of institution-wide quality improvement.
- Quality improvement programmes must represent permanent, on-going activities.
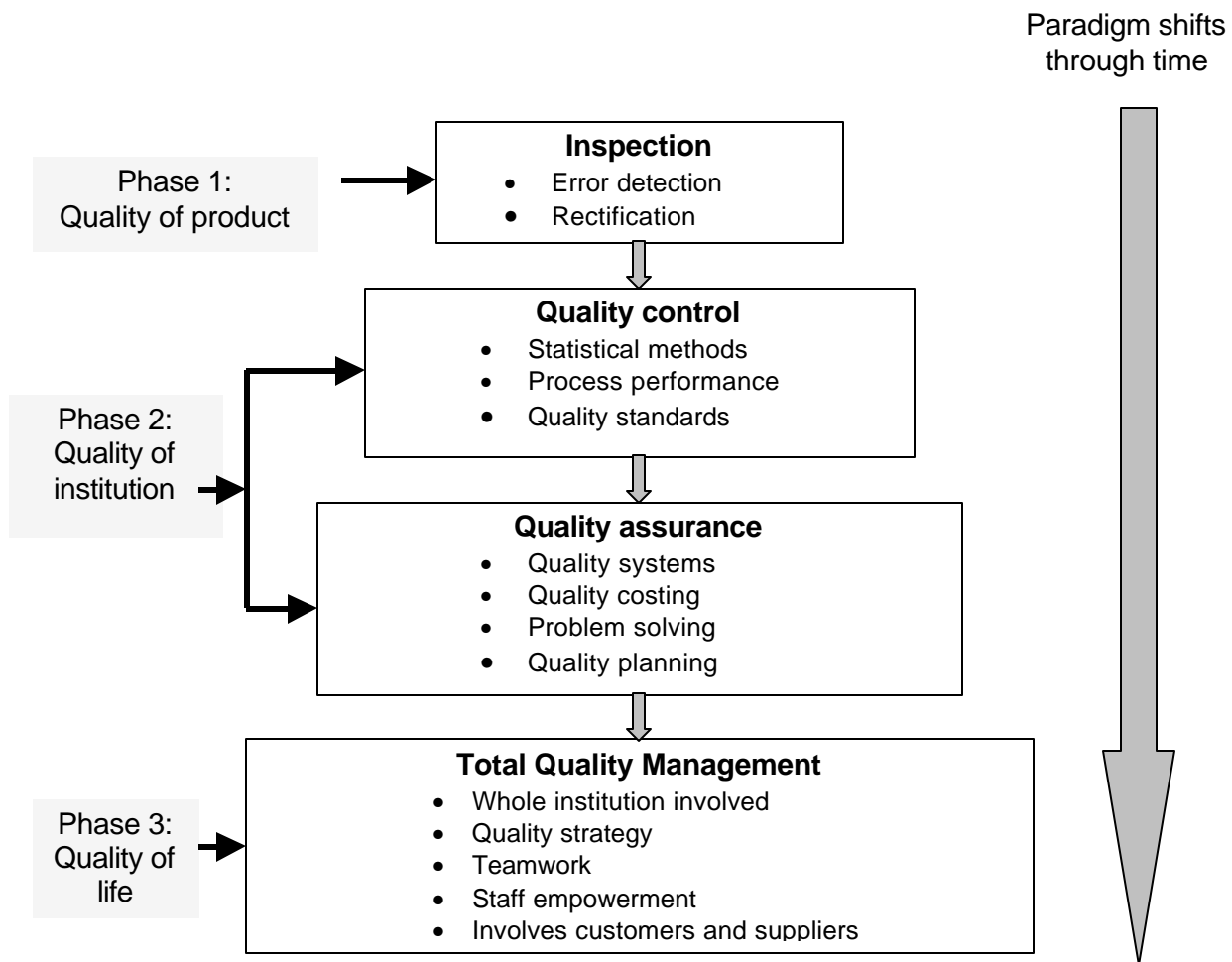
Whilst these theories of the quality gurus provide an understanding of quality management, there appears to be no all-encompassing correct approach. The dynamics of the difference in approach by the five quality gurus indicate a need to close the gaps in quality theory and management and sort out what they offer as a whole. There are two main areas of focus, namely (1) the technical dimension of quality and (2) the human dimension of quality. The technical requirements are catered for largely by statistical and quantitative methods incorporating inspection, process control and reliability from design to final product or service delivery by all five quality gurus. The management of the human dimension of institutions, however, is not at all clearly provided for. The quality gurus declare their interest in the management of people within their differing philosophies and offer a few tangible principles and no common useable methods as is found in the technical dimension.

2.3.2 Historical evolution from quality to total quality

According to Oakland (quoted by Pycraft, Singh & Phihlela 2000:736), TQM is a philosophy, a way of thinking and working that is concerned with meeting the needs and expectations of customers. TQM applies to all parts, departments and sections of the institution and, further, it is the responsibility of all people in an institution. TQM can be viewed as a logical extension of the way in which quality-related practice has progressed (see figure 2.2).

With reference to figure 2.2, originally quality was achieved by inspection – screening out defects before customers noticed them. The quality control (QC) concept developed a more systematic approach to not only detecting, but also treating quality problems. Quality assurance (QA) widened the responsibility for quality to include functions other than direct operations of an institution. It also made increasing use of more sophisticated statistical quality techniques.

Figure 2.2: TQM can be viewed as a natural extension of earlier approaches to quality management.

Paradigm shifts
through time

Phase 1:
Quality of product

Inspection
- Error detection
- Rectification

Phase 2:
Quality of institution

Quality control
- Statistical methods
- Process performance
- Quality standards

Quality assurance
- Quality systems
- Quality costing
- Problem solving
- Quality planning

Phase 3:
Quality of life

Total Quality Management
- Whole institution involved
- Quality strategy
- Teamwork
- Staff empowerment
- Involves customers and suppliers

Source: Adapted from Dale (2003:21) and Pycraft, Singh & Phihlela (2000:737)

Specifically TQM can be seen as being concerned with the following (Pycraft, Singh & Phihlela 2000:736), namely:

- meeting the needs and expectations of customers;
- covering all parts of the institution;
- including every person in the institution;
- examining all costs which are related to quality;
- developing the systems and procedures which support quality and improvement; and
- developing a continuous process of improvement.

According to Schlotz (1998:64), the evolutionary development of the quality concept can be regarded as a continuum consisting of three different stages/phases in the development of quality (see figure 2.2); each one separated by a substantial paradigm shift in the thinking approach of quality, namely (1) quality of product, (2) quality of institution and (3) quality of life.

2.3.3 Principles of Total Quality Management

Despite diverse views on what constitutes TQM, there are a number of principles that will now be summarized. Chapters 4, 5, and 8 will provide more details on these principles. According to Dean & Bowen (1994:394), TQM as a philosophy or an approach to management can be characterised by its principles. They continue and indicate that TQM implementation can only be accomplished through a set of principles that supports the TQM philosophy. What differentiates TQM from other management processes is the emphasis on *continuous improvement*. TQM is about continuous improvement of individuals, of groups and of institutions. To improve performance, people need to know what to do, how to do it, have the right tools to do it, to be able to measure performance and to receive feedback on current levels of achievement. According to Kanji (1995:3), TQM provides this by adhering to a set of general governing principles. According to Burr (1993:87), TQM programmes have various names, but they share similar principles. Drawing from the recent literature on TQM (Adinolfi 2003:143; Boaden 1997:162; Dale *et al.* 2001:444; Dale 2003:26; Dean & Bowen 1994:394; Eng & Yusof 2003:64; Ghobadian *et al.* 1998:43; Ishikawa & Kano 1993:9; Kanji 1995:4; Kanji 1998:68; Kanji 2000:109; Mehta 2000:59; Nwabueze 2001:661; Provost & Quayle 2001:44; Spencer 1994:447; Vokurka & Lummus 2003:54; Waldman 1994:511; West, Cianfrani & Tsiakals 2000:79; West 2002:61; Wong 2000:428; Yong & Wilkinson 2001:253), the following key principles underpin the TQM concept, which are common to all manifestations, namely:

- TQM starts at top management - Top management should demonstrate understanding, commitment and be involved in the total quality improvement process from day one in order to improve quality in all areas of the institution.
- TQM requires total employee involvement – People at all levels are the essence of an institution and their full involvement enables their abilities to be used to the

benefit of the institution. The involvement of every individual in an institution is necessary for successful TQM implementation. Institutions need imagination, ideas, input, commitment and energy from everyone to reach for world-class quality that will make a country competitive in today's market.

- TQM focus on the customer – The goal of satisfying customers (internal or external) is fundamental to TQM and is expressed by the institution's attempt to design and deliver products and services that fulfil customer needs. Institutions depend on their customers and therefore should understand current and future customer needs, meet customer requirements and strive to exceed customer expectations.

- TQM need strategic planning – Strategic planning is necessary to align and integrate all the efforts of the institution with the TQM concept. The link between TQM and strategic planning should provide an integrated management system for an institution.

- TQM focus on the systems approach to management – Identifying, understanding and managing interrelated processes as a system should contribute to the institution's effectiveness and efficiency in achieving its objective.

- TQM requires ongoing education and training of employees – Training should start with educating top managers in TQM and its principles, in the need for quality improvement, and in the tools of improvement. Training should provide employees with the education required to effectively participate in quality improvements.

- TQM focus on teamwork – Institutions should understand that employees need to participate in vertical, horizontal and cross-functional teams to be most effective. Teams should be used through collaboration/participation, to provide an opportunity for employees to work together in their pursuit of total quality in ways that they have not worked together before.

- TQM focus on continuous improvement – Continuous improvement should be a permanent objective of the institution. Continuous improvement means a commitment to constant examination of technical and administrative processes in search of better methods. Underlying this principle are the concept of institutions as systems of interlinked processes and the belief that by improving these processes, institutions can continue to meet the increasingly stringent expectations of their customers.

- TQM respects employees and their knowledge – Subordinates' inputs as improvements should be taken into account, especially where they have the

appropriate experience and are specialists in their field. Employees should be actively involved in the improvement process.

- TQM focus on process improvement – The institution should be reconfigured as a set of horizontal processes that begin with the supplier and end with the customer. All processes in an institution should be identified to establish ownership for the processes and processes should be kept as simple as possible.

- TQM requires statistical way of thinking and the use of statistical methods – Results of tests, measurements and conditions under which measurements were made should be kept meticulously. Electronic systems that are available should be used, but computer software packages can be developed relatively cheap for in-time statistical purposes.

- TQM focus on prevention rather than detection – Problems are to be anticipated to prevent them from occurring. Frequent meetings should be held to discuss foreseen problems.

- TQM requires mutually beneficial supplier relationships – Suppliers should be treated in a way to ensure a win-win situation for all parties involved. An institution and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value.

- TQM focus on performance measures that are consistent with the goals of the institution – Feasible measures should be established to reward performance and thereby promoting positive attitudes. In order to monitor how the institution is performing, management must analyse the performance on a continuous basis.

- TQM focus on product and service quality design – Quality should be built into the programme as soon as possible, preferably from day one, and should be spread over the total sphere of the programme. Therefore, the advice of experts should form part of the project right from the start.

- TQM focus on substantial culture change – All changes in the environment should be taken note of and the necessary adoptions should be made promptly. It will mean that certain alterations should be frequently made to meet new circumstances.

- TQM focus on the factual approach to decision-making – Effective decisions should be based on the analysis of data and information. Facts are necessary to manage the institution at all levels by giving the correct information to people so that

decisions are based upon facts rather than 'gut feelings' which is essential to achieve continuous improvement.

- TQM requires self-assessment efforts as control mechanism to determine results – Institutions' performance should be evaluated against internationally recognized standards.

- TQM focus on fast response - Increasingly rapid response times and ever-shorter cycles for new or improved product and service introduction are a necessity for customer satisfaction today. The time performance of work processes should be among key process measurements. Improvements in response time often drive simultaneous improvements in institution, quality and productivity.

- TQM provides standardisation – Institutions should develop and adhere to the best-known ways to perform a given task.

- TQM focus on partnership development - Institutions should seek to build internal and external partnerships to better accomplish their overall goals. Internal partnerships might include those that promote cooperation between labour and management. External partnerships might be with customers, suppliers and educational institutions for a variety of purposes, including education and training. A partnership might permit the blending of institution's strengths and capabilities, thereby enhancing the accomplishment of each partner's mission.

The above principles must be seen as a "package deal". To gain the full potential of TQM, the SA Air Force must implement all of these TQM principles to the greatest extent possible. These principles are applied, not as a succession of standalone *programmes*, but as an integrated set of systematic, methodical *practices* designed to create an effective *management system*.

According to TQM experts, proper implementation of TQM in institutions is a critical determinant in enhancing institutional performance (Coff 1999:119). According to Ghobadian *et al.* (1998:43) and West, Cianfrani & Tsiakals (2000:79), the quality management principles (QMPs), when consistently applied across an institution, should engender optimal overall performance excellence far more effectively than a series of individually optimised activities. There is an overlap of principles between the researchers, but any of them, if neglected or not in place, can jeopardize the total effort. The management of a process based on such diverse underlying principles involving

dimensions of a managerial, technical and human nature, requires investment in training and education of people, transformation of company systems and interactive human effort (Grib 1993:23). TQM is therefore not for the faint-hearted, but for institutional leaders who are excited about creating the necessary changes, who accept the challenge of being different and have a vision of what can be achieved through TQM.

2.3.4 Defining Total Quality Management

This section considers the definition of TQM by examining a variety of literature sources. The aim is to develop a set of common themes which define TQM, in order to contribute to the debate rather than merely to add another definition to those already available. Despite the popularity of the concept TQM, it is ill-defined and the abbreviation "TQM" also adds to the confusion (Ghobadian *et al.* 1998:9; Wood 1997:181; Yong & Wilkinson 2001:247). Given the vast amount of literature available on TQM, one is surprised to find that very few authors have a meaningful definition of TQM (Nwabueze 2001:658). The wide and often confusing use of the term TQM in the literature warrants a clarification of its meaning. However, TQM is a multidimensional and complex term. Boaden (1997:154) argues that confusion about definition is not confined to the TQM field. He discusses the issue of definition related to quality costs and states firmly that: "… without clear definitions or meaningful communication on the topic … admittedly there are difficulties in finding generic terms to describe tasks or activities having the same broad objectives in different industries."

Wilkinson & Witcher (1993:48) and Nwabueze (2001:659) summarise TQM as having three major requirements, as outlined in the following:

- Total: Participation of Everyone, an institution-wide process: "TQM requires continuing improvement and getting things right first time. Since most quality solutions are outside the control of any one individual or function, this needs team work and the maintenance of good relationships."
- Quality: Meeting Customer Requirements Exactly: "TQM requires customer-agreed specifications which allow the supplier to measure performance and customer

satisfaction.   Individuals and teams need to use quality tools and systems to facilitate measurement and problem solving."

- <u>Management</u>: Enabling Conditions for Total Quality: "TQM requires leadership and total commitment from senior management to quality goals. They must ensure that an appropriate infrastructure exists to support a holistic and not a compartmentalised approach to institutional management."

For the purposes of this thesis a broad definition of the term TQM is required that includes its strategic, operative, administrative and behavioural aspects and which emphasizes that the creation of TQM in institutions is a continuous, holistic and integrated process initiated and maintained by management. According to Djerdjour & Patel (2000:26) TQM cannot be fully understood through one definition only.   In support of their argument and on analysing the various TQM definitions available in literature, TQM can be classified under the following broad headings:

- TQM as a *culture* (Ghobadian & Gallear 1996:83; Kanji & Wallace 2000:979; Kreitner & Kinicki 1998:14; Sashkin & Kiser 1993:39).

- TQM as a *management and institutional-wide process* (Capezio & Morehouse 1993:1; Edgeman 1999:49; Ross 1994:3; Parzinger & Nath 2000:355; Selladurai 2002:615; Senthil, Devadasan, Selladurai & Baladhandayutham 2001:682; Stevenson 1996:101; Wicks 2001:511).

- TQM as a *management philosophy and guiding principles* (Aksu 2003:592; BS 4778, Part 2 1991; Clauson 1995:45; Djerdjour & Patel 2000:26; Elmuti & Kathawala 1999:68; Elshennawy & McCarthy 1992:34; Eng & Yusof 2003:64; Hansson 2001:989; Perigod 1990:54; Pun 2002:760; Yong & Wilkinson 2001:252).

- TQM as a *strategy* (Dean & Evans 1994:7; Jones 1994:98).

- TQM as a *system* (Evans & Dean 2003:16; Hansson 2001:990; Lindsay & Petrick 1998:20; Scharitzer & Korunka 2000:S942; Stahl 1995:4; Yong & Wilkinson 2001:249).

Various versions of definitions of TQM can be found in the literature to validate the five headings under which TQM can be classified, of which only a few are given below, namely:

- **TQM as a culture**

  o Kanji & Wallace (2000:979) define TQM as: "TQM is the culture of an institution committed to customer satisfaction through continuous improvement." The two researchers also use the following definition: "TQM is a corporate culture characterized by increased customer satisfaction through continuous improvements, in which all employees in the firm actively participate."

  o Sashkin & Kiser (1993:39), experts on the subject, offered this definition of TQM: "TQM means that the institution's culture is defined by and supports the constant attainment of customer satisfaction through an integrated system of tools, techniques and training. This involves the continuous improvement of institutional processes, resulting in high quality products and services."

- **TQM as a management and institutional-wide process**

  o Parzinger & Nath (2000:355) define TQM as a management process and institutional-wide process to instil a culture of continuous improvement in an institution to ensure that the institution consistently meets and exceeds customer requirements.

  o Senthil *et al.* (2001:682) and Selladurai (2002:615) define TQM as a continuous management process that aims at quality improvement in all processes and activities in institutions. The ultimate goal of TQM is to establish a management system and institutional culture that ensures customer satisfaction (both internal and external) and never-ending continuous improvement of all institutional processes.

- **TQM as a management philosophy and guiding principles**

  o Djerdjour & Patel (2000:26) define TQM as a management philosophy, which seeks continuous improvement in the quality of all processes, people, products and services of an institution. Continuous improvement can be achieved through internal and external quality improvements.

  o Pun (2002:760) defines TQM as an integrated management philosophy and set of practices that emphasise continuous improvement, meeting customers'

requirements, reducing rework, long-range thinking, increased employee involvement and teamwork, process redesign, competitive benchmarking, team-based problem-solving, constant measurement of results and closer relationships with suppliers.

- **TQM as a strategy**

  o Dean & Evans (1994:7) define TQM as an integrated, systematic, institution-wide strategy for improving product and service quality.
  o Jones (1994:98) defines TQM as "… a strategy for improving institutional performance through the commitment of all employees to fully satisfying agreed customer requirements at the lowest overall cost through the continuous improvement of products and services, business processes and the people involved."

- **TQM as a system**

  o Evans & Dean (2003:16) define TQM as a total system approach (not a separate area or programme) and an integral part of high-level strategy; it works horizontally and vertically across all functions and departments, involves all employees, top to bottom, and extends backward and forward to include the supply chain and the customer chain.
  o Hansson (2001:990) defines TQM as a management system in continuous change, which comprises values, techniques and tools and that the overall goal of the system is increased customer satisfaction with decreasing resources.

A common definition of TQM however is needed to prevent confusion among staff and help to resolve any arguments, which may arise from time to time within and between departments in an institution. Based on the above-mentioned analysis of TQM definitions by different authors, the following definition of TQM was developed for this research, namely:

"TQM is a *strategy* and *process* to manage institutions as an *integrated system* of principles, methods and best practices that provide a framework for institutions to strive

for excellence in everything they do under the *leadership and commitment of top management*, supported by *education and training, open communication, change management, regular self-assessment, support structures, systems and resources*, which *empower employees* through *investing* in them to improve their performance as *teams* to deliver *continuously improved* quality products and services. Through this approach a corporate TQM *culture* will be established, to *satisfy and exceed agreed internal and external customer requirements* at the lowest overall cost to increase institutional performance in all areas such as service results, financial results, marketing results, operational results, society results, customer results and employee results to obtain world-class quality."

The definition provided places leadership and top management as the starting point with customer satisfaction at the centre of the institution's purpose and focus. Defining TQM in these terms emphasises two important aspects. Firstly, it reminds managers of their institution's purpose (Deming places "constancy of purpose" at the top of his 14 points) and secondly, of the methods to follow in order to achieve customer satisfaction.

2.3.5 The essentiality and scope of Total Quality Management

According to Mani, Murugan & Rajendran (2003a:396), the impact of international competition in a sanction-free world market forces institutions to follow multidimensional survival strategies in which the potential of each available resource is fully utilised. They states that for many institutions TQM is a management strategy that firstly enhances an institutional culture embracing continuous improvement and realising the potential of personnel in order to face known problems. Secondly, TQM enhances the integration of quality technologies within each process of the institution in order to provide products and services both economically and customer-friendly. TQM as a management strategy is applied actively by more and more institutions and considered by many in order to obtain the competitive edge. The SA Air Force is one of the institutions that strive for the competitive edge. How does an institution obtain the competitive edge? By accepting the TQM philosophy, an institution's employees commit themselves to the idea that there is always a better way to utilise resources and to be more productive. TQM strongly supports this idea as a method to render better

products and services, linked to processes that have to be developed in order to maximise value for customers and other interest groups.

This statement is supported by Kanji & Moura (2003:272) who regards TQM as a strategy to improve organisational performance by firstly the commitment of all employees to satisfy the needs of customers as agreed upon at the lowest cost possible, and secondly, through the continuous improvement of products and services, organisational processes and employees involved. This means that the concept of TQM focuses firstly on customer satisfaction via the employees and the integration of quality technologies in all facets of the institution. Secondly, the concept of TQM is extended to include the economic and cost aspects of product and service rendering in a win-win situation according to which all internal and external customers' prosperity is increased. TQM usually refers to a *customer-driven management strategy* according to which institutions design, develop, produce and provide products and services that are economical and environment friendly and that will always satisfy the customer in order to obtain the competitive edge.

Selladurai (2002:615) emphasises that TQM is a philosophy and concept to manage an institution as *an integrated system and process*. Ehlers (2001:4) supports him and states that TQM is a management approach that applies to all processes. Such a process is the interaction between personnel and organisational resources to produce continuous improvement to satisfy the needs of all interest groups. Pelser (2000:5) mentions that all work within the TQM philosophy is to be regarded as a process, while the institution is to be regarded as a system (see paragraph 5.7, chapter 5) with the purpose of executing the process. However, a process is a collection of activities and tasks that requires various inputs to add value. Processes transform inputs to the set outputs by means of human resources, equipment, facilities and documentation. Processes can also be subdivided into sub-sub-systems, in the same way an institution can be subdivided into subsystems. Each subsystem is designed to execute one or more subprocesses. Outputs may be products, strategies, plans, communication, policies, services or anything else performed by persons or groups (Pelser 2000:6; Selladurai 2002:615).

Hammer & Champy (2000:35) regard TQM mainly as the process of continuous and incremental improvement of existing institutional processes, while business reengineering (rearranging the institution) involves radical redesign and changes to institutional processes, organisational structures, management systems and values, in order to achieve substantial breakthroughs with regard to the performance of the institution. The two authors define a process as: "… a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer." Dale (2003:26) and Johnson (1993a:8) emphasises the relationship between process approach and TQM by regarding the nature of TQM as a philosophy that combines all processes into an integrated system in an institution and that centralises all the integrated subsystems as a global institutional entity and links it to the employees, suppliers and customers with the purpose of working together as an operational team (team work) for common performance, improvement and to obtain results.

Following Pelser, Ehlers, Hammer & Champy, Johnson and Selladurai's approach to TQM, Lindsay & Petrick (1998:55) state that the 'Total' in TQM is applicable to (1) each process, (2) each task and (3) each person. Therefore, as already mentioned, it is applicable to all processes and not only to manufacturing and production. According to Ghobadian *et al.* (1998:3), TQM must be applied to all operational areas. Design, conception, research and development, accounting, marketing, maintenance and all other functions must be involved in quality improvement. Supporting functions such as sales, marketing, finances and logistics must also be more involved in the TQM concept. Furthermore, TQM is applicable to each task, not only those that are concerned with the manufacturing of the product. Secretaries are expected not to make typing errors, accountants are not to make wrong entries and the president of a country is not to make strategic errors. TQM also requires from each person to accept responsibility for the quality of his/her work.

TQM also demands changes (Evans & Dean 2003:29). These changes involve moving away from a situation where control is exercised over employees and their activities to an approach where employees are supported and empowered in their attempts to establish continuous improvement. By following this approach employees are forced to continuously develop new ways of doing things and to question the manner in which the institution functions. According to Pelser (2000:7) TQM is also a system that

requires each top manager to apply leadership and other management skills in each individual leadership/management position.

Pelser's point of view is supported by Cascella (2002:62) who regards TQM as that part of the total management function and strategic planning that has to direct the institution to total quality. According to Cascella (2002:67) total quality must be directed on (1) establishing cultural values with integrity, (2) unlocking the potential of personnel, (3) establishing improved structures, systems and procedures, and (4) improving all processes in order to develop the ability to fully satisfy all current and future customer needs.

Ghobadian *et al.* (1998:14) and Korunka *et al.* (2003:538) argue that TQM could effectively address much of the strategic issues faced by an institution. A more detailed examination of the reasons for the introduction of TQM revealed the following points:

- It improves efficiency by driving out waste from the system. Improving the operating procedures in line with values expounded by TQM and using its suggested tools not only drives out unnecessary costs, but also reduces time to market and delivery reliability.
- It increases revenue through the provision of more effective products or services. A focus on customer needs improves customer satisfaction, while a focus on institutional effectiveness and culture improves the image of the institution. These two combined help the institution to increase its revenue.
- It increases overall competitiveness through improved process efficiency and institutional effectiveness.
- It provides a focus for the introduction of wide-ranging cultural, institutional and procedural change.
- It provides positive effects on quality of working life (QWL) of the employees.
- It provides continuous improvement that can be related to improved goal setting, and therefore to an increase in job satisfaction.
- It provides increased teamwork that can be related both to increased job satisfaction and better institutional commitment.

- It provides stronger employee participation, which is positively related to job satisfaction.

Despite the above sound and logical reasons for embarking on a TQM programme, many institutions fail to achieve success and their programmes fail dismally. Paragraph 2.4 looks at the reasons for this ironical situation.

2.4   FACTORS THAT INFLUENCE TQM

The transformation to a TQM programme depends on the extent to which institutions successfully implement certain quality management practices. Fewer defects, reduced rework and scrap, lower inventory levels, reduced lead times, higher flexibility and increased employee satisfaction are reportedly among the benefits of a successful TQM programme (Sirota 1994:62; Rhonda, Reger, Gustafson, DeMarie & Mullane 1994:565). What is critical is a thorough understanding of the barriers that can impede an effective quality transformation. There is ample evidence that quality management systems improve institutional performance if properly implemented (Salegna & Fazel 2000:53). However, the inconsistent track record of institutions reported to have implemented TQM, has resulted in many debates about the usefulness of TQM programmes. It is argued that the majority of failures involves the process by which the TQM philosophy is implemented rather than flaws in the principles of TQM itself. There appears to be multitude reasons according to Mani, Murugan & Rajendran (2003b:606) and Salegna & Fazel (2000:54) why institutions fail in their endeavours to implement a quality management system; however, two common problems appear to be a lack of strategic planning and a lack of an appropriate culture supportive of TQM programmes.

In order to analyse TQM, it is important to understand the reasons why TQM programmes fail, which may provide insight into the importance to understand the meaning of TQM. Institutions and authors have identified a variety of reasons why TQM programmes fail and many surveys have been done on this subject (Grib 1993:31). The following is a list of obstacles, barriers, reasons and pitfalls institutions have reported when implementing TQM (Claus 1991:139; Djerdjour & Patel 2000:27; Grib 1993:31; Macdonald 1992:237; Mani, Murugan & Rajendran 2003a:396; Matherly & Lasater 1992:84; Masters 1996:53; Mellahi & Eyuboglu 2001:746; Morrison & Rahim

1993:145; Nwabueze 2001:666; Tamini & Sebastianelli 1998:57). Even though this is not an exhaustive list, it does include the obstacles that are frequently cited in today's literature, namely:

- Lack of management commitment, communication thereof and participation/motivation.
- Lack to establish a guiding framework for TQM.
- Inadequate knowledge or understanding of TQM.
- Lack of an institution-wide definition of quality.
- Quick fix approach, emphasis on short-term results.
- Lack of a formalized strategic plan for change.
- Inability to change institutional culture.
- Lack of customer focus (internal and external customers).
- Poor interinstitutional communication.
- Lack of real employee empowerment and teamwork.
- Lack of employee trust in senior management.
- Drive for short-term financial results.
- Traditional belief that TQM costs money.
- Lack of strong motivation and seeing it as the "quality people's" job, all people not really involved, underestimating the potential of people.
- Lack of time to devote to quality initiatives.
- Lack of vision, imagination and constancy of purpose.
- Lack of leadership.
- Lack of continuous training and education.
- Inappropriate conditions for implementing TQM.
- Lack of investment, resources allocation.
- Lack of employee involvement and commitment, their inability to change culture, behaviour and attitudes.
- Lack of education and training of management and employees.
- Lack or inadequacy of an improvement measurement system.
- Barriers between departments.
- View of quality programme as a quick fix.
- Perception of TQM as an optional extra and not as a necessity for development.

- Lack of cooperation between suppliers, management and customers.
- Obsolete technologies.
- Use of a generic model rather than adopting the model to the institution's culture.
- Inflexible and highly bureaucratic institutional structure.

Understanding the barriers that can hinder the success of TQM initiatives is essential for the survival of TQM programmes. The obstacles cited in this research can be used with other TQM frameworks (for example Deming's 14 points, Crosby's 14 steps, and Baldrige Award criteria, ISO 9000:2000) to help institutions conduct self-audits of their TQM culture (Tamini & Sebastianelli 1998:59). The number and diversity of the reasons why TQM fail, have important implications for the assumptions listed in paragraph 1.7 to implement TQM successfully. The answer as to which one of the above-mentioned factors causes TQM programme failure would therefore most probably be "all of them". TQM depends on the successful, combined approach to all the previously prescriptions of the gurus (see paragraph 2.3.1), underlying principles (see paragraph 2.3.3) as well as the avoidance of all the above obstacles. What is perhaps of greatest importance is the interconnectedness and interaction between the prescriptions of the gurus' various principles, i.e. their systemic nature. They should reinforce one another and form a synergistic, comprehensive strategy towards TQM.

More and more institutions are employing self-assessment models as a tool to encourage employees' empowerment and responsibility for the TQM programme. As institutions pass through the early stages of the TQM journey, they use self-assessment models to identify improvement opportunities and the plan for their achievement. To implement TQM, institutions should today select international self-assessment models to measure their TQM progress. Paragraph 2.5 offers five models and tools to perform self-assessments.

2.5   INTERNATIONAL SELF-ASSESSMENT MODELS

The roots of self-assessment can be seen in the quality movement, which started in Japan. Due to successful Japanese efforts, United States institutions began to discover the competitive advantages that TQM could bring and how the lack of a quality system could bring an end to institutions. With customers demanding quality and

competitors responding to such demands, institutions turned to TQM as the key to enhance overall performance (Vorkurka, Stading & Brazeal 2000:41). As customers' expectations increased and performance improvement initiatives were implemented, quality evolved from a product-specific focus to an institutional-wide effort, from a separate manufacturing function to a strategic business initiative. The quality function was expanding, and with that came new practices concerning continuous improvement.

There is no recipe for institutional success; however, there are a number of great TQM (excellence) models that institutions can use. These include the Deming Application Prize, first awarded in 1951; followed by the United States' Malcolm Baldrige National Quality Award (MBNQA) in 1988. The European Foundation for Quality Management (EFQM) followed in 1992 with the European Quality Award (EQA) SAEF followed in 2000 with the ISO quality management standards (Kueng 2000:68). Any institution that wants to improve its performance would be well served by selecting one of these models and conducting a self-assessment. All of these awards propagate the TQM principles through models and stress the importance of self-assessment. Balbastre & Moreno-Luzón (2003:367) define self-assessment as a comprehensive, systematic and regular review of the activities and results of an institution, contrasted with an excellence model. According to Pun (2002:761), self-assessment can make comprehensive, systematic and regular reviews of an institution's activities that ultimately result in planned improvement actions. The assessment process helps institutions identify their strengths and shortcomings and best practices where they exist. With the common direction and an increased consistency of purpose, self-assessments can provide institutions with opportunities to build greater unity in pursuit of initiatives that effect improvement (Pun 2002:761). The countries from which these awards are administrated represent a significant amount of the world's production and goods and services and, collectively, account for approximately 74% of the world's gross national product (Pycraft, Singh & Phihlela 2000:754; Vorkurka, Stading & Brazeal 2000:42). In other words, self-assessment models are a means that help analyse institutions' status quo in implementing the TQM concepts and in achieving their strategic objectives.

In their pursuit of TQM, institutions around the world began turning to quality award programmes for more than just the recognition such programmes offered (Pun

2002:760).   Institutions realized that the awards also offered models and tools for implementing a quality strategy, benchmarking best practices, performing self-assessments and, ultimately, achieving improvements (Kueng 2000:68; Vorkurka, Stading & Brazeal 2000:41).   Award criteria for successful and established programmes continue to improve, reflecting changes in the quality arena. As national and regional award criteria include updated strategic content, a trend towards a uniform, international model of institution-wide quality performance is evolving. According to Pun (2002:760) these awards, based on models of business excellence, are being used increasingly by institutions as part of the performance measurement (PM) process. Integrating PM with TQM concepts becomes an imperative in the pursuit of excellence.   According to Balbastre & Moreno-Luzón (2003:368), Kueng (2000:68) and Schoeman (2002:3), self-assessment offers various benefits, namely:

- It produces an objective identification of current strengths and areas for improvement.
- It builds a commitment to change among the key players.
- It provides a reliable, dependable and repeatable method of preparing an improvement plan.
- It helps management identify the 'vital few' areas for improvement - those activities which can have the most leverage in improving performance.
- It provides a tool that can be built into the annual planning cycle as a way of driving continuous improvement year after year.
- It provides a useful analysis of an institution's capability, which is of real interest to potential customers.
- It helps to create a vision in order to counter an institution's tendency to skip from one initiative to the next.
- Overall, self-assessment is predominantly used for strategic management and action planning, or as a basis for improvement projects.

2.5.1   Deming Prize

In 1951 the Union of Japanese Scientists and Engineers (JUSE) established the Deming Prize in Japan. It was named in honour of the American statistician and father of the worldwide quality movement, W. Edwards Deming. Today, the Deming Prize

honours private and public institutions for the successful implementation of quality control activities. Unlike other national and regional quality awards, the Deming Prize does not provide a model framework for organizing and prioritising criteria. Instead, the evaluation includes 10 equally weighted points that each applicant must address. The 10 points involve the following categories: policies, institution, information, standardization, human resources, quality assurance, maintenance, improvement, effects and future plans. Expert panel members judge performance against these points. While the Deming Prize does not provide a model per se, the categories are similar to those of the other award models. (Dale 2003:477.)

2.5.2 Malcolm Baldrige National Quality Award Criteria

The Malcolm Baldrige National Quality Award (MBNQA) was created to promote quality awareness, identify the requirements for quality excellence, and share information about successful quality strategies and benefits. Striving to define quality performance, the National Institute of Standard and Technology (NIST) developed a set of core principles for quality management, including customer-driven quality, leadership, continuous improvement and learning, employee satisfaction, design quality and prevention, planning for the future, institutional responsibility and citizenship, and results. Baldrige administrators believe these core principles form the framework for performance excellence – the basis of the award's criteria. The criteria (see figure 2.3), used to assess an applicant's performance, are divided into seven categories and provide the strategic direction for the entire system. (Collier, Goldstein, & Wilson 2002:98; Evans & Dean 2003:63-65; Dale 2003:480.) The categories are leadership, strategic planning, customer and market focus, information and analysis, human resource focus, process management and results. Information and analysis support the Baldrige model, with the remaining categories falling under a customer and market focused strategy umbrella. The model includes a leadership triad (the leadership, strategic planning, and customer and market focus categories) and a results triad (the human resources, process management and business results categories). One objective of the MBNQA is to provide a model that shows understanding and improvement of quality management by continuously improving the award criteria themselves (Rao *et al.* 1996:67; Vorkurka, Stading & Brazeal 2000:43).

Figure 2.3: The Malcolm Baldrige Model
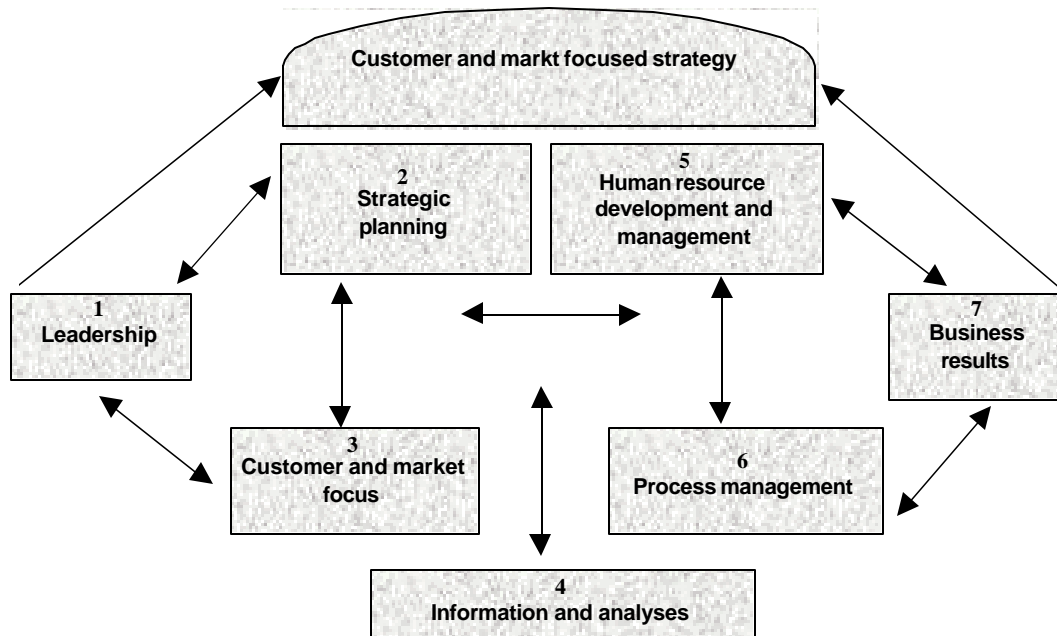
Source: Collier, Goldstein & Wilson (2002:99), Dale (2003:480) and Heaphy & Gruska (1995:6)

2.5.3 "European Foundation for Quality Management" (EFQM) model

Recognizing the importance of quality performance, 14 major institutions in Europe formed the European Foundation for Quality Management "(EFQM - see figure 2.4).

By 1991, EFQM developed the European Quality Award programme to honour outstanding European institutions. Unlike other awards, the European Quality Award is a regional programme that currently involves 16 countries in Europe (Dedhia 2001:658). The award is similar to the MBNQA, but its criteria involve enablers and results. The EFQM consists of nine criteria as shown in figure 2.4

The quality improvement enablers include the following categories: leadership, people management, policy and strategy, resources and processes. Effective implementation of the enablers impacts the result categories – people satisfaction, customer satisfaction, and impact on society and business results. The quality improvement enablers include the following categories: leadership, people management, policy and strategy, resources and processes. Effective implementation of the enablers impacts

the result categories – people satisfaction, customer satisfaction, and impact on society and business results.

Figure 2.4: EFQM-model
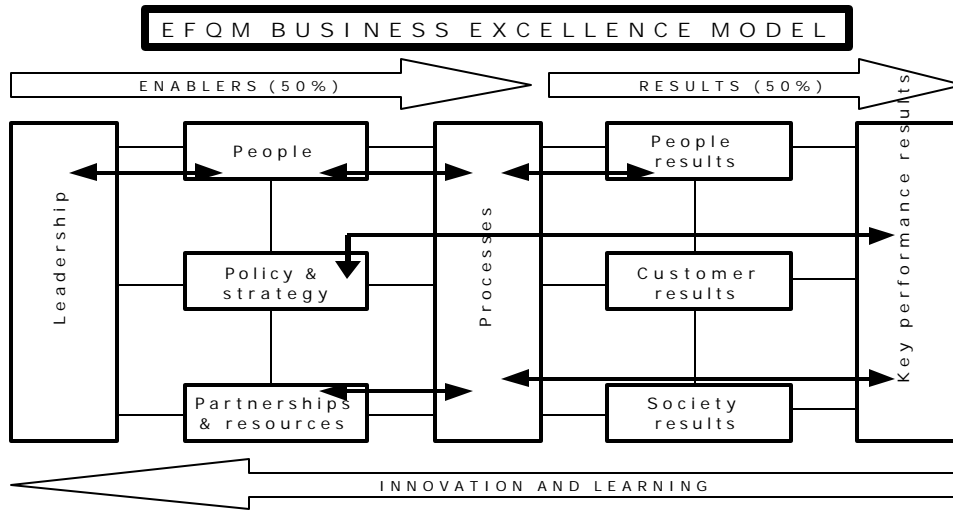
Source: Dale (2003:484), Msimang (1999:7) and Rao *et al.* (1996:93)

The assumption behind the model is that "Excellent results with respect to performance, customers, people and society are achieved through leadership driving policy and strategy, people, partnerships and resources and processes. EFQM improves its own quality model by continually analysing applicant feedback and making the necessary adjustments (Eskildsen & Dahlgaard 2000:1082; Seghezzi 2001:865; Vorkurka, Stading & Brazeal 2000:43).
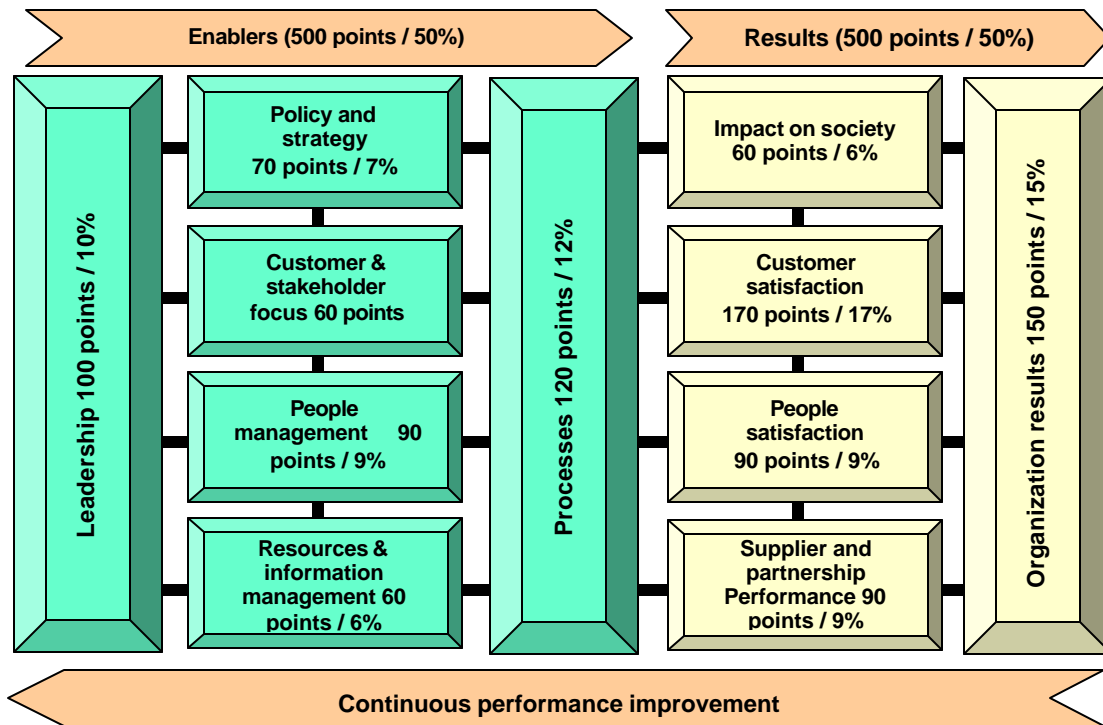
2.5.4 South African Excellence Foundation Model

After considerable research and consultation throughout South Africa and abroad, the SAEF was officially launched on 28 August 1997 and today recognised by both the Malcolm Baldridge and European Quality Award Foundations. The White Paper on the Transformation of the Public Service (*Batho Pele White Paper*) was published on 1 October 1997 by the Department of Public Service and Administration as a *framework and practical implementation strategy for the transformation of Public Service Delivery.* The "*Batho Pele White Paper*" calls on the national and provincial departments to make public service performance excellence a reality.   The SA Air Force adapted and deploy the SAEF (see figure 2.5) since the beginning of 2000 to

specififically improving the efficiency and effectiveness of the way in which services should be delivered in the SA Air Force, based on the requirements of the "*Batho Pele White Paper*".

To ensure wider acceptance, application and to indicate flexibility of the SAEF, the term "Business" has subsequently been omitted – the model is now refered to as the South African Excellence Model. The South African Excellence Award is the highest level of national recognition for performance excellence that a South African institution can receive. The major focus of the Award is on *results*, with emphasis on *customer satisfaction.* It is not given for specific products or services. An institution must have a system which ensures, through sound leadership, continuous improvement in the delivery of products and/or services and which provides the means of satisfying and responding to customers' needs.

Figure 2.5: SAEF-model

Enablers (500 points / 50%)			Results (500 points / 50%)	
Leadership 100 points / 10%	Policy and strategy 70 points / 7%	**Processes 120 points / 12%**	Impact on society 60 points / 6%	**Organization results 150 points / 15%**
	Customer & stakeholder focus 60 points		Customer satisfaction 170 points / 17%	
	People management 90 points / 9%		People satisfaction 90 points / 9%	
	Resources & information management 60 points / 6%		Supplier and partnership Performance 90 points / 9%	

Continuous performance improvement

Source: Bond (2000:11)

The award is similar to the MBNQA and EFQM, but its criteria involve enablers and results. The SAEF consists of eleven criteria as shown in figure 2.5. The quality improvement enablers include the following categories: leadership, policy and strategy,

customer and stakeholder focus, people management, resources and information management and processes. Effective implementation of the enablers impacts the result categories – impact on society, customer and stakeholder satisfaction, people satisfaction, supplier and partnership performance and institutional results.

2.5.5   Australian Quality Criteria Framework

The Australian Quality Award (see figure 2.6) provides a model certified by the Australian Quality Council, an institution recognized by the Commonwealth Government of Australia as the top institution for quality management (Evans & Dean 2003:80; Vorkurka, Stading & Brazeal 2000:43). The council was formed in 1993 with the merger of Enterprise Australia, the TQM Institute, the Australian Quality Awards Foundation and the Quality Society of Australia. Six additional institutions later joined the council, encouraging quality performance in Australian industries. The goal of the award programme is to develop and deploy a comprehensive and contemporary body of quality principles and best practices. The council measures quality performance through seven categories of criteria (see figure 2.6).

Figure 2.6: Australian Quality Criteria Framework
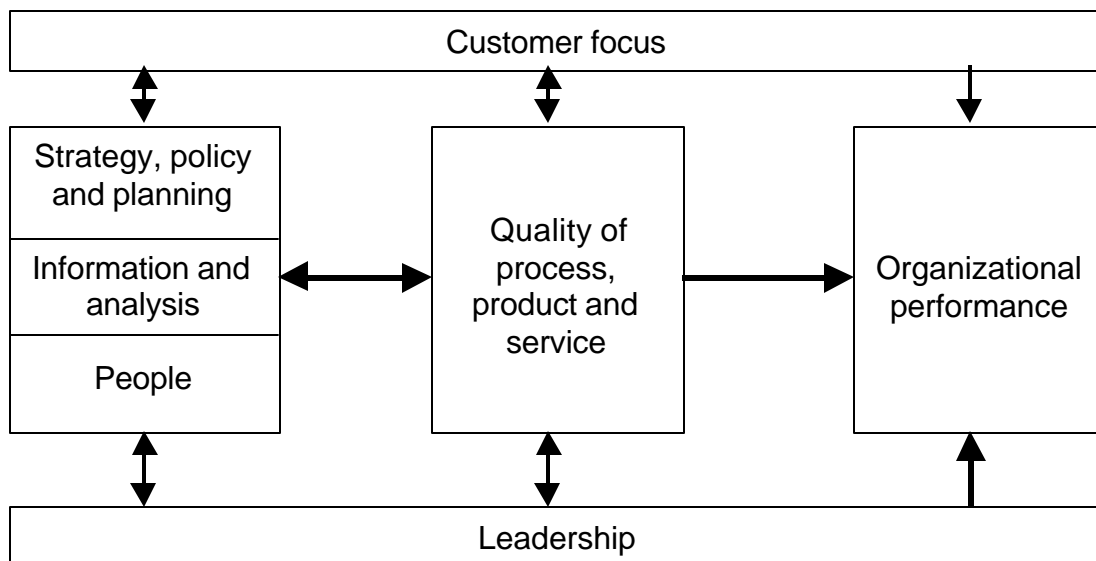
Source: Vorkurka, Stading & Brazeal (2000:43)

The people, information and analysis, and strategy, policy and planning categories have the greatest effect on the quality of processes, according to the model. The quality of the processes, in turn, affects institutional performance. Customer focus and

leadership are key elements, interacting with all other parts of the model. Although it is similar to the MBNQA, the Australian Quality Award has an increased emphasis on the significance of multicultural management.

2.5.6 Comparative analysis of the five self-assessment models

The five quality award programmes, their models and their criteria have several objectives in common. Each programme emphasizes continuous analysis and improvement and, with the exception of the Deming Prize (which is concerned with institution-wide quality control for product manufacturers), focuses on institutional quality management. Overall, the programmes exemplify customer- driven quality through streamlined processes, product design, leadership; human resource development and customer focused strategic plans. While the programmes have similar criteria, the approaches and definitions involved vary from award to award. Each award's criteria address seven quality areas – leadership, planning, customers and employees, processes, suppliers and results. Institutional results have the greatest weight for the MBNQA, customer satisfaction for the EFQM and SAEF, institutional performance for the Canadian Quality Award, and people or process for the Australian Quality Award. All of the checkpoints in the Deming Prize are equally weighted.

Results are important when implementing any quality endeavour – true TQM cannot be successful without evaluating results. As is the case in the evaluation of any improvement initiative, results are the true indicator of success. The award criteria reflect this importance, as one of the greatest commonalties found between the programmes is the weight that institutional results are given where competitive advantage is concerned. Despite changes in customer expectations, economic pressures and management approaches, quality awards continue to offer institutions comprehensive and contemporary bodies of quality principles and practices. With the national and regional quality awards being periodically reviewed and updated, further similarities between their models and criteria should result as these award models continue to evolve and mature.

As processes evolve, a strategic model for quality and institutional performance assessment is emerging. The model should not be considered a panacea for all problems, however. Competitive advantage still remains a function of individual institutional infrastructure and cannot be achieved by simply replicating a quality award model. Instead, the award programmes should be used to provide a foundation for assessing and encouraging TQM in the global marketplace.

2.6 INTERNATIONAL ORGANISATION FOR STANDARDIZATION: THE ISO 9000:2000

ISO is an acronym standing for the International Organisation for Standardization (ISO). ISO represents a system as a common denominator for what business quality entails internationally. According to Quazi, Hong & Meng (2002:53) and Gordon (2002:86), ISO 9000:2000 is a family of standards that provides a series of innovatively applicable guidelines on how to establish a quality system to manage the processes that affect its product or services. Russell (2000:657) supports this statement and mentioned that ISO is there to assist institutions implement and operate effective quality management systems (QMS) for the continuous improvement of institutional performance. The ISO 9000:2000 is a way in which an institution can "organise" itself for quality. ISO 9000:2000 describes the fundamentals of quality management systems; ISO 9001 specifies requirements for quality management systems; whilst ISO 9004 provides guidance on quality management systems. The intention from the beginning of ISO efforts in developing quality standards has been to integrate and harmonize similar existing quality management standards into a single body of international quality standards, which could apply to world trade and commerce. According to Vavra (2002:69), the ISO standard is the incorporation of customer satisfaction data as a consequence of indicating the value of processes adopted by an institution. The ISO 9000:2000 philosophies are based on (Evans & Dean 2003:58; Hradesky 1995:599; Wright 2001:58) the following:

- Global trend toward higher customer expectations regarding product and service quality.
- Technical specifications alone cannot guarantee conformance with customer requirements.

- International quality system standards complement technical specifications in order to consistently meet customer satisfaction.

- A quality system of an institution is influenced by its vision, mission and values, culture, management style, industry, product and service. Therefore, quality systems will differ from one institution to another.

- Purpose of quality standards is to provide guidelines for developing quality systems and not to standardize quality systems that are implemented to achieve continuous improvement.

According to Zuckerman (1999:35) and Dale (2002:86), the ISO 9000:2000 standards focus on continuous improvement and customer satisfaction and its emphasis is on the process approach. They continue and add that the ISO 9000:2000 standards are a communication tool that is document based. When all employees are involved in documenting their work procedures and analysing how the institution operates, they are well prepared to perform other tasks that involve gathering, sorting and culling information. They will be able to better monitor information flow throughout an institution, provide strategic analysis to aid a marketing or sales department, and, in the long run, maximize technology use (Hradesky 1995:604).

ISO 9000:2000 is intended to be relevant to all types of institutions. Whether it is manufacturing industries as diverse as electronics, steel, chemicals, or paper pulp, or service industries as diverse as medicine, insurance, banking or transportation, the ISO 9000:2000 series provides a quality system model. This set of quality system standards is applicable to all products and services. The four major areas of ISO 9000:2000 is (1) management responsibility, (2) resource management, (3) process management, and (4) measurement, analysis and improvement (Seghezzi 2001:862). The foundation of the ISO 9000:2000 which is based on 20 elements that can be incorporated in the four aforementioned major areas, are (1) management responsibility, (2) quality system, (3) contract review, (4) design control, (5) document control, (6) purchasing, (7) purchaser-supplied product, (8) product identification and tractability, (9) process control, (10) inspection and testing, (11) inspection, measuring and test equipment, (12) inspection and test status, (13) control of nonconforming product, (14) correction action, (15) handling, storage, packaging and delivery, (16)

quality records, (17) internal quality audits, (18) training, (19) servicing, and (20) statistical techniques (Dale 2002:294; Seghezzi 2001:862; Sheridan 1994:611).

According to Zuckerman (1999:36), the ISO 9000:2000 also promotes a human/technology partnership that will produce the desired competitive results. Evans & Dean (2003:59), Hooper (2001:70), Ketola & Roberts (2001b:67), Stahan (2002:28) and Zuckerman (1999:36) state that the ISO 9000:2000 is:

- An interpersonal communication tool which encourages information sharing as a key to internal auditing, working inadvertently to break down the communication barriers that exist in many institutions. It encourages employees to communicate their concerns about work processes and promote changes in a way that management can hear. Proper communication means competitive success. ISO 9000:2000 can offer a base for improving interpersonal communication on which institutions can build their operations.
- A tool because customers require it due to the fact that certification means more business and it reflects a well-organised operation.
- A team-building tool for information flow, by involving all employees-created teams for the purpose of documenting work procedures and continued auditing of the quality system they are creating.
- An information-sharing tool, sharing information within a team, department and institution, which is the heart of the ISO 9000:2000 internal auditing process. It is through information sharing that an institution gains full benefit of the ISO 9000:2000 process because it gains the knowledge needed to enhance quality and performance.
- Bases for monitoring information flow, which maintain a long-term, free flowing documentation system that will act as an internal auditor without creating bureaucracy.
- A training tool for information management skills, because the ISO 9000:2000 is a written process; it inadvertently promotes reading and writing skills.
- A basis for continued information management. Information overload is a problem many institutions face while putting an ISO 9000:2000 documentation system in place. Establishing information judgment and rules is key to a free-flowing ISO 9000:2000 documentation system. Management must set rules for managing

information, making it clear to employees what information matters most to the institution's operation.

- It directly manages the creation of value horizontally across functional departments, thus reducing quality problems that occur at department boundaries.

- It directly ties process measures of performance to customer needs and supplier performance, thereby focusing process performance on what is important to the customers.

- It is a strong model for continual improvement, with gaps between customer requirements and process performance providing an ideal place for improving efforts.

- It directly supports the systems approach to management with improvements involving everyone and every level of the institution.

The standards underwent major revision in 2000 and now include ISO 9000:2000:2000 (definitions), ISO 9001:2000 (requirements) and ISO 9004:2000 (continuous improvement) (West, Cianfrani & Tsiakals 1999:41 and West, Cianfrani & Tsiakals 2000:80).

2.7   SIX SIGMA METHODOLOGY

According to Wyper & Harrison (2000:721), Six Sigma is a logical and methodical approach to achieving disciplined quality improvements in areas critical to the success of any service-oriented institution or manufacturing business. Because this quality improvement is a prime ingredient of TQM, many institutions find that adding a Six Sigma programme to their current business system, such as the ISO 9000:2000, gives them all or almost all the elements of TQM: (current business system) + (Six Sigma) = (TQM). This process improvement methodology was developed in the 1980s in Motorola's high volume manufacturing environment, and its implementation helped the company win the 1988 Malcolm Baldrige National Quality Award. (Lucas 2002:27.) This has contributed to the creation of the general opinion that Six Sigma is applicable to both manufacturing and service institutions. In the first five years of Six Sigma implementation, Motorola achieved savings of $US2.2 billion.

According to Nave (2002:73), Six Sigma includes five steps: define, measure, analyse, improve and control (commonly known as DMAIC):

- Define – First begin by defining the process and ask who the customers are and what are their problems to identify the key characteristics important to the customer.
- Measure – Measuring the process by first categorizing the key characteristics of the process, then measurement systems are verified and data collected.
- Analyse – Once the data are collected, it must be analysed. The intent is to convert the raw data into information that provides insights into the process. These insights include identifying the fundamental and most important causes of the defects or problems.
- Improve – The fourth step is to improve the process. Solutions to the problem must then be developed, and changes are made to the process.
- Control – If the process is performing at a desired and predictable level, it is put under control. This part is the sustaining portion of the Six Sigma methodology.

Six Sigma starts with the application of statistical methods for translating information from customers into specifications for products or services being developed or produced. Six Sigma is a business strategy, and a philosophy of one working smarter not harder. It promotes and requires different behaviour and a new way of thinking facts based, statistical thinking. Six Sigma is named after the process that has six standard deviations on each side of the specification window. A major advantage of Six Sigma is that it does not have "quality" or "statistics" in its name. (Gross 2001:25.)

Treichler, Carmichael, Kusmanoff, Lewis & Berthiez (2002:34) define Six Sigma as: "A highly disciplined process that helps institutions focus on developing and delivering near-perfect products and services. The word is a statistical term that measures how far a given process deviates from perfection. The central idea behind Six Sigma is that if you can measure how many defects you have in a process, you can systematically figure out how to eliminate them and get as close to "zero defects" as possible."

Another element of Six Sigma emphasizes cooperating with suppliers of products and services to the institution, and a focus on customer satisfaction. Many institutions treat suppliers with indifference, and often with hostility. Instead of having many potential

suppliers, each competing to give the institution the cheapest price, Six Sigma emphasizes a different relationship. In an institution that implements Six Sigma, vendors are treated as business partners, with all parties working to deliver a quality product. Companies choose suppliers based on consistently delivering a quality product or service. This means that for an institution to succeed, its suppliers must implement Six Sigma as well. A key philosophy in dealing with customers is that it is they who define what quality is. Manufacturing can be considered the customer of engineering; patients can be the customers of doctors. The "products" departments produce for other departments must satisfy the quality requirements of their internal customers.

2.8   SUMMARY

A clear understanding of the concept of TQM, as it is presented in literature, forms an essential part of the initial foundation on which to build a framework for its implementation. This chapter has covered different rationalizations of the TQM concept as an internal institutional arrangement. It has also provided an overview of quality management as a discipline, based on a historical review of its development. What has become clear is that there is significant disagreement among various so-called quality gurus over the best approach that any single institution should adopt. Following this, the principles and definitions of TQM provided in literature that are relevant to the study were discussed in this chapter. Based on this, a definition of TQM that is valid for this research was formulated. TQM's prescriptions, principles and definitions are a set of powerful interventions wrapped in a highly attractive package to drive the TQM process. Barriers that can impede an effective quality transformation were analysed. Using these barriers as guidelines, the reasons to introduce TQM were analysed, including the fact that it can help institutions to improve and, in the process, serve their communities and their own employees better. Attention was paid to five internationally accepted self-assessment models developed to audit institutions worldwide. This was followed by a discussion of the ISO 9000:2000, which aims to integrate and harmonize similar existing quality management standards into a single body of international quality standards that could be applied to world trade and commerce. Finally, the Six Sigma was discussed in its role as a logical process improvement methodology to achieve TQM that is highly methodical. In the following

chapter, an attempt is made to develop a framework for the implementation of TQM. In particular, attention is paid to the most important dimensions of TQM as discussed in literature in order to integrate them into the framework.