

**Total Quality Management:
An Investigation of the link between Management Control Systems and
Organisational Learning to support Continuous Improvement**

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**A thesis submitted in fulfilment of the requirements
for the degree of
DOCTOR OF PHILOSOPHY**



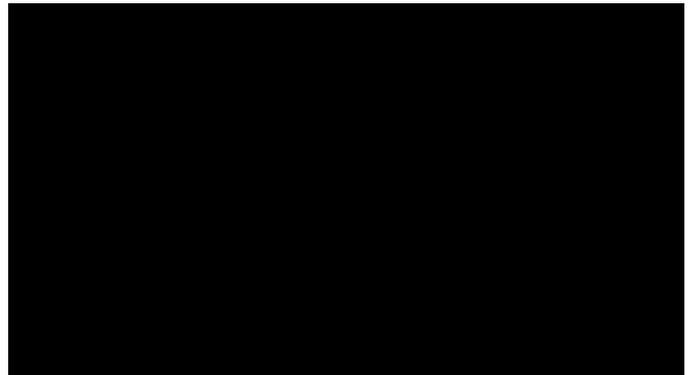
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DECLARATION

I, Judy Oliver, declare that the PhD thesis entitled Total Quality Management: An Investigation of the link between Management Control Systems and Organisational Learning to support Continuous Improvement, is no more than 100,000 words in length, exclusive of tables, figures, and appendices, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.



ABSTRACT

This research was descriptive in nature, based on a survey of quality managers and finance managers employed by organisations certified to ISO9000. An examination was undertaken of the respondents' perceptions of the role of organisation learning mechanisms and their effect, if any, on the success of the quality initiative in their organisation.

The majority of respondents note that their organisations are operating in a competitive environment whereby it is necessary to improve efficiency and customer satisfaction. The need for such improvement has led to the adoption of an operating philosophy based on continuous improvement. However, respondents have identified differing levels of satisfaction with the quality initiatives adopted by their organisations.

A discriminant analysis was undertaken to identify organisational practices that may explain the differences in outcomes identified by respondents. The focus of the analysis was on the difference between the most successful and the least successful quality programs. The findings show that respondents who rate their organisation's quality program as more successful consider that their organisations have adopted practices and procedures in line with the attributes of organisational learning mechanisms. A closer examination of the practices adopted by these organisations indicates that they have or are developing the attributes of a learning organisation. Respondents who consider their organisation's quality program has met or exceeded expectations have identified the importance of:

- key performance indicators (KPIs) linked to customer satisfaction;
- investment in employee training;
- reward systems to promote employee skill development;
- transformational management style;
- regular meetings for employees to share knowledge and experience;
- knowledge management practices that support organisational learning; and
- performance measurement systems structured as organisational learning mechanisms to support continuous improvement and learning.

The study contributes to the literature by the identification of organisational learning mechanisms employed by organisations with a more successful quality program. The findings of the study give support to the notion that there is a link between organisational learning and the success of a quality program. Practices have been identified which, if present, would maximise the benefit from the investment of the organisation's resources in quality. In particular, the findings suggest that if organisations are to gain the most satisfaction from a quality program then attention should be given to ensuring that practices and procedures are developed as organisational learning mechanisms in order to facilitate learning.

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TABLE OF ABBREVIATIONS

ANOVAS	Analysis of Variance
ANZSIC	Australian and New Zealand Standard Industry Code
COQ	Cost of Quality
JAS-ANZ	Joint Accreditation System of Australia and New Zealand
KPIs	Key Performance Indicators
OLMs	Organisational Learning Mechanisms
MAS	Management Accounting System
MCS	Management Control System
SPSS	Statistical Package for the Social Sciences
TQC	Total Quality Control
TQL	Total Quality Learning
TQM	Total Quality Management

Chapter 1 – Introduction

1.1 Background

Since the 1980's two major forces have been driving the change in business operations: technology and the market place (Brimson, 1986; Ross, 1990; Shields, 1991). Technology coupled with new management philosophies is impacting upon business activities by the introduction of new operating procedures and philosophies such as just-in-time, flexible manufacturing and total quality management (TQM). The changes in the market place are signalling the need for quality to be an essential ingredient of success. Today's customers are more discerning, less loyal and expect value for money and the long-term survival for many organisations will be dependent on their ability to satisfy their customers. Customers' demand for quality products and services at the lowest possible cost have forced business managers to focus their attention on production methods and cost management strategies in a bid to reduce costs while maintaining product/service specifications.

As a consequence of the changes in the market place, organisations are required to compete on the quality of the product, its service delivery and its cost. Quality management has become recognised as one of the key strategies for organisations to improve their productivity and international competitiveness (Czuchry et al., 1997; Spong, 1994) and thereby meet the demands of customers. Howell and Soucy (1987, p.22) quote Harold Sperlich (the then President of the Chrysler Corporation) who argued that

“...to put value into the marketplace (sic) and meet the competitive challenge, you have to run a cost effective business dedicated to constant, never ending improvement. Quality is the main doorway to improving productivity and running a tight ship...”

In response to the challenges posed by the “new” operating environment, and the need to gain a competitive advantage in the market place, organisations are adopting quality practices and embracing the philosophy of Total Quality Management (TQM).

1.2 Origins of the research

A TQM philosophy, with its focus on continuous improvement, can help an organisation cope with the rapidly changing and highly competitive world (Lee and Walden, 1998; Sambrook and Stewart, 2000), and also gain a competitive edge by improving operating performance (Chenhall, 1997; Evans and Lindsay, 1996). A quality approach to operations will assist an organisation in looking for ways to do things better and thereby lead it towards its desired performance goal; success being found in the organisation's ability to learn to discover problems and resolve them effectively (Argyris, 1999).

However, continuous improvement may require a process that disseminates local innovations throughout the larger system. Organisational learning, through organisational learning mechanisms (OLMs), can provide a tool for this diffusion. The ability to learn new sets of skills on a continuing basis represents a sustainable source of advantage for the future (Liedtka and Rosenblum, 1996). Increasingly, learning is seen as a continuous work-based activity necessary to cope with changing demands from the organisational environment (Sambrook and Stewart, 2000), and a key capability for developing and sustaining a competitive advantage (Tranfield et al., 2000).

Therefore, learning can be viewed as the foundation for improvement activities. It provides the organisation with the capabilities to take action and without which any attempts at improvement will possibly fail (Bessant and Francis, 1999; Wick and León, 1995). Learning can assist an organisation in its quest for continuous improvement by helping to avoid repeating mistakes; building sensitivity to the changing world so that the organisation can adapt better; and improving operations by understanding the weaknesses in the past and how to correct them (Lee, 1995). This implies learning will involve error, which, through reflection, should allow improved practices in the future. Learning will be seen to have occurred when an organisation performs in changed and better ways (Dodgson, 1993).

Knowledge is an important input for learning and the organisation's OLMs, such as its management control system (MCS) and its knowledge management practices, are important in the acquisition (and retrieval), dissemination and storage of knowledge. For example, the MCS sets a framework for an organisation's information seeking, accountability and feedback designed to ensure that it adapts to changes in its environment (Kloot, 1997; Lowe, 1971). To support an organisation's adaptation to its environment the MCS should be adaptable to revision whenever an organisation switches its operating strategy (Banker et al., 1993). Metrics will be needed to help ground the vision in reality. Therefore, it will be critical for the MCS to be designed to support and put into practice the operating philosophies of continuous improvement and organisational learning, and thereby act as an organisational learning mechanism. The knowledge management practices within an organisation will determine the information flow from its acquisition, interpretation to dissemination. Such practices will also influence the development of the organisation memory. An organisation's capability to learn will rely on its ability to record organisational experience and, when needed, retrieve these organisational experiences. Knowledge is seen as a strategic asset of the organisation, which will be the key to competitive viability and growth of the learning organisation

The following comment by Ahmed et al. (1999, p.426) provides a good summary to the above discussion

"...becoming a learning and continuously improving company demands more than debate and resources; it requires an organisational culture that constantly guides organisational members to strive for continuous improvement and a climate that is conducive to learning..."

1.3 Motivation for the research

The idea for this research stemmed from the issues discussed in Section 1.1 and raised the questions of how learning is promoted, and how the management control system is configured to support learning in organisations with a quality focus. These questions were the catalyst for this study and sparked an interest in wanting to understand more

about organisations with a successful quality program. Specifically, the study is motivated by the following factors.

- A desire to understand how an organisation can successfully embed quality within the organisation. Previous studies have identified 60% - 80% of attempted TQM implementations have failed to meet their objectives (Lau and Anderson, 1998). This raised an interest in the identification of business practices favoured by organisations with a successful quality program. However, this raises the question of how is success measured? For the purposes of this study success will be measured by respondents' perceptions as to whether the quality program in their organisation has achieved the desired outcomes.
- To add to the academic body of literature on quality practices. A criticism of the quality literature is that it is practitioner-orientated, consultancy-driven and not built on the basis of academic research. Silvestro (1998) argues for the teachings of quality to move from being evangelical, based upon the teaching of TQM "gurus", to being provided in a rigorous academic approach.
- To make a contribution in closing the identified gaps in the literature in relation to quality. For example, there is considerable interest among managers and academics in identifying "best or effective" quality management practices (Hackman and Wageman, 1995; Hendricks and Singhal, 1997). Saraph et al. (1989) argue that decision-makers need to know the status of the organisational controllables, that is, the levers of quality management that they can manipulate to make organisation-wide improvements in quality performance. They state that although many organisations collect quality data, such as defect rates, error rates, these are usually measures of quality performance and not measures of organisation-wide quality management. Hackman and Wageman (1995) call for researchers to do a better job illuminating the mechanisms through which quality practices realise their effects

Also, there is growing recognition in the management accounting literature (Hoque and Alam, 1999) that when an organisation adopts a new management philosophy, such as total quality management, it may lead to changes in the firm's internal accounting and control mechanisms. Hoque and Alam (1999) identify that there has been little attention to date to the understanding of how and to what extent management accounting systems can satisfy management's needs for information in a quality orientated culture. Otley (1999) notes that there is a dearth of information available concerning what is current practice in business, and what is the impact of different configurations of controls.

- To explore whether organisational learning is a key determinant of quality success. The concept of learning, both individual and organisational, as a vehicle for assisting organisations to deal with the competitive environment has become increasingly prominent in the management and organisational literature.

1.4 Aim of the research

The aim of the research is to examine organisational learning in quality-focused organisations in order to identify its contribution to the success of the quality initiatives. The adoption of a quality philosophy can be a catalyst for change and organisational learning, operationalised through organisational learning mechanisms (OLMs), can guide the change process.

This will involve an assessment of the form and extent of OLMs, which are the organisation's structural and procedural arrangements. Attention will be given to how quality-focused organisations design and use the performance measurement system, one of the many control systems available to organisations, to encourage learning and thereby support continuous improvement. To date this link appears not to have been investigated empirically. Also the knowledge management practices will be examined to understand more about how an organisation develops its memory and thereby identify the attributes that give support to learning within the organisation.

The specific aims of the research are:

- to identify the motivation for organisations to adopt a quality approach to business activities (*shown in Section 9.4*);
- to examine the form and extent of organisational learning mechanisms adopted by organisations(*shown in Section 9.5*);
- to determine whether organisations have embedded learning within the performance measurement system (*shown in Section 9.5.2.3*);
- to identify the attributes of the knowledge management practices in relation to the acquisition and sharing of information (*shown in Section 9.5.2.1*); and
- to provide an inventory of attributes of organisations with a successful quality program (*shown in Section 9.7*),

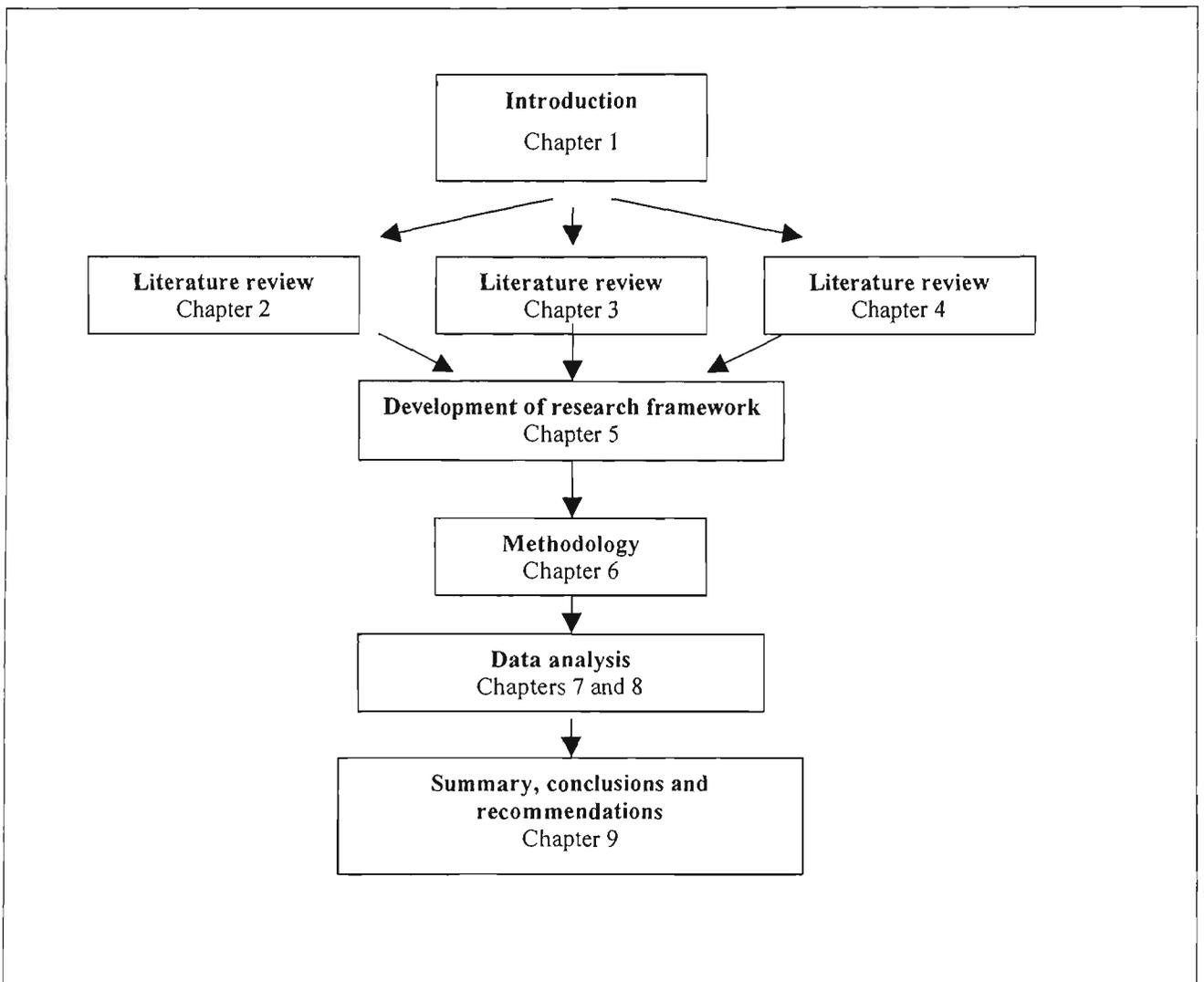
The proposition put forth is that an organisation having a quality philosophy of continuous improvement will be more likely to raise its competitive position by improving either product or service performance. For this competitive advantage to be both realised and sustained the organisation must embed continuous improvement into its operations. Organisational learning will be the link that will enable the organisation to both sustain and improve its competitive position. The organisational memory, seen via the knowledge management practices, will be important to ensure employees have the information available to undertake their work activities. Given that the performance measurement system, is used by organisations both to monitor performance and communicate management's objectives then it will be important that the system supports organisational learning.

Organisational learning embedded within the organisation's performance measurement system should enhance the ability of the organisation to adapt to changes in its environment and encourage continuous improvement in organisational activities.

1.5 Overview of the study

The thesis consists of nine chapters (including this introductory chapter); an overview of the remaining chapters follow, and a concept map summarising the thesis structure is shown in Figure 1.1.

Figure 1.1 Concept map summarising thesis structure



Chapter 2 – Literature review focusing on quality – in this chapter the discussion will explore the motivation of organisations to adopt such an operating philosophy.

Chapter 3 – Literature review focusing on the management control system – in this chapter there is discussion about how an organisation is able to monitor the success or

otherwise of the quality program. The focus is on the Management Control System, which is an important tool to monitor performance and communicate the organisation's objectives to all employees. The MCS as a behavioural device will also be explored.

Chapter 4 – Literature review focus on organisational learning – this chapter provides a discussion of the literature in relation to organisational learning. The discussion will focus on the facilitating factors to enhance learning.

Chapter 5 - Development of research framework – in this chapter a synthesis of Chapters 2 –4 is given to develop the research questions that will guide the study.

Chapter 6 - Research methodology – a discussion of the research design to explore the research questions developed in Chapter 5 is given in this chapter. Discussion will focus on sample selection, the data collection method, questionnaire development and the statistical tests to be used in the data analysis phase.

Chapter 7 – Focus on responses to survey - a detailed analysis of the data collected from the questionnaires is given in this chapter.

Chapter 8 – Further analysis of findings - in this chapter further analysis of the findings will be investigated to identify variables that discriminate between the more successful and least successful organisations in relation to their quality approach to operations.

Chapter 9 – Summary, Conclusions and Recommendations – in this chapter conclusions on the study will be given. There will be an overview of the research framework, a summary of the findings in relation to each research question, and a summary of the outcomes.

1.6 Summary

In this chapter an overview of the study has been provided. It has given the background to and the aims of the research. The motivation for the study is to understand more about

organisational practices to support quality management. In particular, one of the hoped for outcomes of the study is to identify how organisational learning supports a successful quality outcome for an organisation. In order to investigate organisational learning, the form and extent of OLMs will be examined to identify the support given to continuous improvement. The next chapter will begin the literature review and will focus on an examination of quality.

Chapter 2 – Quality Management

“...Continuous improvement...allows business to see beyond the present and create the future...” Ahmed et al. (1999, p.426)

In this chapter the literature relating to quality management will be examined to understand the motivation for an organisation to adopt such an operating philosophy and to understand more about its effect on business operations.

2.1 Introduction

There is no universally accepted definition of quality and, as such an organisation will need to develop its own working definition (Reeves and Bednar, 1994). The definition will evolve from an organisation establishing its quality philosophy, which will find its origin in the organisation’s vision (Chapman et al., 1997; Groth, 1995; Lau and Anderson, 1998; Sinclair and Zairi, 1995a; Srinidhi, 1998). The meaning of quality will be peculiar to individual organisations with different definitions of quality appropriate under different circumstances (Reeves and Bednar, 1994).

In the literature quality has been defined as fitness for purpose (Juran and Gryna, 1970); conformance to requirements (Crosby, 1980); and uniformity about a correct target (Deming, 1986). Such definitions reflect the early focus on quality inspection and control and do not capture the more holistic approach. An understanding of this broader view of quality is found by referring to the work of Egan (1993) and Hames (1994). Egan (1993, p.17) suggests that quality is:

“...everything in the company or institution: strategy, customers’ requirements, work design and flow, products and services, customer service, organisational structure, human resource management systems, coaching and counseling, system-wide leadership, and so on...”

Egan's definition implies that quality permeates every aspect of business operations. Hames (1994, p.138) refers to the "holistic consciousness of quality" and states

"...quality of the outcome of any organisation is essentially a function of the quality of the whole organisation itself, in addition to the quality of the relationships it has with the environment in which it operates..."

Hames' definition points out that quality has gone beyond the organisation itself and is also seen in how the organisation interacts with its external environment and illustrates the "total" quality system.

The different approaches to quality are reflected in the terminology used. During the evolution of quality the terminology used to describe the quality movement changed without any clear declaration. At some point the term total quality management (TQM) began to be used instead of total quality control or just quality control (Dahlgard, 1999). Today TQM is the term generally used to describe quality practices within organisations.

The term TQM has been given many definitions, including (emphasis added):

*"...a management philosophy that focuses on fulfilling **customer expectations** by providing quality services and products as a result of **continuous improvement** to the organisational processes..."* (Ehrenberg and Stupak, 1994, p80).

*"...the unrelenting pursuit of **continuous improvement** which is realised by accessing and utilizing the **concerted knowledge and experience of managers and employees** at all levels..."* (Kossoff, 1993, p.131)

*"...a philosophy and a set of concepts and methods employed throughout an organisation **by individuals in concert** with a view toward **continually improving** the product or service **provided to customers...**"* (Melan, 1993, p.8)

The above definitions highlight TQM as a management approach characterised by three core principles: customer focus; continuous improvement; and employee involvement. Such a view is supported by other authors (Dean and Bowen, 1994; Evans and Lindsay, 1996; Sitkin et al., 1994).

TQM is also viewed as having a “soft side” with a focus on more qualitative aspects such as greater customer orientation, employee involvement, team-work and generally better management of employees within the company (Yong and Wilkinson, 2001). This view of TQM places more significance on education, training and communication, with the management of the organisation culture geared towards achieving continuous improvement by changing people’s mindset rather than by changing production processes.

Therefore, TQM can be viewed as an operating philosophy, which influences the mindset of the organisation, and is seen to be operationalised by continuous improvement of the business activities. Instrumental to this is the knowledge and experience of employees working together to achieve the desired outcomes.

The remainder of the chapter is set out as follows. First, the evolution of quality from its initial focus on quality inspection to the more all-embracing concept of TQM is discussed. Barriers that may restrict organisations moving through the different stages are analysed. Next, a more detailed discussion is provided on continuous improvement. This is then followed by a look at the relationship between quality and quality certification. Next, factors motivating a quality approach to operations are given, and this is then followed by a discussion on the importance of linking quality to the strategic plan. Finally, factors that may lead to the failure of a quality program are discussed.

2.2 Evolution of quality management

In this section a discussion is provided of how an organisation may develop its quality “mindset”. The path an organisation may take to achieve this change in thinking behind business operations is also explored. The work of Garvin (1988) provides a starting point

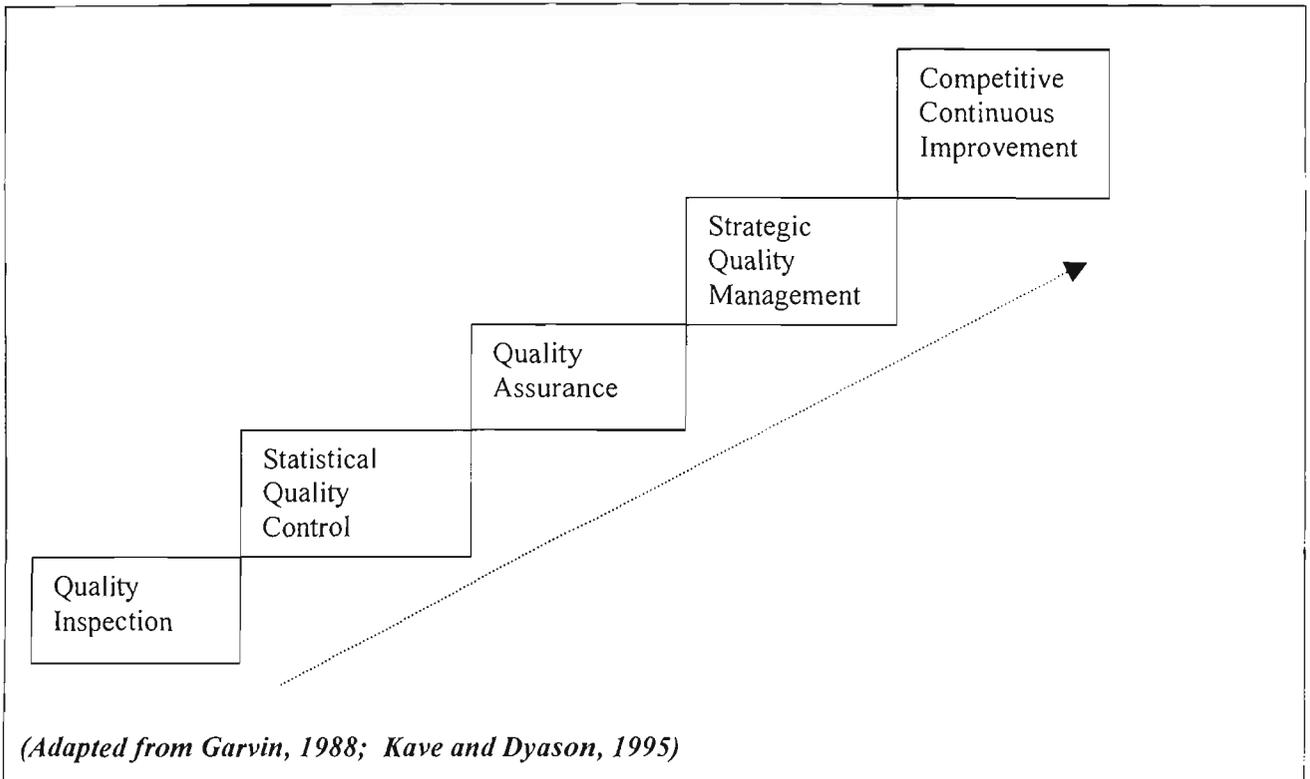
to understand the path a business takes in its quality endeavours. He identified four stages in quality evolution: (1) inspection; (2) statistical quality control; (3) quality assurance; and (4) strategic quality management. Although Garvin's model has been widely accepted it is not without its critics, especially in relation to its technical focus and for ignoring the "soft-side" of TQM in relation to such aspects as general management viewpoints, learning aspects, sociological viewpoints or human relations aspects (Dahlgaard, 1999).

Garvin's model was expanded to identify a fifth major quality era, competitive continuous improvement, which enabled businesses to meet the rapidly changing business environment (Kaye and Dyason, 1995). This has enabled the focus of quality to shift from internal operations to one of a competitive opportunity, to promote a pro-active approach to customers and market needs. As an organisation becomes more mature in its TQM activities, there will be modifications to the infrastructure supporting quality improvement activities which is demonstrated by greater empowerment of the work force to control and own continuous improvement activities (Cook and Dale, 1995). However, it is necessary to understand how an organisation becomes mature in its quality endeavours, and what changes need to be made in the organisation to shift from quality control to TQM.

This can be understood by an examination of the factors that have moved quality through each stage in the quality evolution. The management factor and the focus on all business activities can be seen to have developed as the concept of control moved from inspection to maintenance, and to the notion of building quality into the product (Dahlgaard, 1999). The control concept moved from "backward looking" to "forward looking", from a defensive approach to an offensive approach, and from focusing on the results only to focusing on the processes and interrelations. Dahlgaard (1999) suggests that this deeper understanding of quality enabled the quality movement to spread from the manufacturing sector to the service sector where the issues for quality activities are mostly intangible factors.

Figure 2.1 illustrates the different stages of the quality evolution in an organisation and shows that the quality approach adopted by individual organisations will be in line with the stage of the quality development within the organisation.

Figure 2.1 – Evolution of Quality



Despite the focus of quality changing, some businesses are unable to move through the various stages in their quality initiatives. Kaye and Dyason (1995) examined 13 organisations that had reached different stages in their quality initiative as measured against Garvin's four-stage model and the fifth stage of competitive continuous improvement. Their findings provide an interesting insight into the factors, which were preventing the organisations moving to the next stage in their quality development. The majority of organisations were found not to have the capability for continuous improvement as they were locked into the early quality eras of inspection and quality assurance. A summary of Kaye and Dyason's (1995) findings follow:

Barriers that stopped organisations moving from *inspection to detection* were:

- lack of top management commitment despite management initiating the quality program;
- lack of focus on strategic goals;
- errors were recorded but no preventative action taken;
- minimal staff training;
- confusion about who the customer was; and
- quality not being seen as important to business results.

The factors that prevented companies from moving from the era of *detection to prevention* were:

- ownership and responsibility for quality improvement had not been “cascaded” throughout the organisation – the commitment had stayed with top management;
- no strategic performance measurement mechanisms – performance measurement focused on financial matters only with no focus on quality dimensions;
- lack of communication between functions;
- line managers resistant to change and lacking in the necessary skills to develop staff; and
- business results were not reviewed against objectives.

The factors that impacted upon organisations moving from the era of *prevention to strategic quality management* were:

- failure to bring about the change in culture and management style necessary to move from an internal to an external focus;
- strategic orientation short-term focused – quality improvement centred on a project-by-project approach;
- staff not empowered to make decisions;
- human resource management strategies not integrated with quality improvement or strategic goals;
- little or no performance monitoring at a strategic level; and

- little use of customer feedback.

For companies identified as being *beyond the strategic quality management* era, the companies were able to demonstrate:

- horizontal and vertical integration of continuous improvement activities into the whole of the organisation;
- mechanisms for continuous improvement (internally) and competitive continuous improvement (externally);
- continuous improvement viewed as vital to survival; and
- a view that continuous improvement begins and ends with the customer.

A review of Kaye and Dyason's (1995) findings suggests organisations that were able to move to the fifth quality stage of *competitive continuous improvement* exhibited the following characteristics:

- leadership - demonstrated ongoing commitment of all management;
- strategic quality orientation - review of critical success factors and the ability to change strategy;
- people management – staff development system linked to business planning;
- partnership with suppliers;
- customer perception important when making changes; and
- ability to learn and adapt.

In the following section a closer look will be given to continuous improvement and its effect on business operations.

2.2.1 Continuous improvement

Continuous improvement has been referred to as the fifth quality era. It is deemed essential for organisations in achieving flexibility, responsiveness and the ability to adapt quickly to changes within the environment (Kaye and Anderson, 1999; Lillrank et al.,

2001), and is associated with management practices focused on incremental and continual change (Berling, 2000).

The conceptual basis for continuous improvement stems from the Deming Cycle of “plan-do-check-act” (Deming, 1986). Within a continuous improvement framework change occurs in a disciplined manner, with a repeating cycle of planning, implementation, stabilisation and evaluation (Jha et al., 1996). This cycle does not imply unremitting change, but a period of stabilisation of the system at its new level after the planned change has taken place. However, this period of stabilisation does not imply that other improvement initiatives are not taking place in other areas of the organisation.

Jha et al.’s (1996) review of the continuous improvement literature provides some insight into what is, as well as what is not, continuous improvement. A continuous improvement system, capable of change as the environment requires, is contrasted with a “standard maintaining” approach whereby the organisation is relatively static. Continuous improvement is not considered to be a situation where the outcome is for a radical or quantum leap change. Such changes are related to less frequent and more encompassing changes than continuous improvement. Jha et al. (1996, p.27) conclude that

“...continuous improvement is based on employee participation, usually at all levels across the organisation, and relies on the experience and know-how of workers assisted, rather than directed by staff experts. This knowledge is difficult for competitors to duplicate because it is often very widely diffused, consisting of a great many custom-tailored and tightly linked elements; thus it creates a sustainable advantage for the continuous improvement organisation...”

and they consider the alternatives to continuous improvement

“...rely on fewer, larger and often highly visible changes, which are not diffused as widely through the organisation. Such changes are typically embodied in a few very capable specialists, high quality product designs and state-of-the-art automation purchased from equipment suppliers. They are relatively easier to copy...”

Bessant and Francis (1999, p.1106) also view continuous improvement to be an organisation-wide process of focused and sustained incremental innovation and identify its importance to the long-term success of the organisation as follows:

“...strategic advantage...from a collection of attributes which are built up over time in highly organisation-specific fashion and which provide the basis for achieving and maintaining a competitive edge in an uncertain and rapidly changing environment...since behaviour patterns take time to learn and institutionalize...hard to copy or transfer...”

Jha et al.'s (1996) statement of what is, and what is not, continuous improvement highlights the debate in the literature as to whether or not there is a link between continuous improvement and innovation or whether they conflict with one another. Continuous improvement as mentioned earlier is built on small, gradual, though frequent, improvements over a long term, with many of the improvements due to the know-how and experience of workers. On the other hand, innovation has been described as large, short-term, and radical changes in products or processes brought about by investment in equipment or technology (Evans and Lindsay, 1996; Lorente et al., 1999).

The pursuit of twin initiatives has been questioned by Lorente et al. (1999, p.16) who suggest

“... if a company is trying to convince its employees of the benefits of continuous improvement and, at the same time, decide to reorganise a process resulting in redundancies, then it is highly likely that the commitment to continuous improvement will disappear...”

To counter this apparent conflict between the two concepts Lorente et al. (1999) suggest that reengineering should be built on a TQM foundation of continuous improvement. Another approach suggested by Krishnan et al. (1993) is for the organisation to defer quality management initiatives until the major changes brought about by strategic repositioning have been achieved.

Others suggest that continuous improvement is not enough to sustain a TQM organisation's competitive position relative to the rate of technological change and argue that a more "radical" change initiative is required (Dooley and O'Sullivan, 1999). Organisational change needs to be an "explosive mix of dramatic change...which builds on existing change processing mechanisms, which are incremental in nature" (Parker, 1993). As such "an organisation would never reach a steady state but instead would launch new change initiatives while existing initiatives are still ongoing" (Dooley and O'Sullivan 1999, p. 485)

Cao et al. (2000, p187) provide an interesting analysis of this issue. They suggest that "often the distinction between incremental and radical change is contingent on the opinions of the participants". Incremental change can develop and expand into what are seen to be radical implications for the organisation. With hindsight, such incremental change will sometimes appear as transformation rather than adaptation. Cao et al. (2000) conclude that the differentiation between incremental and radical change is often more difficult to discern than might be expected.

None the less the relationship between continuous improvement and innovation is still unclear and open for debate. In the next section the evolution of continuous improvement is further explored.

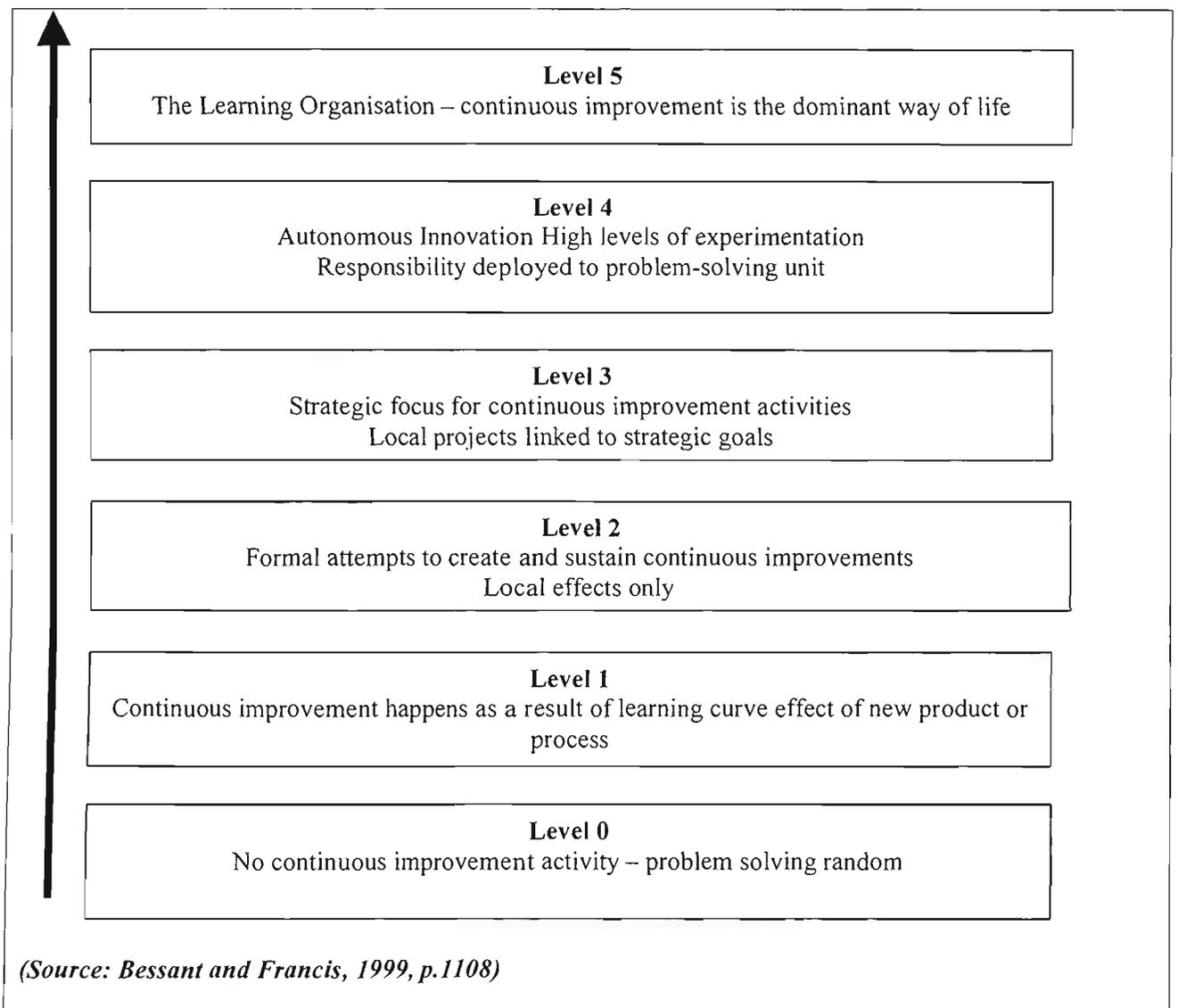
2.2.2 Evolution of continuous improvement

Bessant and Francis (1999) developed "The Evolution of Continuous Improvement" model (Figure 2.2) to illustrate the path an organisation may take in its attainment of continuous improvement. This work provides an extension of Kaye and Dyason's (1995) work as it shows what is required to operationalise continuous improvement. Reference to the model highlights that continuous improvement is a learning process moving from a specific area of the organisation to an organisation-wide effort; and from operational in focus to strategic in nature.

The transition through each stage is achieved by considerable learning and fine-tuning of mechanisms that are likely to include (Bessant and Francis, 1999, p.1107):

- training in basic problem finding and solving process;
- training in basic continuous improvement tools and techniques;
- setting up relevant vehicles, e.g., quality circles to enact continuous improvement;
- development of an idea management system to receive and respond to ideas; and
- development of an appropriate reward and recognition system.

Figure 2.2 – Evolution of Continuous Improvement



Bessant and Francis (1999) suggest that continuous improvement is dependent upon the nurturing and encouragement of employees by ensuring they are trained to undertake their duties and encouraged to think about better ways to undertake their tasks.

Kaye and Anderson's (1999) review of the literature provides a further insight into the key criteria that need to be in place for an organisation to achieve and, more importantly, to sustain continuous improvement. Table 2.1 provides a summary of the key criteria identified to sustain continuous improvement. The criteria are grouped under the characteristics Kaye and Dyason (1995) suggest organisations need in order to move to the fifth quality dimension of competitive continuous improvement. These criteria are also supported in the work of other authors: Jha et al. (1996), who also provide an in-depth discussion on continuous improvement; Bessant and Caffyn (1997); Melan (1998); and Dahlgaard (1999).

Table 2.1 – Key criteria to sustain continuous improvement

<i>Leadership</i>
<ul style="list-style-type: none"> • Senior management commitment and involvement • Leadership and active commitment to continuous improvement (demonstrated by management at all levels)
<i>Strategic quality orientation</i>
<ul style="list-style-type: none"> • Focusing on critical processes • Integrating continuous improvement activities into the strategic goals across the whole organisation, across boundaries and at all levels
<i>People Management</i>
<ul style="list-style-type: none"> • Focusing on people
<i>Customer Focus</i>
<ul style="list-style-type: none"> • Focusing on the needs of the customer • Establishing a culture for continuous improvement and encouraging high involvement
<i>Ability to learn and adapt</i>
<ul style="list-style-type: none"> • Learning from continuous improvement results, the automatic capturing and sharing of learning • Standardizing achievements in a documented quality management system • Establishing measurement and feedback system

Adapted from Kaye and Anderson (1999)

Analysis of the key criteria suggests that to achieve success continuous improvement must begin with management commitment; a management that provides strong leadership to encourage the type of corporate culture that supports the change necessary for continuous improvement (Czuchry et al., 1997). However, the success of continuous improvement efforts can be blocked by an incompatible organisational culture, such as (Waldman, 1994, p34):

- pervasive values and norms orientated towards short-term production and quick fixes as opposed to systematic problem solving;
- segmentation of activities and the pursuit of departmental goals as opposed to unified efforts; and
- hoarding of information for purposes of power building as opposed to sharing information where it is needed to solve problems and empower individuals.

The above discussion shows that continuous improvement cannot succeed without the ongoing commitment of management and employees. However, what motivates their participation in the endeavour? Berling (2000) undertook a study to identify the factors that motivate employees and management to participate in continuous improvement activities. His motivating factors are outlined in Table 2.2.

Table 2.2 - Factors motivating management and worker participation in continuous improvement efforts

Panel A: Motivating Factors – Management
<ul style="list-style-type: none"> • To improve employee commitment • To improve co-operation and communication • To improve delivery reliability • To increase productivity • To increase employee skills • To enable cost reduction • To improve manufacturing quality (conformance)
Panel B: Motivating Factors – Workers
<ul style="list-style-type: none"> • Job security in a competitive company • Monetary rewards (e.g. , suggestion system, bonuses) • Participation and empowerment • To facilitate the work itself • Better working conditions and safety • Job satisfaction and making improvements

Adapted from Berling (2000)

Table 2.2 highlights that the main reasons for management engaging in continuous improvement activities are to improve operational performance indicators and organisational capabilities. For workers, the motivation is more individually directed: job security, financial rewards and a safe and satisfying work environment.

Effective communication will enable management to stop any active resistance to the change process by eliminating employee fears (Dervitsiotis, 1998a). To enable TQM to be used to gain a competitive advantage employees must have access to key information and be empowered to adapt their work processes to environmental changes (Douglas and Judge, 2001). Factors that affect the safety, health, well being, and morale of employees influence employee motivation and are therefore a critical part of the continuous improvement objectives and activities of the organisation (Evans and Lindsay, 1996).

2.2.3 Quality certification

In this section a brief discussion of ISO9000 certification and its relationship to TQM is provided. ISO9000 series certification for quality management is a visible sign in the market place of an organisation's commitment to quality management processes (refer to Ho (1995) for a detailed discussion). ISO9000 certification indicates that an organisation has passed an audit, conducted by an independent assessor, of its procedures and practices against the quality standards. The standards prescribe documentation for all processes affecting quality and suggest that compliance through auditing leads to continuous improvement. However, the standards do not specify any measure of quality performance, as specific product quality levels are set by the organisation. The standards only require that an organisation has verifiable processes in place to ensure that it consistently produces what it says it will produce, thus providing confidence to customers and management that certain principles of good management are followed (Evans and Lindsay, 1996).

Organisations are motivated to seek ISO certification for a number of reasons such as: customer requirement; basic business requirement; a useful marketing or public relations

tool; to improve the company's internal processes; and a desire to improve the competitive edge of the company (Evans and Lindsay, 1996).

In a study of Australian companies Jones et al. (1997) found the benefits of certification did not increase with time and that a large number of certified companies are not experiencing meaningful benefits from the process. Organisations that are more likely to realise the benefits of quality certification are ones where there is a commitment to quality by those within the organisation. Jones et al. (1997) concluded that organisations should not be "forced" to obtain certification but rather willingly embrace it due to the belief that it will assist in improving the performance of the organisation. They consider a pre-requisite for a successful ISO9000 initiative is for organisations to commit resources to education in order to develop the generic quality mindset. The work of Hill et al. (2001) would support this assertion as they concluded that ISO9000 could be a foundation for TQM only if there is "executive intent and visionary leadership".

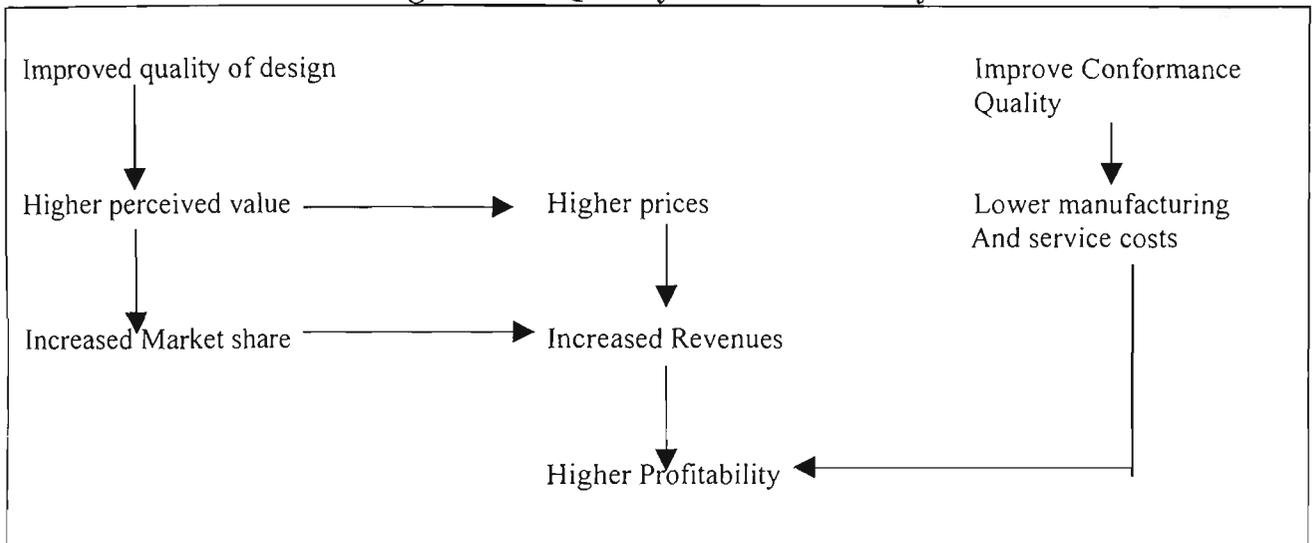
Evans and Lindsay (1996) consider that organisations in the early stages of a formal quality program will benefit from the standards, as they will enforce the discipline of control that is necessary before any serious pursuit of continuous improvement. They suggest that the periodic audits conducted to maintain the certification reinforce the stated quality system and from this may become ingrained in the organisation. Dale and Oakland (1994) also consider ISO9000 certification to be a foundation for TQM.

2.3 Factors motivating a quality philosophy

Quality deals with a collective ethic within the organisation and is not simply a measure of deviation from the norm of customer expectations of product or service specifications. Quality dictates the organisation's operating philosophy and is a key strategy by which organisations can improve productivity and international competitiveness (Brown et al., 1999). However, what is the motivation for an organisation to adopt a quality philosophy? Ultimately, the motive must be financial. Any stated motivation can be related back to the need either to maintain or to increase profits (or in the case of a non-profit organisation to maximise the use of resources to deliver the services).

Profits can be affected either by an increase in operating revenue, via increased sales levels, or by a decrease in operating expenses via more cost efficient operations. Figure 2.3 gives an example of how this can be achieved by showing the net effect of improved quality of design and conformance on increased profits.

Figure 2.3 - Quality and Profitability



Source: Evans and Lindsay 1996, p. 19

Evans and Lindsay (1996) suggest that design improvements in such aspects as performance, features and reliability will differentiate the product from its competitors, improve a firm's quality reputation, and improve the perceived value of the product. The perceived higher value should allow the company to command higher prices and also capture a greater market share. The increased revenues then offset the costs of improving design. Conformance to requirements throughout the organisation should lead to lower manufacturing and service costs through savings in rework, scrap and warranty expenses.

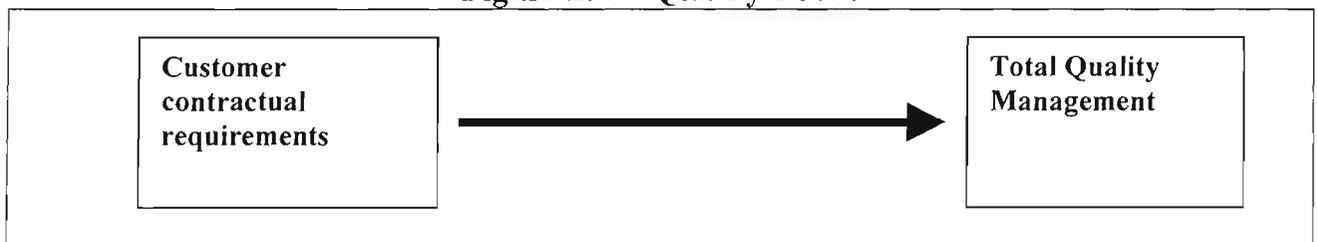
Empirical findings have suggested that profit margins increase significantly for organisations after the adoption of TQM (Lemak and Reed, 1997). Obviously, the actions to improve or maintain profits require a complex set of actions by the organisation that will involve process improvement, customer satisfaction, committed employees, the system's capacity for continued existence, and benefits to others contributing to the

organisation (Pruett and Thomas, 1996). However, to achieve the competitive edge over competitors, management of organisations must direct their attention to all aspects of the business activities and focus both on the “technical side” and the “soft side” of quality management.

Some of the quality outcomes identified in the literature include: higher standards of performance to improve the quality of service (Leonard, 1997); organisational effectiveness and competitiveness (Schroeder and Robinson, 1991); enhanced customer satisfaction (Kaye and Anderson, 1999); cost reduction (Berling, 2000); flexibility, and reduced cycle times (Evans and Lindsay, 1996); business survival; the ability to adapt to changes in the environment; to maintain market share; and to gain a competitive edge by improving operating performance with the view to increasing profitability (Chenhall, 1997; Evans and Lindsay, 1996). All identified outcomes can be linked back to management’s need to improve or to sustain the organisation’s financial position.

The discussion above illustrates that the decision to adopt a quality approach to operations is influenced by a number of factors. Quality focused organisations can be represented on a continuum with one extreme being organisations which have adopted a quality focus simply to satisfy customer contractual requirements and at the other extreme organisations that consider quality is at the very essence of the organisation and influences all its activities. This is depicted in Figure 2.4.

Figure 2.4 – Quality Focus



2.4 Importance of strategic planning

As outlined in Table 2.2 one of the key criteria for success is to have the continuous improvement activities integrated with the strategic goals of the organisation. As quality management is directed towards enabling change and continuous improvement (Butz,

1995; Ehrenberg and Stupak, 1994), it must be driven by the strategic plan. The strategy forming process provides the cognitive component of the change process (Liedtka and Rosenblum, 1996) and a coherent strategy is an enabler for continuous improvement as it provides the backdrop against which improvement efforts can be focused (Bessant and Francis, 1999).

The adoption of quality management as a strategic focus can result in: cost and productivity improvements; improving product appeal in a market with a keen quality awareness; and facilitating, building, and maintaining a competitive position (Reitsperger and Daniel, 1991). To maintain both the direction and momentum of the quality initiative, organisations need to avoid decentralising quality management to the extent that each division and department can “do its own thing” (Krishnan et al., 1993). A strategic focus will avoid this situation.

The development of a strategy for overall operations is the important first step towards implementing TQM. The quality program should develop as a sub-set of the company’s unique strategy (Lau and Anderson, 1998) and support and supplement the attainment of the organisation’s goals and visions (Srinidhi, 1998). Strategic planning and TQM must be a single process. The following are three critical links for this merger to occur (Butz, 1995):

- a customer-driven strategic plan to ensure the long-term success and survival of the organisation;
- a strategic plan that provides the direction and context for TQM, a plan that must affect daily decision making; and
- employee effort that focuses on activities rather than results, in order to foster a TQM culture and continuous improvement.

Krishnan et al. (1993, p.8) provide a summary of problems encountered in the formulation and implementation of quality management programs which are not linked with the organisation’s strategic goals:

- confusion arising from the pursuit of multiple quality initiatives and lack of clarity and consistency of program goals;
- implementation problems including an inability to translate broad quality goals into quantitative targets, difficulties over the appropriate organisational structure within which to implement quality programs, communication difficulties, and problems in managing the transition from individual to organisational learning; and
- inconsistency between quality management programs and other strategic initiatives being pursued by the organisation and, in particular, the difficulties of simultaneously pursuing quality management and restructuring.

It has been suggested that quality management programs may be more effective when an organisation has a fairly stable strategic position, with a focus on enhancing its competitive position through long-term improvements in product performance and customer satisfaction (Krishnan et al., 1993). In contrast, a period of radical restructuring will considerably reduce the effectiveness of the quality program. Krishnan et al. (1993) suggests that the key to incrementalism is for individual employees and groups to be focused upon specific short-term targets, while management is preparing for the next stage. This suggests both careful and long-term planning. As continuous improvement is built around continual short-term change, without the efforts being within an overall strategic framework employees may also become orientated to the short-term rather than long-term in their behaviour. As Srinidhi (1998, p.40) points out “change is often opposed by those who are not convinced of the merits of the proposed change and are not in a position to evaluate its contributions”. The ability to sustain success in a changing environment will occur only if there is widespread diffusion of strategy-making capabilities in individuals throughout the organisation, and central to this is information being processed in a way that fosters learning (Liedtka and Rosenblum, 1996).

If continuous improvement activities are isolated from the main strategies it is unlikely to achieve general acceptance across the different functions of the organisation. Within this

context the continuous improvement program is likely to fail if the “champion” moves on to other issues (Chapman and Hyland, 2000). In their study of Australian small to medium sized organisations, Chapman and Hyland (2000, p.178) identified three distinct organisational approaches to strategy and identified the role of continuous improvement in each. Their findings did not show that an organisation must pass sequentially through each stage as they grow. The three approaches to strategy identified follow.

1. “Laissez-faire” Strategy – focus on short-term priorities - continuous improvement activities only evident in response to particular problems.
2. Top Down, Deliberate Strategy - relatively tight control and structure – continuous improvement is directed mainly at production, but often appears in strategic agendas.
3. Deliberate and Emergent Strategy – loose control structure with overarching values – continuous improvement is an accepted function of the business and features in organisational performance measures and strategies

Chapman and Hyland (2000) in their review of the survey findings of Chapman et al. (1997) suggest that the foundations required to achieve sustainable performance improvement across the full manufacturing function may not be possible for Australian manufacturers who only focus on cost reduction. The lack of correlation between competitive measures and motivation for continuous improvement suggests that there is no clear strategy providing direction to the program, and that the continuous improvement activities have little or no impact on the development of organisational strategy.

Melan’s (1998) case study of TQM implementation in two universities highlights the problems when there is a lack of cohesion between the quality effort and the organisation’s strategy. Melan found that the ability to implement and deploy planned change successfully is contingent upon the presence of social and cultural environmental elements and behavioural factors - role perception, power and motivation. Melan (1998) proposed that other variables are also operative in the implementation and vital for the

accomplishment of the plan: the change process itself and its manner of facilitation, and behavioural factors (both group and individual) such as environmental stress, socio-cultural elements, motivation and communication. In the two universities studied the TQM initiatives slowly evaporated primarily due to the lack of ongoing commitment by management and environmental stress on the universities. Such findings would suggest that the organisations never implemented the TQM program with the view of embedding it within the culture of the organisation. Instead, TQM was employed as a quick fix for existing problems and was not given a strategic focus. Hence, once the environmental pressures lifted the TQM initiative was no longer deemed important. Neither organisation attempted to sustain the TQM intervention.

2.5 Factors causing quality failures

The literature reports mixed success of quality management programs and it is suggested that 60% - 80% of attempted TQM implementations failed to meet their objectives (Lau and Anderson, 1998, p.85). The high level of reported failure would be of concern to organisation stakeholders given the considerable amount of resources that are invested in quality initiatives (Srinidhi, 1998). However, the greatest cost for an organisation as a result of failure is the loss of morale or an increase in cynicism among employees (Dooley and O'Sullivan, 1999). Beck and Yeager (1996) suggest that if employees are less than enthusiastic about the plan for improvement they will exhibit poor teamwork, one of the biggest causes of failed quality initiatives. Srinidhi (1998) reports the results of a 1991 Ernst & Young survey in which it was found that only 36 percent of executives believed their quality efforts had a significant effect on the organisation. Without management commitment it is unlikely any quality initiative would be successful.

TQM's weak link to strategy in many implementations can account for its limited success (Butz, 1995), leading to suggestions of TQM being "oversold", inappropriately implemented, and ineffective (Sitkin et al., 1994). This has come about because TQM has been advocated as universally applicable to organisations with no attention to the nature of the uncertainty faced by the organisation. The "turnkey" approach to implementation

has not been successful. The complex nature of TQM has been ignored by many organisations (Lau and Anderson, 1998).

To overcome the problems noted by Krishnan et al. (1993) (refer Section 2.3), Lau and Anderson (1998) suggest the need for an organisation to have: a strategy which guides the quality initiative; an infrastructure, such as a performance measurement and evaluation system, to monitor and control quality programs; and the necessary cues to encourage organisational learning. A well-structured management control system (MCS) can enable the implementation and support the ongoing success of the quality initiative (Bessant and Francis, 1999). Perhaps the underlying reason behind the lack of success of some quality programs is that the processes put in place lack the necessary cues for quality learning. This research may contribute to an understanding of whether a lack of learning is inhibiting the success of quality programs.

2.6 Summary

In this chapter, the literature relating to TQM, with a focus on continuous improvement, has been reviewed. It has been shown that a continuous improvement approach to business operations can assist an organisation in adapting to changes in its operating environment. In Section 2.3 a discussion was given of the two major factors motivating organisations to adopt a quality approach to operations. These were to satisfy customers and to improve operating efficiency. However, for an organisation to develop its quality mindset it will need not only to focus on technical issues but also on what is described as the “soft side” of TQM. The organisation environment must support the continuous improvement efforts. A committed leadership can achieve this by: giving quality a strategic focus; empowering employees to make decisions about their work activities; developing relationships with both customers and suppliers; and having a performance measurement system to monitor both operational and strategic activities.

Continuous improvement will only be achieved if learning takes place within the organisation (Bessant and Francis, 1999; Egan, 1993). The focus on learning is highlighted by reference back to the definition of continuous improvement by Jha et al.

(1996) and raises the question of how does the organisation enable learning to take place to create the sustainable advantage? The organisation's MCS can be used for this purpose, as it is able to empower organisational learning (through MCS design features) and interactively influence strategy (Simons, 1990). MCS are an important element of strategy implementation by translating the plans into action (Simons, 1992). In the next two chapters the literature relating to MCS and organisational learning will be discussed.

Chapter 3 – Management Control Systems

The management control system is one of the management tools available to ensure that an organisation adapts to changes in its environment. In this chapter literature relating to management control systems, in particular the performance measurement system will be discussed in order to identify the characteristics of such systems that may provide support to the continuous improvement effort.

3.1 Introduction

Of the problems identified by Krishnan et al. (1993) in relation to the success of the quality program, two specifically relate to one of the management control systems (MCS), the performance measurement system. These are the lack of clarity and consistency of program goals, and an inability to translate broad quality goals into quantitative targets. This suggests that a successful quality program may be dependent on a supportive performance measurement system. However, this raises the question of what is the most appropriate form of performance measurement system to support the continuous improvement effort? In the following section the management control system will be discussed and next a more detailed discussion of the performance measures used to guide employee action.

3.2 Overview of MCS

The management control system (MCS) provides the framework for management to control the organisational activities to assure that resources are obtained and used effectively and efficiently in the accomplishment of the organisation's objectives (Anthony, 1965). The purpose of a MCS is to increase the likelihood of the organisation achieving its goals by controlling the flow of information, developing criteria for evaluation and designing appropriate rewards and punishments (Birnberg and Snodgrass, 1988). Lowe (1971, P.34) defines a management control system as:

“...a system of organisational information seeking and gathering, accountability and feedback designed to ensure that the enterprise adapts to changes in its substantive environment and that the work behaviour of its employees is measured by reference to a set of operational sub-goals (which conform with overall objectives) so that the discrepancy between the two can be reconciled and corrected for...”

The above definition links the MCS to both strategic and operational control and the need for operational performance goals to direct employee actions towards the overall strategic objectives of the organisation. If a discrepancy is identified between the work behaviour and the goals set, corrective action should be taken to realign the two. Therefore, a well-designed control system should align the interests of all those within the organisation towards the accomplishment of the strategic objectives. The MCS can be viewed as the organisation's control package, with components such as of the accounting information system (cost systems and budget systems), performance measurement and reward systems and planning systems. However, in reality it could be any system put in place to monitor and assist work practices.

In this section the focus is on: the relationship between strategy and the chosen control systems and design issues in relation to management control systems.

3.2.1 Impact of strategy on MCS

The current business environment can be described as one, which is becoming increasingly turbulent, competitive and uncertain. The management of change will need to be embodied within the organisation's strategy and a performance measurement system will be necessary to assist the organisation in all the change dimensions.

The type of control systems employed by organisations pursuing different competitive strategies has been the subject of research for many years and the strategic typology developed by Miles and Snow (1978) has been used as the framework by many researchers. Their strategic typology classifies companies as either defenders or prospectors. Defenders have a narrow product-market focus, with an extension of the

current product line or an expansion into clearly related areas, and they seldom need to make major adjustments to operations, rather they concentrate on improving their efficiency. The prospector, in contrast, continually searches for new product/market opportunities and regularly experiments with potential responses to emerging market trends. A prospector will be a creator of change and uncertainty in the market place to which competitors are forced to react. As prospectors have a strong emphasis on product and market innovation, they are usually not highly efficient. Simons (1987) identified that successful prospectors (organisations seeking new product and market opportunities) use MCS intensively to monitor uncertain and changing conditions. Such organisations use a high degree of forecast data in control reports, set tight budget goals and monitor outputs carefully. In contrast defenders (organisations competing in a stable environment) use the MCS less actively.

Porter (1980) identifies two main competitive strategies that an organisation can elect to follow, either separately or in combination: cost leadership and product differentiation. Those organisations adopting a cost leadership strategy (likened to defenders) will aim to be the low cost producers and gain competitive advantage through economies of scale, access to favourable material prices and superior technology. Low cost relative to competitors becomes the theme running through the entire strategy, though quality, service, and other areas cannot be ignored. In contrast organisations adopting a product differentiation strategy (likened to prospectors) will concentrate on providing products with attributes that are highly valued by the customer. Competitive advantage is gained by dependability of the product, after sales service, wide availability of the product and product flexibility. Differentiation provides insulation against competitive rivalry because of brand loyalty by customers and resulting lower sensitivity to price.

Porter (1980) argues that improving quality is meaningless without knowing what kind of quality is relevant in competitive terms. The comparison of the two strategies suggests that the quality focus adopted under each will be different. Under a cost leadership strategy it may be expected that the focus is to maintain quality comparative to competitors, whereas a differentiation strategy will have superior quality as its focus.

However, despite the different quality foci, the advantages to flow from a quality system, such as cost reduction and process improvement, should be equally beneficial to an organisation regardless of its strategic positioning (Reed et al., 2000). It is suggested that emerging competitive conditions are turning quality into a prerequisite for all organisations (Dervitsiotis, 1998b). Quality's strategic definition of "meeting the needs of customers" (both external and internal) suggests that it will influence every generally accepted source of advantage (Abraham et al., 1997).

Pruett and Thomas (1996) argue that if a systems view of quality is taken then Porter's generic strategies are not strategies but mutually reinforcing elements of strategy. They suggest that an organisation can reduce costs while improving both processes and relations with suppliers, together with a focus on improving service to a well understood customer set and differentiate itself through both perceived and actual quality. They use the example of Toyota where the value of using quality as a strategic concept helped integrated specific production (cost-reduction) and marketing (differentiation) skills to develop over time.

3.2.2 MCS design issues

Simons (1992) identified three categories of management control systems and a brief discussion of each follows.

- (1) *Diagnostic controls* - control systems used to measure progress against plans. Strategies must be clear and critical performance variables should be measurable.
- (2) *Interactive controls* - control systems that stimulate continual challenge and debate of underlying data, assumptions, and action plans. The organisation will be faced with strategic uncertainties and management will want to stimulate organisational learning.
- (3) *Boundary systems* - systems which communicate the domain of permissible activity to all employees, by dictating acceptable rules of competition.

Simons' classification of control systems provides management with the tools necessary to control all environments, both certain and uncertain, together with providing a signal to all employees of the boundaries within which they can act.

Simons' (1995) suggests that the use of control systems may be influenced by the stage of the organisation's life cycle. In the start-up phase organisations have little use for control systems, other than internal controls to secure assets and reliable accounting information. As the organisation grows there comes a need to delegate authority to lower levels in the organisation, which then creates the need for measurable goals and the monitoring of employee performance. To control operations management makes use of *diagnostic controls*, with incentives tied to the achievement of targets. *Boundary systems* are also present during the growth stage to focus the organisation on certain activities. By the end of the growth stage organisations operate in multiple markets with a variety of locations.

Interactive control systems are introduced in mature organisations when managers rely on the opportunity seeking behaviour of subordinates for innovation and new strategic initiatives. At the mature stage organisations will want to sustain and improve their competitive advantage which will be supported by continuous improvement.

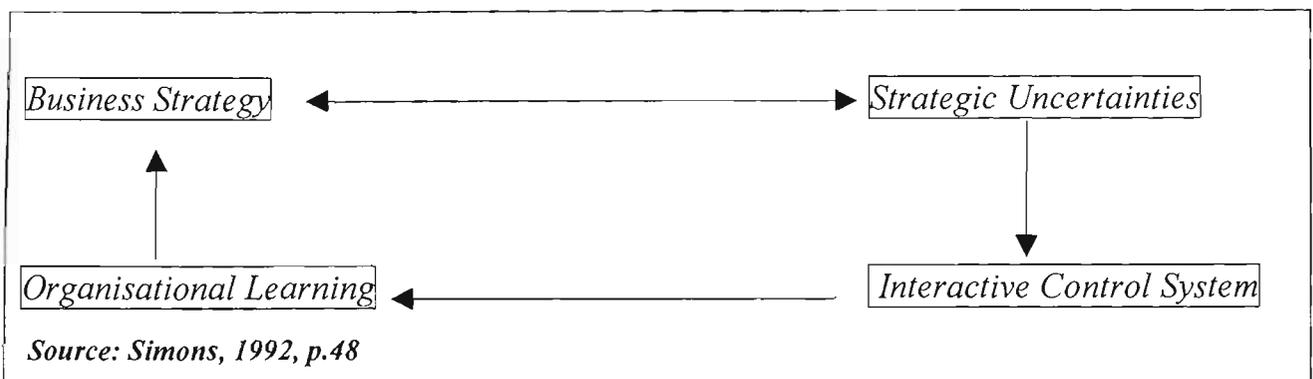
Four conditions are typically present when the three control systems are used interchangeably to suit the business needs (Simons 1991, p.50):

1. information generated by the management control system is an important recurring agenda addressed by the highest levels of management;
2. frequent and regular attention from operating managers at all levels of the organisation;
3. data interpreted and discussed in face-to-face meetings of superiors, subordinates, and peers; and
4. the continual challenge and debate of underlying data, assumptions, and action plans.

The design of a MCS may also be influenced by the amount of time available to managers to monitor performance. Simons (1990) introduced the notion of limited attention and suggested that managers do not have the time or the capacity to process all the information available to them, and that only limited subsets of the organisation's formal management control process can have their attention. To deal with such attention constraints managers focus on uncertainties that must be monitored to ensure the goals of the organisation are achieved. Such uncertainties will be influenced by the strategy adopted by each organisation and will lead managers to focus on the use of interactive controls. Interactive management controls demand regular attention from operational subordinates at all levels of the company. Such interactive controls serve three functions: signalling; surveillance; and decision ratification. The use of interactive controls focuses the organisation's attention and encourages the interactive exchange of information, which will stimulate learning about the strategic uncertainties that are perceived by management (Simons, 1990).

Figure 3.1 illustrates the process model of the relationship between business strategy and management control systems. Simons (1990, p.139) "suggests that the organisational learning engendered through the interactive control system is a powerful influence on strategy".

Figure 3.1 - Process model of relationship between business strategy and MCS



The strategic uncertainty perceived by management will influence the selection of the interactive control system that will trigger dialogue and debate to stimulate people to

exercise their creative abilities. The organisational learning triggered by this dialogue will cause new strategies to emerge (Simons, 1992).

3.3 Performance measurement system

The ability of organisations to adapt successfully to changes in the competitive environment can be seriously inhibited by a poorly designed performance measurement system (Sinclair and Zairi, 1995a-d). A performance measurement system, one of the MCS employed by organisations, needs to be informed by the strategic plan for the system to meet management's expectations (Atkinson et al., 1997). The chosen strategy will define the role and focus of the performance measurement system to those within the organisation. A well-structured measurement system provides the link between strategies and actions that is summed up in the phrase "what gets measured gets done". It could involve constant monitoring for incremental improvements, or measures to identify processes that need to be radically redesigned and changed (Srinidhi, 1998). The measurement system will lead to increased communication and understanding amongst those within the organisation. Hutt (1994) refers to the "three Rs" of performance management:

1. having clear *requirements* for the individual, to which he or she is committed;
2. providing regular appraisal and feedback *review* on the individual's performance against those agreed requirements; and
3. ensuring appropriate and equitable *reward* to the individual for the agreed level of performance.

Superior levels of performance can be achieved from sound management practices deliberately and systematically applied (Garvin, 1983). To be effective and support change the control system must not be allowed to lag behind change, it must be used to support the change over time (Abraham et al., 1997; Banker et al., 1993). An appropriate reward and recognition system will be instrumental in embedding key behaviours in employees (Bessant and Francis, 1999; Hutt, 1994). The increasing levels of internal and external uncertainty demand new performance evaluation and control systems to ensure the effective implementation of strategies to compete in the global market (Abernethy

and Lillis, 1995). Through manipulation a performance measurement system can act as “levers for strategic change” (Simons, 1991) as it directs, corrects and rewards employee behaviour and is important for operationalising and implementing strategy.

Duberley et al. (2000) undertook case research with a small furniture manufacturer, which had changed its strategy from high volume, low cost, to an environment that promoted flexibility of the work-force and quality that surpassed competitors. The manufacturer experienced difficulty in implementing this new strategy and the problem was traced to the pay system, which worked on a payment-by-results basis. The pay system encouraged workers to specialise in one job and many resisted job rotation. Management at the company found the pay system to be “immutable”, as they feared a loss of control would lead to a decrease in output. It was also found that the performance measures regularly reported focused almost exclusively on volume and costs with quality appearing as a secondary issue. Dunberley et al. (2000) conclude that any development of a new performance measurement system should entail the institutionalisation of review processes that help managers reflect on and evaluate the behaviours and norms that the system promotes and reinforces.

As Duberley et al. (2000) note it is inappropriate to maintain the same performance measurement system while adding new manufacturing systems to existing practices and then expect them to work. It is important that managers review and change their system in line with evolving strategies to avoid dislocations (Duberley et al., 2000; Srinidhi, 1998). Reitsperger’s (1986) study into Japanese management of British organisations found that the adoption of an innovative management control and incentive system was the major factor that contributed to superior performance. The performance measurement system closely monitored employee performance, provided frequently upgraded quality goals and tied worker incentive pay to quality and productivity. Following is a discussion focused on performance goals.

3.3.1 Performance goals

The MCS provides the framework to control the organisational activities to assure that resources are obtained and used effectively and efficiently in the accomplishment of the organisation's objectives (Anthony, 1965). Goals are an important component of the MCS. Lowe (1971) notes the importance of the link between operations and strategy, and the importance of goals for feedback and corrective action. It is important that management acts immediately on feedback it receives and encourages all managers and supervisors to do the same (Flynn et al., 1995). Therefore, goals are broad statements that set the direction for an organisation to take in realising its mission and closing the gap between where it is and where it wants to be (Evans and Lindsay, 1996).

In the following sub-sections the focus is on: the importance of goal setting to direct performance and the type of goals required to encourage employees to achieve the desired objectives in different operating environments. The effect of leadership style on goal attainment is also discussed.

3.3.1.1 Goal setting

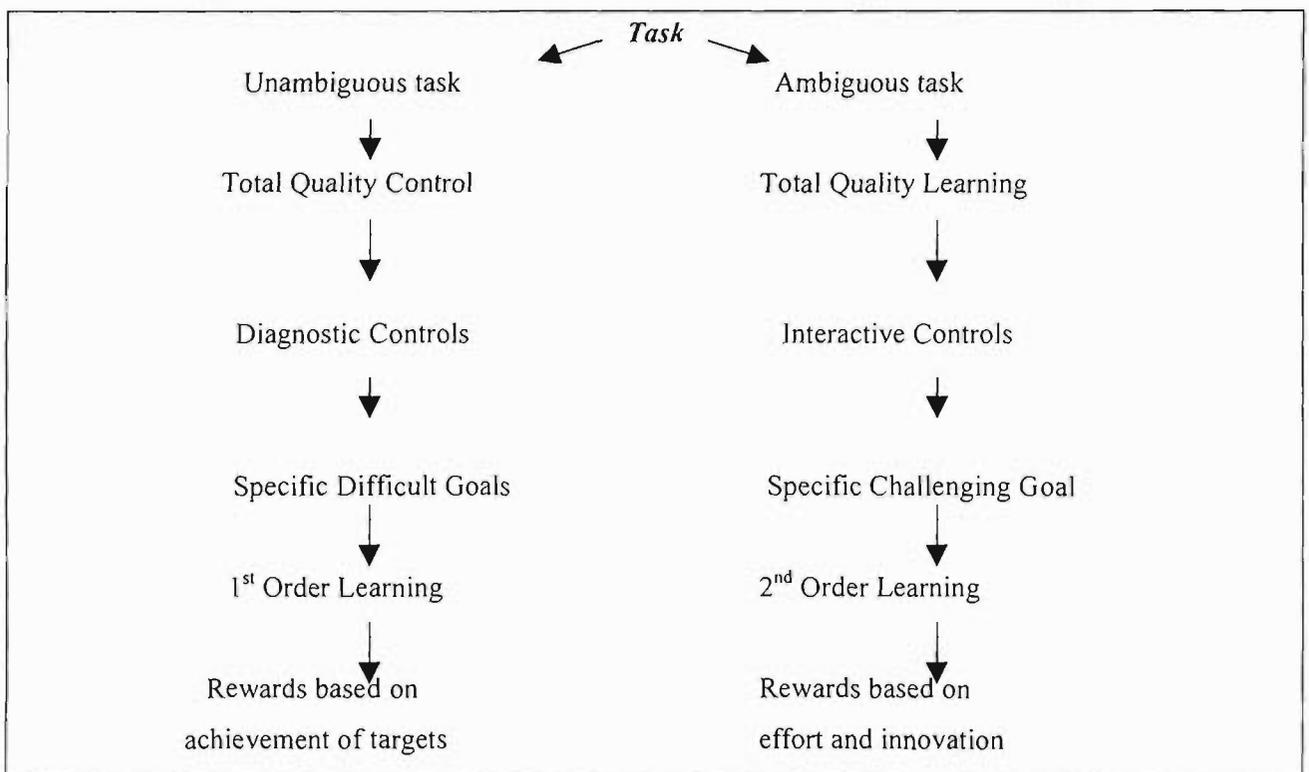
The beneficial effect of goal setting on task performance is one of the most robust findings in the psychological literature (Locke et al., 1981). Goals affect task performance by directing attention and action; mobilising energy expenditure or effort; prolonging effort over time (persistence); and motivating the individual to develop relevant strategies for goal attainment. The goal setting literature identifies that individuals with specific and hard or challenging goals outperform individuals with specific easy goals, do-best goals, or no assigned goals (Dossett et al., 1979; Locke et al., 1981). A review of all available experimental field studies on goal setting found that when goals are set the median improvement in productivity and quality was 16%. When goal setting was combined with monetary incentives, median performance was improved by more than 40% (Locke et al., 1981).

The level of task uncertainty influences goal setting (Figure 3.2). In an environment where the tasks are well-defined (standard operating conditions) and unambiguous the

establishment of goals is a prerequisite for measurement of quality performance. The emphasis is on the outcome of the process and the control system should focus on performance goals. Such tasks are sufficiently routine to be well understood and have a regulatory standard.

A diagnostic control system will be appropriate to measure the outcomes where employees undertake tasks they are familiar with and have the necessary skills and knowledge to do the job. It is also possible that employees will avoid challenging situations because they believe their ability level is fixed. This situation will encourage employees to use proven strategies to complete the job, and encourage first-order learning.

Figure 3.2 – The level of task uncertainty and performance goals



(Adapted from Simons, 1992; Sitkin et al., 1994; Winters and Latham, 1996)

In an environment where the tasks are complex (non-standard operating condition) employees will find the tasks ambiguous, and will need to explore and be innovative to find ways to complete the job. Organisations in this situation should support employees by establishing a control system that concentrates on establishing learning goals. An

interactive control system best supports this process where the emphasis is on task mastery in the first instance. Employees need the motivation to explore and test methods of completing the task. The increased level of experimentation requires managers to show a high level of tolerance for errors.

The imposition of specific challenging goals will lead to dysfunctional behaviour in the absence of appropriate learning cues (Winters and Latham, 1996). Employees need to be encouraged to work smarter, not harder. There is a need to develop and encode strategies to assist in completing the job in the future. Employees will need to step outside the system to question the very assumptions on which it operates, which is considered to be second-order learning. Management control systems should facilitate such quality based learning by using frequently revised goals to encourage continuous improvement (Daniel and Reitsperger, 1992). The reward system will need to be structured to acknowledge effort and innovation and encourage employees to share information and engage in open debate (Simons, 1992). The role of accountants will also change whereby they will act as gatekeepers for diagnostic controls and facilitators and advisors for interactive controls.

Therefore, given the level of uncertainty the control system must support either problem finding or problem solving. Sitkin et al. (1994) agree with the need to undertake different approaches when faced with a situation of both certain and uncertain tasks. They illustrate this by separating TQM into two conceptually distinct approaches – total quality control (TQC) supported by cybernetic control systems and total quality learning (TQL) which would be supported by a non-cybernetic control system. The approach taken is contingent upon the level of situational uncertainty. This is based on their contention that TQM comprises two fundamentally different goals – control and learning. The motto “do it right the first time” does not apply in both situations. In a work environment with standardised procedures employees will be expected to “do it right the first time”, however, when the task is uncertain employees need to be given the opportunity to experiment with alternative approaches. Winters and Latham (1996) support this and argue that when employees have the knowledge and skills to perform a task, the setting of

outcome goals will motivate them to increase their effort. However, if employees need to increase their cognitive abilities, as they have not yet learned how to perform a task, then learning goals should be set.

Hackman and Oldham (1980), cited by Sitkin et al., (1994), suggest that when tasks are routine and expectations are clear, employee performance and motivation will be aided by increased feedback. With high uncertainty there is not the knowledge to identify what information should be collected and disseminated. Under more certain conditions, for example, performance improvements and learning occur through incentives that stress the reduction of errors and variance and “small wins”. In uncertain environments, learning occurs through error induced discovery together with incentive systems that reward well-executed and planned failures, to foster both learning and innovation. The setting of goals to measure performance in the above situations should support the level of uncertainty of the task being performed by personnel.

3.3.1.2 Type of goals

The work of Tjosvold (1998) provides further insight into the type of goals to support either a certain or uncertain environment. His work concentrated on the involvement of employees to improve organisational performance. Tjosvold (1998) undertook a study to examine the critical mediating variables of the interaction between employees of an organisation when they discuss how to reduce costs. He was attempting to reconcile the conflict in the literature whereby one group suggests participation has a positive effect on performance and the second group which suggest that this is just wishful, biased thinking (Latham et al., 1994). Tjosvold based his study on Deutsch's (1973, 1980) theory of cooperation and competition to examine the interaction of employees when they participate in solving efficiency problems. Deutsch proposed that the dynamics and outcomes of interaction could be analysed in terms of how people perceive their goals, as either cooperative or competitive. Cooperative goals tend to lead to open discussion about problems as they encourage employees to discuss their conflicting views openly and productively. In contrast, competitive goals have the employees in opposition to one

another as one person's successful goal attainment will make it less likely that others will reach their goals.

Tjosovold's findings suggest that the type of goals set by the organisation is critical to enhance participation and employee empowerment, by encouraging constructive interaction between managers and employees leading to open-minded discussion of opposing views. Tjosovold's results identified a number of benefits that flow from cooperative goals: employees felt positive about their joint work; work relationships amongst employees strengthened; and, most importantly, employees understood the way cost reduction decisions were made. Cooperative goals contribute to constructive interaction whereby the managers and employees use their skills and information to dig into problems, create a number of alternatives, and select and implement solutions that reduce costs and improve quality. Tjosovold's findings support the team work organisational structure (supported in a TQM environment) with employees working together to achieve the goals set by the organisation. Cooperative goals overcome the "goal only" mentality (Wright, 1994), whereby individuals focus all of their time and energy on the goal-driven task and fail to perform other behaviours that may be important. A results-based appraisal system, based on individual performance results, will provide little incentive to each individual to engage in behaviours that help his or her co-workers.

MacIntosh (1994) would support the use of cooperative goals in uncertain environments. He suggests that when the environment is uncertain decision making should be orientated towards opening up and maintaining channels of communication. Cooperative goals will promote dialogue and act as the catalyst for debate and overcome conflict and power plays evident when employees view themselves in competition with each other. The incorporation of cooperative goals into the MCS will stimulate learning in the organisation by promoting dialogue and debate.

3.3.1.3 Effect of leadership style on goal attainment

The leadership style adopted by management is another influence on the establishment of goals. New thoughts on leadership suggest that it should be a process of leaders and followers engaging in reciprocal influence to achieve a shared purpose (Rosenbach and Taylor, 1993). Employee motivation may be influenced by the behaviour of leaders in the organisation. Leadership behaviour and goals may be interrelated because the climate established by the leader's behaviour provides individuals with focus and feedback regarding individual's attainment of performance goals and learning goals. The value of learning goals can be strengthened when the leader takes a transformational approach. Such leaders stress to employees the importance of becoming more skilled and knowledgeable; provide positive feedback when competencies improve; emphasise that most learning occurs during the execution of new and more difficult tasks; and indicate that mistakes are all part of the learning process (Coad and Berry, 1998).

In contrast a transactional leadership style would encourage subordinates to avoid initiating change and risk taking, and concentrate on the status quo. It then follows that the appropriate leadership style may be contingent on the particular circumstances of the work environment and will influence the level of organisational learning. Management's role is to create the environment whereby learning and experimentation can foster new strategic initiatives (Simons, 1992).

3.4 Closer look at MCS and quality

Control is the continuing process of evaluating performance and taking corrective action when necessary. Control is necessary for two reasons – to maintain high quality processes, and to bring processes under control before any improvements can be made (Evans and Lindsay, 1996). Banker et al. (1993) propose that the implementation of a continuous quality improvement program will require a shift in the management control system. Continuous improvement promotes multiple skills in workers and requires the involvement of all within the organisation. The reporting structure in organisations has been traditionally focused on management reporting, with little or no information being given to operational personnel. However, the issue relating to the "ownership" of the

measurement system is important in a continuous improvement environment (Bessant and Francis, 1999). Ownership of the measurement process becomes critical to embedding the behaviour that promotes improvement.

Bessant and Francis (1999) make an important point about ownership and function of the measurement system to promote and encourage continuous improvement. They describe the traditional performance measurement system whereby performance goals or targets are used as devices for control over activity, with specialists carrying out the measurement process. In contrast the performance measurement system for continuous improvement will incorporate goals or targets to enable and monitor the rate and direction of improvement, and its implementation is best carried out by those directly involved in the continuous improvement process. Continuous improvement data are both designed and recorded by groups and individuals and this involvement is critical in embedding the behaviour necessary to support continuous improvement.

In the following sub-sections the focus is on: the characteristics of a performance measurement system to support quality; a look at the use of a Balance Scorecard and Cost of Quality Reports; and the type of performance goals and reward systems suitable for TQM.

3.4.1 Characteristics of a performance measurement system to support quality

Oakland (1993) cited by Sinclair and Zairi (1995a) suggests that appropriate performance measurement systems play the following roles in quality and productivity improvement:

- ensures customer requirements have been met;
- provides standards for establishing comparisons;
- provides visibility and provides a “scoreboard” for people to monitor their own performance levels;
- gives an indication of the costs of poor quality;
- justifies the use of resources; and
- provides feedback for driving the improvement effort.

He also suggests that the performance measurement system will guide employee actions by directing their effort towards the organisation's goals. This can be achieved by providing the operating boundaries, that is, the desired outcome embodied within the performance goal itself, and the resources allocated to undertake the task. Employees should be able to monitor and (if necessary) change their actions based on the feedback gained from comparing actual performance against target. For example, Chapman and Hyland (2000) concluded from a study of small-to-medium Australian manufacturing organisations that there was a low level of correlation between the competitive measures and motivation for continuous improvement or content of the continuous improvement program. They also identified that the measurement system often did not include a closed feedback loop and any learning that did take place was usually localised owing to the absence of any effective information collection and storage mechanisms. They further suggest that there needs to be continued efforts to develop the environment for successful continuous improvement that will allow organisations to improve their feedback loops for organisational learning.

In addition, van Schalkwyk (1998, p126) proposes the following ten principles for TQM companies to use in removing weaknesses in their performance measurement systems.

1. A significant emphasis on the quality strategies of the company.
2. Be freely available at all levels in the organisation to encourage employee empowerment.
3. Be relevant, user-friendly, reliable and frequent.
4. Have a strong focus on performance information that directly measures customer satisfaction and responsiveness to customer requirements.
5. Encourage and enable employees to control and improve processes.
6. Deliver information that every organisational unit really needs to satisfy its "internal customers" and eventually the external customer.
7. Show an apprehension for financial indicators and actively promote the use of non-financial indicators.
8. Not be used as weapons and not used to punish or blame.

9. Appropriate internal standards.
10. Use of subjective data based on opinion or estimates.

Specific performance goals or targets to support quality have also broadened with the move from quality control to TQM (Dahlgaard, 1999). Initially, quality was measured in defect rates, complaint rates, returns, etc. TQM has extended the measures to focus on customers and employees. However, it has been suggested that the poor performance of many new TQM initiatives can be accounted for by the continued reliance on out-dated traditional performance measurement systems focusing on financials. Performance measurement is the identification and continuous monitoring of the critical performance measures which the organisation deems important to its future success. As mentioned by Oakland (1993) the key success factors today are not easily found in the financials. Information will focus on customer satisfaction, and non-financial information relating to the work effort and to costs relating specifically to quality.

A study undertaken in New Zealand explored the changes in the management accounting system (MAS) as a result of a TQM implementation (Hoque and Alam, 1999). Pre-TQM the organisation's MAS was historical and financial accounting orientated, with internal information processing for management decision-making being ad hoc. Post-TQM the organisation recorded both financial and non-financial events of the company. The reports generated pre-TQM concentrated around the preparation of the annual profit and loss variance and, therefore, had a short-term focus. Now, reports are directly relevant to the company's quality improvement activities. Reports are generated that provide a variety of measurements, e.g., cost of quality-related activities, defect rates, returns from customers due to poor quality, warranty repair cost and rework. Managers from the research site "expressed a high degree of satisfaction with the post-TQM MAS in belief that the system helped them coordinate, plan and communicate the TQM related work to the best interests of the company" (p.207). TQM was introduced in phases commencing with an education process for all employees to understand what quality meant to the company and the recognition that quality was a long-term goal. Post-TQM a number of improvements were noted: employees were empowered to "take proper action to solve

problems on the spot” (p205); quality initiatives were encouraged from all levels of employees; strategic information on market and competitors was provided to work-groups; management meetings changed from twice yearly to quarterly; accountability for corrective action was assigned to management accountant; and all suppliers were required to have ISO accreditation. No insight was given into the impact on the financial position or the reward system and whether it was linked to the quality program.

3.4.1.1 Balanced scorecard

A development that provides an integrated model for performance measurement has been the balanced scorecard. The balanced scorecard is an integrated set of performance measurements comprising both current performance indicators and drivers of future performance, with financial as well as non-financial measurements. For managers of organisations, the balanced scorecard provides a holistic view of events both inside and outside the organisation (Chang and Chow, 1999). Its key characteristic is that the included measurements are linked to the entity’s mission and strategy and are explicitly designed to inform and motivate continuous efforts towards their attainment. Chang and Chow (1999) suggest that the balanced scorecard merits consideration as a means to stimulate, focus and sustain continuous improvement efforts, by improving communication and providing focus on key variables. Otley (1999, p376) provides an interesting link between the balanced scorecard and the work of Simons (1995). He suggests the scorecard can be seen as an embodiment of Simons’ (1995) interactive control systems; that is, it reports those measures which senior managers have decided should be emphasized for a period of time.

3.4.1.2 Cost of quality reports

Another performance measurement tool is Cost of Quality (COQ) reporting which provides a measure of cost specifically associated with the achievement or non-achievement of product or service quality. The understanding of quality costs and the use of such information as a management tool can provide valuable benefits to an organisation’s quality program, including: improved quality; higher productivity; and better cost management (Morse and Roth, 1987).

The importance of the incorporation of a COQ reporting system to support management's performance evaluation system was further explained by Dane (1982, p.97): "to manage we must control; to control we must measure; to measure we must define; in defining we must quantify". Such reports translate quality problems into the language of upper management – money (Evans and Lindsay, 1996). Interestingly, Australian studies undertaken by Ramsay et al., (1991), Ross (1993) and Oliver and Qu (1999) have all reported that COQ reporting had been adopted by less than 50% of respondents.

The motivation for measuring quality costs includes: evaluation of underlying quality-control program (Ponemon, 1990); planning and control of quality costs (Morse, 1983); identification of improvement projects (Plunkett and Dale, 1986); and to provide management with insight into their company's performance overall (Gray, 1995; Dane, 1982). Poston (1996) provides a comprehensive examination of COQ reporting in a case study of Union Pacific Railway. In this organisation additional motivation was given to the managers by having cost of quality targets incorporated into employment contracts.

In contrast, Edmonds et al. (1989) argue that as quality is a long-term commitment, COQ reports do not support this commitment due to the focus on short-term changes in cost only. Other reasons cited in the literature why firms elect not to pursue a COQ reporting system are: lack of support from management (Gupta and Campbell, 1995); firms being unaware of the concept (Ross, 1993); the time lag between expenditures for conformance and resulting changes in failure cost (Carr and Ponemon, 1994); and the large amount of resources required to support the system (Gupta and Campbell, 1995). Morse (1983) outlined the following limitations of a COQ reporting system that may also be barriers to implementation: subjective information; important costs omitted; overhead cost assignment to scrap and rework may be imprecise; and variation in activity may reduce comparability.

3.4.2 Performance goals and quality

A well-designed MCS can facilitate and support induced quality learning by incorporating goal-setting feedback as an essential component of the system. It is suggested that goal conflicts can be avoided by ensuring that goals are consistent, subsume other goals and are sequentially prioritised. Consensus on what goals to pursue helps to avoid confusion caused by simultaneously pursuing multiple quality programs (Krishnan et al., 1993). The goals need to be consistent with the key factors that drive the business and must not undermine quality. For example, Lincoln Electric, a US manufacturer, gave employees no credit for units that did not meet the quality standard so as to ensure there was no quantity/quality trade off (Wright, 1994). Daniel and Reitsperger (1992) suggest that the lack of goal setting in the MCS might lead to a lack of cohesion between the strategic plan and operational planning and control mechanisms. They suggest that if quality is a strategic priority then the provision of quality targets and feedback to operating management should reflect the importance of quality improvement and emphasise the importance of continuous improvement.

3.4.2.1 Financial and non-financial goals

Goal feedback can be either non-financial, allowing for more frequent reporting to operational personnel, or financial, i.e., monthly quality cost information, to be used as a motivational tool to increase the managers' awareness of quality issues. A study undertaken by Banker et al. (1993) found that the existence of a continuous quality improvement strategy was positively related to the provision of non-financial information to line personnel. As mentioned earlier it is the performance measurement system that provides the link between strategy and action. It has been claimed that conventional aggregate financial accounting indicators are inappropriate in a TQM setting (Chenhall, 1997). In their research Banker et al. (1993) examined the provision of reports to shop floor employees in TQM organisations. The findings show that the existence of a continuous quality improvement strategy is positively related to the provision of non-financial information to line personnel. The usefulness of the information provided to shop floor workers was not explored in their study.

One of the problems with financial accounting measures is that they lag performance due to the historical nature of such information. Some of the issues with performance measures focused only on financial information are (Kaplan, 1983; Howell and Soucy, 1987):

1. too late to be used to steer a company effectively;
2. typically lead to manipulation of output levels to achieve cost targets;
3. top-down financial performance information encourages management by remote control;
4. financial data do not identify unnecessary complexity;
5. many financial measures ignore the client;
6. financial goals provide no inspiration to employees; and
7. encourage managers to adopt a short-term perspective.

3.4.2.2 Quality goals

Quality goals are the central focus of an effective quality program and should be supported by a strong measurement system. However, the determination and measurement of the quality goals is not straightforward and is influenced by a number of variables. Some suggest that quality goals must be quantifiable (Lau and Anderson, 1998). Such quantitative measures allow specific goals to be established and specific results to be forecast and provide the basis for clear company-wide quality discussions at all levels of the organisation. This will provide a higher level of precision for discussing results. If such measures are clear it should lead to worker acceptance and commitment. It is suggested that an objective measurement system is a necessary prerequisite if quality measurement is to be linked with employee compensation. This suggests that the organisation needs to translate the quality goals into operational goals, which provide more meaning to employees. Linked to this is the organisation's reward strategy which must be derived from and contribute to corporate strategy (Stredwick, 2000). For example, if customer care is deemed important to sustain competitive advantage, individuals and/or teams may be rewarded based on their achievements in the area of customer care. The reward system must not be fixed but contingent upon circumstances and performance. In this way the reward system works as an interactive control system.

In times when multi-skilling is emphasised, worker's pay would be linked to skill acquisition.

Organisations that have won quality awards have been identified as having the following attributes (Chapman et al., 1997, p433).

- Goals, priorities and targets, which are clear and unambiguous to all employees. These have been deployed throughout the organisation while retaining alignment to organisation-wide improvement strategies.
- Quantifiable goals with measurement/benchmarking processes to provide clear indications of progress towards the goal.
- Competitor benchmarking in the area of customer satisfaction is a continuing activity and the information is fed into the strategy and goal setting process.
- Data collection and analysis relating to key internal processes are a fundamental part of routine work. Results of such measurement are used to produce revised goals and targets.

3.4.2.3 Stretch goals

In Chapter 2 the difference between continuous improvement and innovation (defined as radical change) was discussed. To push an organisation to think radically differently, and to encourage major improvements, as well as incremental ones, an organisation can make use of stretch goals (Evans and Lindsay, 1996). Stretch goals are ambitious targets, for example, a goal of 10 percent improvement would appear achievable with some minor improvements, however, a goal set at 1000 per cent improvement requires employees to be more creative. Benchmarking and re-engineering are tools to assist in the attainment of stretch goals. Dervitsiotis (1998b) argues that a lack of stretch goals will lead to an ineffective transformation. Bessant and Francis (1999) in their case study of a major conglomerate identified the organisation's stretch targets to be achieved over a three-year time frame as: zero defects; zero accidents; zero breakdowns; and a 20 per cent increase in labour productivity. Thompson (1998) describes how Motorola use stretch goals (goals

which doubled the quality targets previously set) to force employees to consider new ways of doing things. He provides four explanations as to why the use of stretch goals went against the findings in the goal setting literature whereby a goal will only be accepted if the individual views it as reasonable and reachable, and if the person assigning the goal had authority to do so.

1. Higher levels of autonomy appear to increase the probability that the team will accept a stretch goal.
2. The team's control over how the work is done appears to increase the likelihood that the team will achieve the stretch target.
3. The "stretch" team often gets full control over the change process with minimal interference from other parts of the organisation.
4. The team is able to access information it needs, in the form it needs, when it needs it.

3.4.3 Reward systems and quality

Deming (1993) proposed a "theory of profound knowledge". A key aspect of this theory is that the success of quality management efforts depends on the effective integration of various management sub-systems (Waldman, 1994, p33). The maximum effectiveness of TQM may be dependent on whether performance management sub-systems are consistent and integrated with continuous improvement sub-systems. Organisation's seeking advancement must have a set of metrics to quantify both the efficiency and effectiveness of actions. The motivation of the employees to achieve the objectives set by the organisation is further strengthened by linking the performance measurements to the pay system (Flynn et al., 1995; Kershaw and Harrell, 1999). However, a weakness of the reward system could occur if top managers only reward results, regardless of how they came about, rather than rewarding process improvement efforts (Jha et al., 1996). This links back with task uncertainty as results will be more achievable in a more certain environment.

Berling (2000) in his study of Swedish companies found that incentive systems were an important vehicle for accomplishing continuous improvement, as they are able to evaluate and reward improvements. However, it was identified that as employees gained more experience in a TQM environment, indirect forms of rewards become increasingly more important with time. Performance management efforts that focus on group-level appraisal and rewards will have a greater positive effect on the continuous improvement approach to work systems efforts than on efforts focusing on individuals, especially at lower hierarchical levels (Waldman, 1994, p40). Bessant and Francis (1999) and Lillrank et al. (2001) argue that the development of an appropriate reward and recognition system will be a mechanism that will embed key behaviours in employees to foster continuous improvement.

Laabs (1994) discusses a joint survey by the Council for Continuous Improvement and The Wyatt Co. that shows appraisals and rewards in a TQM environment are changing. Initiatives being introduced by organisations to link team performance to quality programs are: skill-based pay programs; merit-based pay programs to reward teams; profit sharing; and gain sharing. The survey findings note the shift away from financial measures to a focus on other measures such as customer satisfaction, process improvement, team results and new product or business development.

Chenhall's (1997, p200) survey of Australian manufacturers indicates that the association between TQM and performance was stronger when manufacturing performance measures were used as part of managerial evaluation. He suggests

“...that designers of formal control systems, operating in TQM settings, build measures of managers' performance based on a range of manufacturing activities that are most likely to provide information on how elements of TQM act collectively to provide comparative strategic advantage...”

Organisational profitability will be enhanced if manufacturing performance measures are used to evaluate managers' performance.

3.5 Summary

In this chapter the literature in relation to the MCS was reviewed. Over time the MCS can assist in changing the culture of the organisation and promote the particular behaviour management wants from its employees. A well-structured MCS can enable the implementation and provide the support for the ongoing success of the quality initiative (Bessant and Francis, 1999). The importance of MCS to the continuous improvement effort has been discussed and the key attributes of the system identified relate to the type of information provided to employees, the performance targets set and how the reward system is linked to the achievement of goals. As discussed in Section 3.4.2, the performance measures in a quality environment should reflect the importance of quality improvement and emphasise the importance of continuous improvement. Performance measures should provide the goals that will direct employee attention and action and motivate the employee to develop relevant strategies for goal attainment.

Perhaps the underlying reason behind the lack of success of some quality programs is that the processes put in place (such as the MCS) lack the necessary cues for quality learning. Continuous improvement will only be achieved if learning takes place within the organisation (Egan, 1993). This raises the question of how does the organisation foster such learning to create the sustainable advantage? The MCS can be used for this purpose, and can empower organisational learning (through MCS design features) and interactively influence strategy (Simons, 1990). In the next chapter organisational learning will be discussed in more depth.

Chapter 4 – Organisational Learning

“...the learning organisation will be the future standard philosophy for many Australian enterprises and a major way in which they cope with change and turbulence ...” Karpin Report (1995)

As outlined in Chapter 3, the management control system is one of the management tools available to assist the organisation in adapting to changes in its environment and to support the continuous improvement effort. It is argued that to take this role the management control system must promote organisational learning. The focus of this chapter is a discussion of the literature relating to organisational learning in order to understand its role in enhancing the ability of an organisation to take effective action and improve performance.

4.1 Introduction

Learning is increasingly seen as a continuous work-based activity necessary to cope with changing demands from the organisational environment (Sambrook and Stewart, 2000), and a key capability for developing and sustaining a competitive advantage (Tranfield et al., 2000). It is a change process, just as change can be a learning process (Hames, 1994, p.246). Some suggest it is a continuous process, which is inherent in the very being of an organisation (Nicolini and Mezner, 1995).

Learning takes place at both the individual and organisational levels. Individual learning occurs when one's direct experiences are transformed into knowledge to form a basis for action. Organisational learning occurs when the organisation processes data and knowledge about events in its environment so as to change its range of potential behaviour (Huber, 1991). Organisational action may be triggered by a performance gap between where an organisation currently is and where it wants to be; by customer requirements; or by competition (Wick and León, 1995).

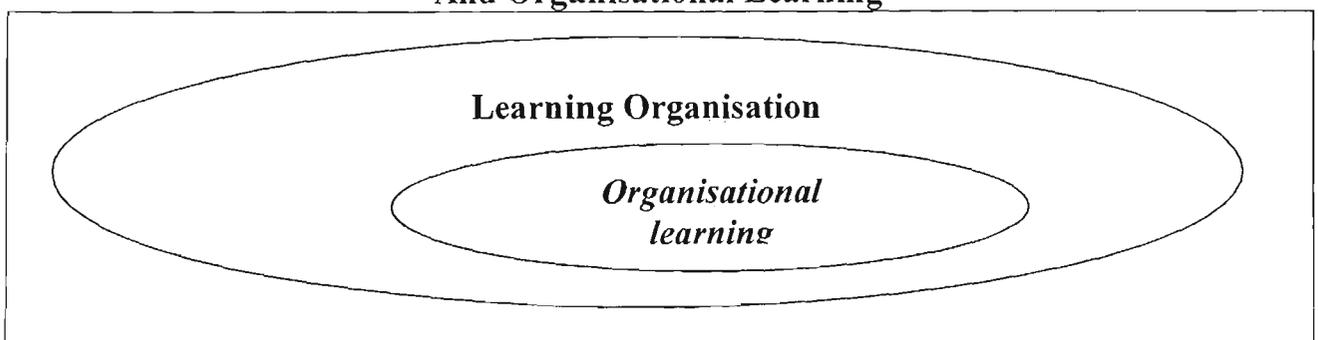
Before further discussion of learning can continue it is important to distinguish between the terms “learning organisation” and “organisational learning” as both are often used interchangeably in the literature.

The learning organisation is seen as a metaphor for the ideal company and relates to all the parts of the organisation that form the whole. It has the capability to adapt to changes in its environment and to respond to lessons of experience by altering organisational behaviour (DiBella and Nevis, 1998). This view is supported by Wick and León (1995, p.299) who consider a learning organisation “as one that continually improves by rapidly creating and refining the capabilities needed for future success”.

Organisational learning can be practised in *any organisation*, but may vary in the magnitude of its application, and may *only impact on a particular event or segment* of the organisation. It can be viewed as a characteristic of an organisation that is observed through the actions of the parts. It describes certain types of activities or processes that may occur at several levels of analysis (for example, individuals, teams and companies), with the objective of maintaining or improving performance based on experience.

Therefore, organisational learning can be found in any organisation, but the *learning organisation* will embody *organisational learning in all its actions* and exemplifies the ideal application of organisational learning. Dodgson (1993, p.377) designates learning organisations as those that purposefully construct structures and strategies so as to enhance and maximise organisational learning. Figure 4.1 represents this relationship.

Figure 4.1 – Relationship between the Learning Organisation And Organisational Learning



The focus in this chapter is on the concept of the learning organisation and organisational learning. In particular, the discussion will focus on understanding more about how an organisation develops its learning environment, the form and extent of environmental factors chosen by an organisation to facilitate learning, and the importance of the acquisition and dissemination of information.

4.2 The learning organisation

The significance of the learning organisation derives from its ability to develop and sustain its competitive advantage. Specifically, the learning organisation has (Dervitsiotis, 1998a, p114):

- the ability to learn more quickly than competitors, which is viewed as the only sustainable competitive advantage;
- an ability to shift people's attention from an "instrumental" (means to an end) view of work to a fulfilment ("sacred") view in which people seek intrinsic benefits of work; and
- a fundamental shift of mind, a new way in which individuals perceive themselves and the work, as part of the world rather than separated from it – they understand their problems are not caused by someone "out there" but by their own actions as part of a larger system.

The adoption of a learning focus will better equip organisations to cope with the changing business environment. The learning organisation is one that focuses on developing and using its information and knowledge capabilities in order to create higher-valued information and knowledge, to change behaviours, and to improve bottom-line results (King, 2001). Ellinger et al. (2002) suggests a positive association between the learning organisation concept and an organisation's financial performance.

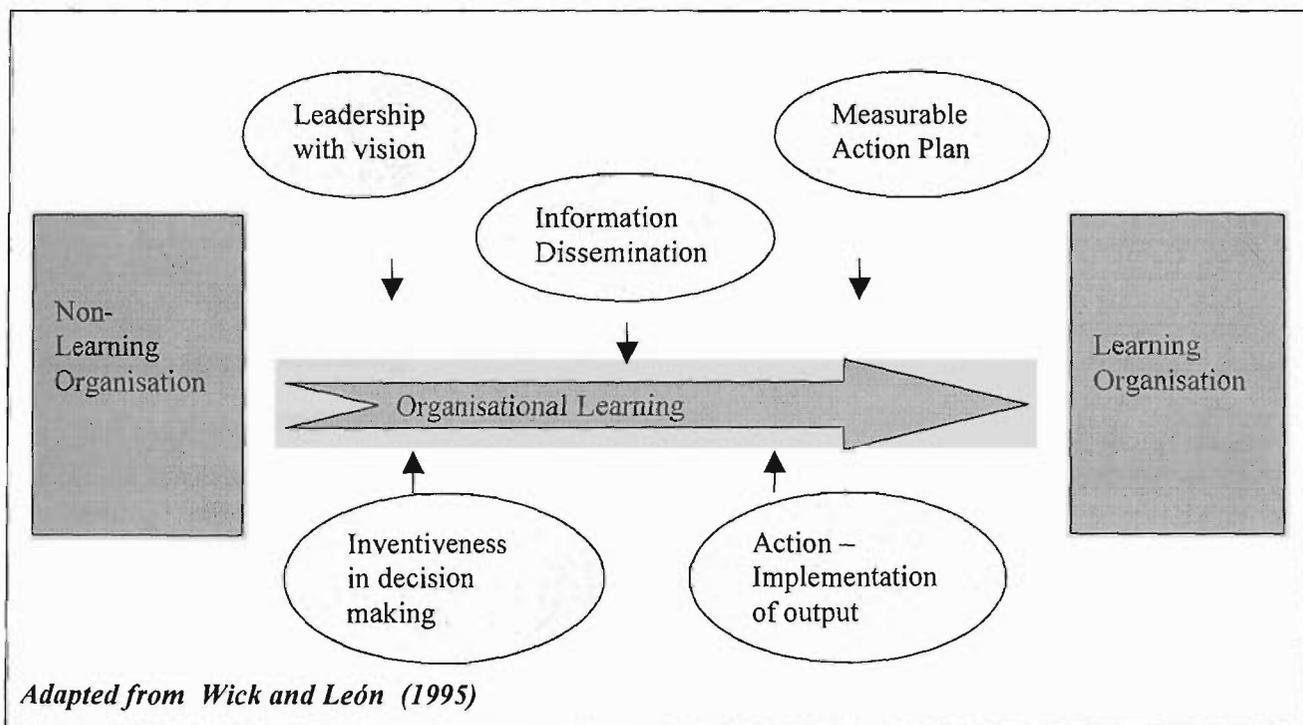
To achieve the benefits learning brings to an organisation, Wick and León (1995) have identified five elements, which they consider are mandatory for creating a learning

organisation. They suggest that the absence of any element may lead to organisations either learning the wrong things or learning at a rate less than full potential.

1. **Leadership** - a leader with a clearly defined vision.
2. **Planning** - a detailed measurable action plan.
3. **Information dissemination** - the rapid sharing of information.
4. **Innovation** – inventiveness in the approach to problem solving.
5. **Implementation** – action taken to implement output of decision making.

The above factors outline the attributes that will assist in the transformation of an organisation into a learning organisation. On a continuum of learning, a learning organisation would display the highest level of organisational learning with other organisations moving towards this state by the adoption of the attributes to encourage organisational learning (Figure 4.2).

Figure 4.2 – Moving towards a Learning Organisation



The term “learning-oriented organisation” (Leys et al., 1992, cited by Sambrook and Stewart, 2000) was devised to refer to organisations which intend to become learning

organisations. Such organisations achieve this by supporting individual life-long learning, and by encouraging the sharing of this learning in order that all employees might learn and change and improve performance.

The making of the learning organisation will require the development of certain disciplines or skills. Senge (1990) has identified the following “pre-requisites”, and these have also been supported by the work of others (Terziovski et al., 2000).

- **Systems thinking** – notion that systems can only be understood by contemplating the whole rather than the individual parts.
- **Personal mastery** – relates to a special level of proficiency achieved through a commitment to life-long learning.
- **Mental models** – the deeply ingrained assumptions, generalisations or even pictures or images that influence how we understand the world and how we take action. They can also restrict our understanding to that which makes sense within the mental model, which limit individuals to familiar ways of thinking and acting.
- **Building a shared vision** – providing goals, values and a mission – gives everyone a common identify and sense of destiny – important for management to provide direction.
- **Team learning** – when the collective intelligence of the team exceeds the intelligence of its individual members. Team learning requires aligning a team to avoid wasted energy and to create the results its members want.

Bennett and O’Brien (1994) identified twelve key factors that influence an organisation’s ability to learn and change. However, they note that not all firms will necessarily exhibit every characteristic. Table 4.1 outlines their twelve “building blocks” of the learning organisation and links them with the “mandatory elements” identified by Wick and León (1995) and the “pre-requisites” noted by Senge (1990).

Table 4.1 – Attributes of the Learning Organisation

Systems Thinking & Building a Shared Vision

1. Leadership

- *Executive practices* – management inspiring the rest of the organisation to follow them towards the vision
- *Managerial practices* – management supporting staff's attempts to grow and develop.

2. Planning

- *Strategy/Vision* – to enable organisational members to anticipate what they need to learn.

Mental Models, Personal Mastery & Team Learning

3. Information Dissemination

- *Information Flow* – the use of systems to promote easy communication among employees and ensure that all workers get company data relevant to their jobs
- *Individual and team practices* – sharing of knowledge, an environment where mistakes are seen as learning opportunities

4. Innovation

- *Climate* – a climate of openness and trust, where people are unafraid to share their ideas and speak their minds.
- *Work processes* – having employees able to use systematic problem-solving techniques, use of benchmarking
- *Training and education* – formal training programs which focus on helping people learn from their own and others' experience.

5. Implementation

- *Organisation/job structure* – flexibility to respond to the changing demands of the environment.
- *Performance goals and feedback* – providing employees with regular formal and informal feedback about how well they are meeting goals set.
- *Individual/team developments* – having empowered individuals and teams who are not required to wait for decisions and levels of approval.
- *Rewards/recognition* – the reward system supporting people for taking risks and developing themselves, by meeting challenges and solving problems, and not being viewed as a punishment device, or discouraging innovation.

Adapted from Bennett and O'Brien (1994), Senge (1990), Wick and León (1995)

Garvin (1993) has identified five main activities that a learning organisation has to become good at performing to enable it to cope with the changing demands of the

environment within which it operates. These activities reinforce the elements of planning, information dissemination and innovation in problem solving outlined in Table 4.1:

- systematic problem solving;
- experimentation with new approaches;
- learning from their own experience and history;
- learning from the experiences and best practices of others; and
- transferring knowledge quickly and efficiently throughout the organisation.

4.3 Organisational learning

In a review of the organisational learning literature Miller (1996) has highlighted the different approaches taken by authors in their attempts to define learning. Some definitions of learning noted by Miller (1996) are: a change in behaviour in response to a stimulus (Cyert and March, 1963); and a conscious acquisition of knowledge or insight on the part of organisation members (Argyris and Schon, 1978; Hedberg, 1981; Huber, 1991).

However, Miller (1996) suggests that the above approaches do not “guarantee” learning. He argues that a change in behaviour may not lead to new knowledge, and that the acquisition of knowledge is only relevant to the organisation if it is related to organisational action or decision making. Therefore, Miller (1996, p.486) proposes the following definition of organisational learning:

“...the acquisition of new knowledge by actors who are able and willing to apply that knowledge in making decisions or influencing others in the organisation...”

Miller’s approach suggests that improved performance outcomes can be achieved through a more informed and knowledgeable work force, coupled with a work place where information is shared and used for decision making. This notion supports the work of other authors such as Fiol and Lyles (1985, p.803) who consider learning to be

“...the process of improving actions through better knowledge and understanding...”

and Kim (1993, p.38) who points out that learning enables employees to possess the skills and knowledge to undertake their jobs:

“...increasing one’s capacity to take effective action...”

Also, DiBella and Nevis (1998, p.28) suggest that learning has occurred when information is shared and used by employees in the fulfillment of their organisational responsibilities:

“...new knowledge has come into an organisational system, has been disseminated or transferred, and is or was used...”

The above discussion strongly suggests that learning requires knowledge to underpin organisational action and decision making, and that learning can be seen to have occurred when organisations perform in changed and better ways (Dodgson, 1993). Knowledge acquisition by those within the organisation will lead to improved outcomes only if there is employee commitment and willingness to participate in organisational activities. To be willing and able, employees must have the appropriate skills to undertake their jobs, and a willingness to apply their knowledge to the work situation. This willingness will be encouraged if the organisational environment encourages participation. Senge (1992) cited by in Terziovski et al. (2000, p25) states that

“...organisations learn only through individuals who learn. Individual learning does not guarantee organisational learning, but without it no organisation learning occurs...”

Therefore, employees will be the catalysts for organisational learning. However, without a human nervous system how are organisations equipped to perform the tasks of

experiencing, reflecting, conceptualising and memorizing in order to learn? (Lipshitz et al., 1996). By reference to the work of others, Lipshitz et al. (1996, p.293) attempt to answer this question and solve this problem of anthropomorphism. They quote Simon (1991, p.125) who suggests that organisations learn in only two ways: (1) by the learning of its members; or (2) by ingesting new members who have knowledge the organisation previously did not have. Organisations can learn independently of any specific individual but not independently of all individuals (Kim, 1993). Unless individual learning is shared and acted on, and unless the organisation as a whole can change, then there is no learning organisation (Sambrook and Stewart ,2000).

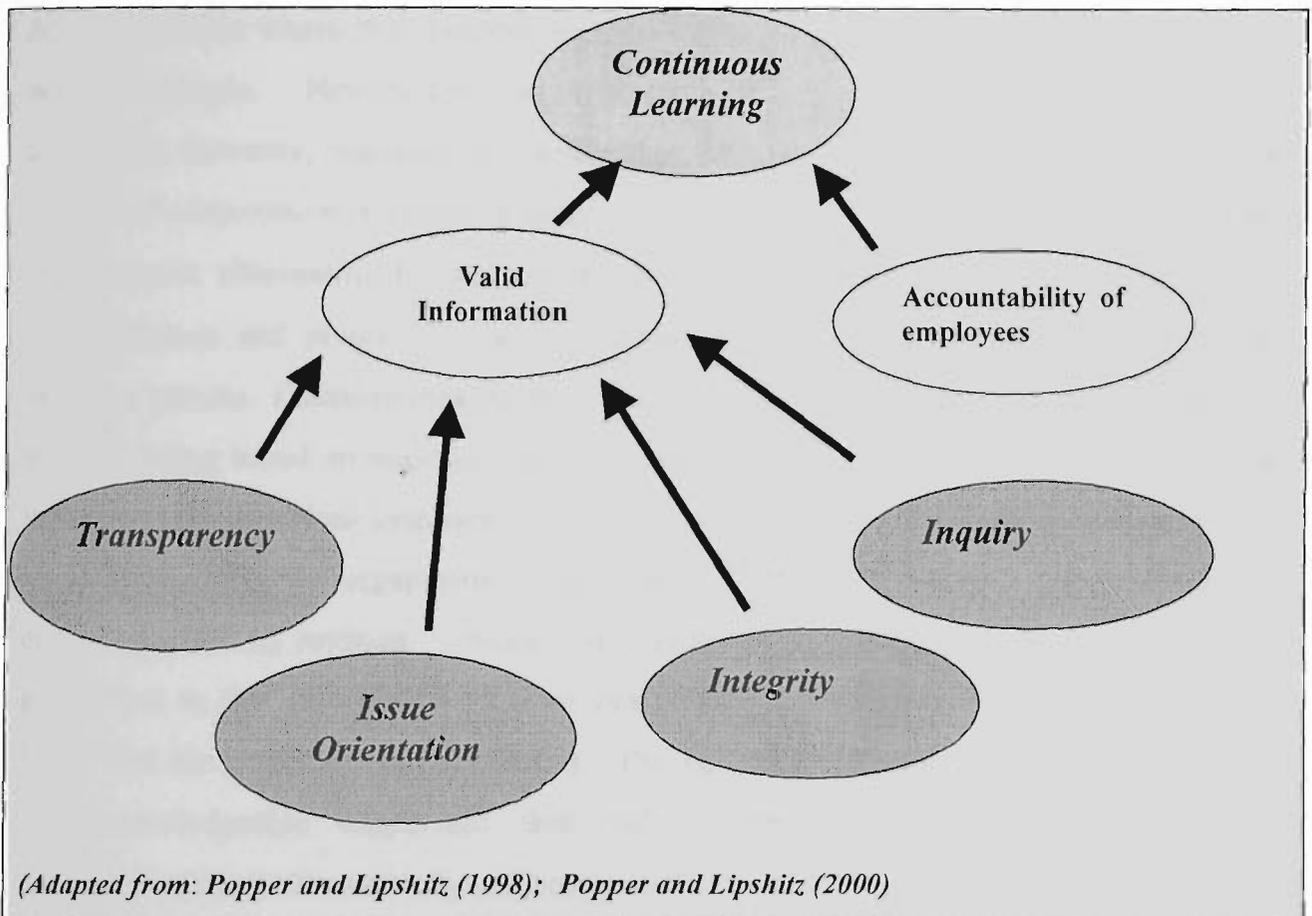
Learning develops insights, knowledge and associations between past action, the effectiveness of those actions, and future actions (Fiol and Lyles, 1985). However, the question is raised of when does the individual member's learning become the "property" of the organisation? To address this Lipshitz et al. (1996) refer to the work of Levitt and March (1988) who suggest "that learning by individuals (and groups) becomes "organisational" when its products materialise at the organisational level". This implies that the knowledge used by the individual to assist in organisational improvement can be stored by the organisation's memory system for future use, so that even if the employee leaves such knowledge is retained by the organisation. Lipshitz et al. (1996) also suggests organisational learning mechanisms enable organisations to learn and this will be discussed in more detail later in the chapter.

4.4 The learning environment

It is important for an organisation to create the environment that will encourage individuals to learn, which, in turn, may lead to organisational learning and improved performance outcomes. It may also assist the organisation in developing the attributes of a learning organisation. The establishment of the "right" environment will not guarantee learning, however, a learning environment will lead to the development of the human assets of the organisation and support other levers of change such as empowerment and group-based management (Dooley and O'Sullivan, 1999) .

Popper and Lipshitz (1998) suggest that productive organisational learning will require a learning culture supported by valid information and employees who take responsibility for their actions. Figure 4.3 provides a framework of the factors Lipshitz et al. (1996) believe necessary to encourage a learning culture and gives further insight into how learning can permeate the procedures within an organisation.

Figure 4.3 - Organisational Learning Values



Popper and Lipshitz (1998) are suggesting that *continuous learning* must be valued in an organisation if it is to survive in a dynamic and competitive environment. As learning involves transforming data into knowledge, full, undistorted and *valid information* is necessary. Learning is strengthened by the *transparency* of information whereby employees are willing to hold themselves (and their actions) open to inspection in order to receive valid feedback, and are able to admit error without fear of punishment. *Issue orientation* relates to ideas and opinions that are judged on their merit, not on the position the person has in the organisation. Employees who *inquire* are more persistent in gaining

a satisfactory understanding of the situation and *integrity* of the information is achieved by giving and receiving full and accurate feedback. Finally, *accountability* relates to employees holding themselves responsible for their actions and any consequences and for learning from these consequences.

Stata (1989) provides an example that illustrates the importance of developing a learning culture and supports the framework outlined in Figure 4.3. Stata relates the experience at Analog Devices where the objective of management was to improve the communication between people. Historically, the organisation had been structured on divisional autonomy, however, management recognised that many changes would require *inter-divisional cooperation*. To create a supporting environment, management created an *open environment*, eliminating hidden agendas, making motives clear and asking others for their opinions and points of view. The objective was to *engender trust* in relations between people. Decision-making was focused on *objective reasoning* with the best answers being based on reasoned positions and objective criteria, as opposed to political influence and parochial interests. To *encourage* this environment the attributes were embedded within the organisation's performance appraisal process, and *feedback* was encouraged during reviews. Analog's management considered that by linking pay and promotion to the intangible factors of openness and objectivity the employees would know that the organisation was serious. The end result of this approach was motivated and knowledgeable employees that led to the improvement of organisational communications both vertically and horizontally.

Using the example of Analog it can be seen that the organisation's ability to innovate can enable it to transform itself as needed to cope with the ever-increasing complexity of the environment. As the rate of change speeds up, living systems adapt to new conditions through learning, becoming more complex internally to cope effectively with external complexity (Stata, 1989).

In the following sub-sections the discussion will focus on the choices an organisation makes in determining its learning orientation and the practices an organisation puts in place that either facilitate or inhibit learning.

4.4.1 Learning orientation

The identification of an organisation's learning orientation provides insight into the values and practices that reflect where learning takes place and the nature of what is learned (Appelbaum and Reichart, 1997). To assist in understanding an organisation's learning environment, Di Bella and Nevis (1998) have identified organisational characteristics to assess the learning orientation of an organisation. Each characteristic can be viewed as a continuum as an organisation will have a preference for how it will be implemented within the organisation. For example, in relation to the characteristic, knowledge source, a preference may be for internally-sourced information, externally-sourced information or a combination of both. A brief overview of each characteristic follows.

- ***Knowledge Source, Documentation and Dissemination Mode***- how knowledge is acquired, used and disseminated – whether the preference is for internal or external information.
- ***Product or Process Focus*** – whether the organisation is interested in understanding the process technologies or simply “getting the product out the door”. This is particularly relevant when only 20% of the product costs can be controlled at the production stage.
- ***Learning Focus*** - whether learning focuses on improving existing capabilities or in the questioning of current practices.
- ***Value-Chain Focus*** - the aspect of the organisation targeted for learning, whether upstream or downstream activities.
- ***Individual or Team Focus*** - if the organisation is adopting team-based work groups or individual work.

The identification of practices adopted by organisations in relation to each characteristic gives an insight into how learning takes place. These practices can either facilitate or inhibit learning. This will now be discussed in more detail in the next section.

4.4.1.1 Factors that facilitate learning

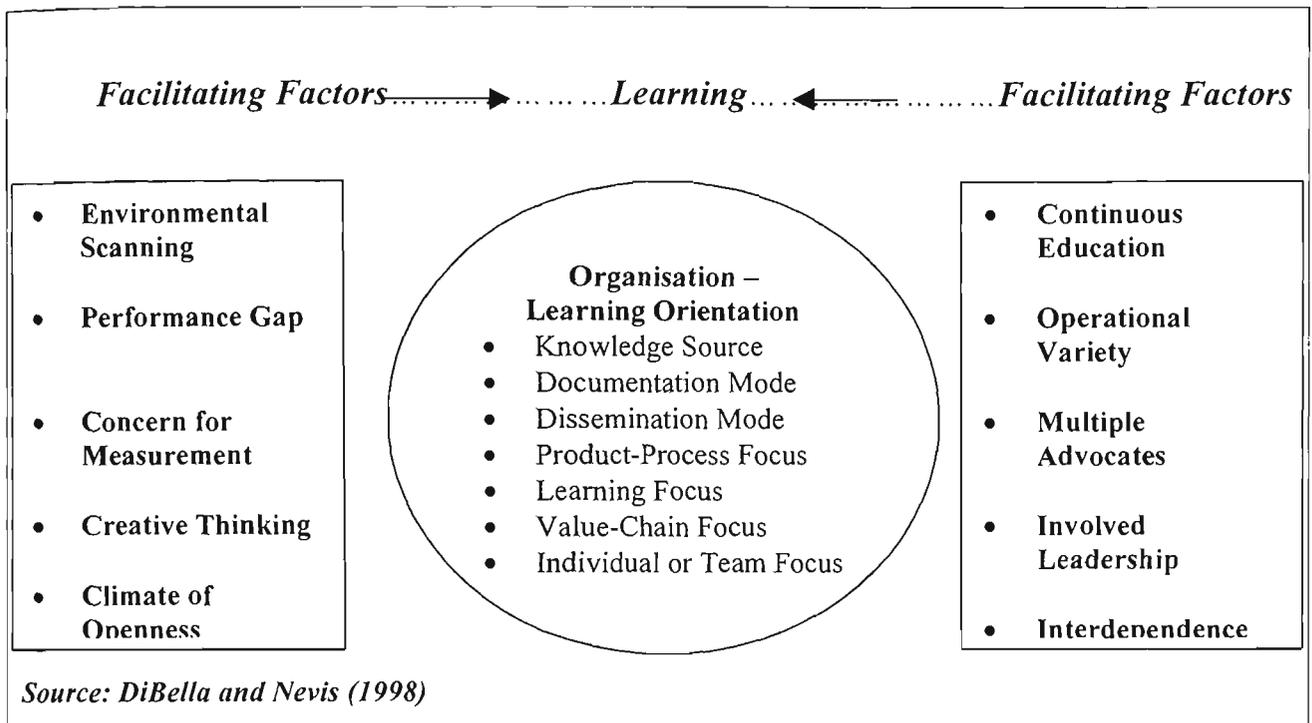
It is important for an organisation to have an environment that encourages learning, however, how is learning facilitated? The learning values discussed earlier in this section assist in guiding the development of both the organisation's learning orientation and influence the facilitating factors employed by individual organisations. Facilitating factors (Di Bella and Nevis, 1998) specify elements that both promote and accelerate learning and are based on best practice and common processes (Appelbaum and Goransson, 1997). The choices made by an organisation in the development of its learning environment assist in understanding the competitive advantage enjoyed by the organisation and may help in explaining why some organisations are more successful than others. Lipshitz et al. (1996) refers to the facilitating factors as organisational learning mechanisms.

In the following sub-sections discussion will focus on the factors that facilitate learning from the viewpoint of Di Bella and Nevis (1998) who refer to facilitating factors, and Lipshitz et al. (1996) who refer to organisational learning mechanisms. This will then be followed by further discussion based on the work of other authors.

Facilitating Factors – DiBella and Nevis (1998)

Organisations will need to incorporate facilitating factors to some degree into the work place in order for organisational learning to permeate organisational decision making. The extent to which an organisation has been able to incorporate the facilitating factors will determine its learning potential. Figure 4.4 provides an overview of the learning orientations and facilitating factors identified by Di Bella and Nevis (1998).

Figure 4.4 – A Model of an Organisation as a Learning System



The facilitating factors promote learning and the more each is prevalent in the organisation the more opportunity exists for learning (Di Bella and Nevis, 1998). Knowledge is one of the keys to learning and this can be strengthened by the organisation broadening its knowledge base by undertaking environmental scanning to gather information from the external environment. To improve processes performance gaps must be identified and any actions taken to improve performance should be assessable against performance targets. The development of the performance targets in itself is a learning activity for those involved in the process. Improved performance can be also encouraged by the promotion of organisational curiosity, encouraging employees to think creatively and encouraging open communication. This will be strengthened by the recognition of the interdependence among organisational units. Employees' skills and ideas should be recognised by organisational members, who should be able to recognise that there is more than one method available to take action and that no one person has all the ideas. To encourage this, employees need the skills to undertake their responsibilities. When performance gaps are identified resources should be directed to learning how to close the gaps and by encouraging employee education to support life-long learning by

committing resources to training. Leadership must encourage learning and management must want learning to become a reality (Abraham et al., 1999; Dunphy and Stace, 1990).

Fieldwork undertaken by Sambrook and Stewart (2000) and Tranfield et al. (2000) provides support for the facilitating factors identified by Di Bella and Nevis (1998).

Organisational learning mechanisms – Lipshitz et al. (1996)

Lipshitz et al. (1996) suggest that for organisations to learn there need to be in place organisational learning mechanisms, which are the facilitating factors to encourage learning. Organisational learning mechanisms (OLMs) can be described as institutionalised structural and procedural arrangements that aid the learning process and operationalise the factors that facilitate organisational learning (Lipshitz et al., 1996). Such mechanisms allow organisations to collect, analyse, store, disseminate and use information that is relevant to the organisation. It is due to the existence of such “mechanisms” that organisational learning can be studied as an actual phenomenon. OLMs enable the experiences of individual organisational members to be analysed and shared by other organisational members. The experience becomes the property of the entire organisation through distribution of lessons learned to relevant units or through changes in standard operating procedures (Lipshitz and Popper, 2000).

Popper and Lipshitz (1998) classify OLMs as either integrated or non-integrated and dedicated or dual-purpose. The key difference between integrated and non-integrated OLMs relates to the range of employees involved. *Integrated OLMs* relate to reviews of task performance by individuals directly involved. In contrast, *non-integrated OLMs* make use of staff specialists for the benefit of others, e.g., strategic planning and research and development units. *Dedicated OLMs* relate to a specific activity, whereas *dual-purpose OLMs* are activities performed in conjunction with task performance, e.g., weekly reviews, which not only relate to the specific activity but also have the potential to influence future performance.

Popper and Lipshitz (1998, p.171) suggest that the relevance of the OLM categorisation is that it assists in the identification of different levels of organisational learning, and by examining if and to what extent OLMs are being used by organisations. For example, low-level learning occurs when learning is assigned to special staff away from the core mission of the organisation. At the higher-level learning, organisational learning and task performance are indistinguishable. All members of the organisation are continually engaged in learning, helping others to learn and sharing their learning with others.

The adoption of OLMs (for example, team-based organisational structures, information distribution systems and scenario analysis) as the means to encourage organisations to learn is supported by other research (Dervitsiotis, 1998a; Sambrook and Stewart, 2000; Terziovski et al., 2000; Tranfield et al., 2000).

Factors that facilitate learning – viewpoint from other authors

Other authors have discussed facilitating factors in terms of organisation archetypes, structures and routines. Dervitsiotis (1998a) suggests that organisations develop new organisational forms to reduce response times, train their employees in multiple skills for more flexibility and re-engineer their processes to cut waste, reduce cycle time and improve quality.

Entrepreneurial organisations have been suggested as natural learning organisations as they have many of the qualities to which learning organisations aspire (Pearn et al., 1995 as cited by Rowley, 2000) including:

- being quick to react because chains of command are short;
- mistakes being felt quickly because the customer is close;
- being adaptative, and not constrained by elaborate structures or stable cultures;
- having energy and a sense of challenge;
- being focused;
- experiencing constant change; and

- the knowledge base being held in minds of people which leads to relatively few systems and a limited explicit knowledge base.

Organisations in the high-technology field have a need to invest in learning to allow the firm to stay ahead in its field (Popper and Lipshitz, 1998), with the high cost of error being the motivating factor. Continuous improvement is the key to their survival in unstable and competitive environments (Lipshitz et al., 1996).

Organisational structure will also influence learning (Lipshitz and Popper, 2000; Wick and León 1995). Flat organisational structures are more conducive to organisational learning than tall, formal structures (Lipshitz and Popper, 2000). Continuous learning can be supported by adopting fluid job descriptions that respond to the changing demands of the external environment, as well as to the needs of the organisation itself. Practices such as rotating assignments and using self-directed, cross-functional work teams support this flexibility. Addleson (1996) supports an organisational structure that abandons the traditional, hierarchical structure and argues that the structure should support

“...self-management and teamwork, with people following their own interests but networking with others and encouraging them to participate in achieving the ends they have in mind...”

According to Addleson (1996) the lack of a fixed organisational structure will not lead to a lack of coordination as employees will be encouraged to cooperate with one another. By giving employees both the authority and responsibility to exercise their options, they will be encouraged to take the initiative as they see things developing.

Also, the employee skill profile may facilitate learning. Popper and Lipshitz (2000) argue that members of organisations with a high level of professionalisation, for example, physicians in hospitals, are socialised to keep up to date as a mark of excellence.

Mitki et al. (1997) undertook a study to explore the nature of “parallel learning structure mechanisms” to determine if they provide the mechanism to make continuous

improvement an integral part of organisational life. Parallel learning structures represent work groups or committees that are not burdened with routine day-to-day work practices. The role of such groups is to engage in ongoing knowledge acquisition for new initiatives. The company used this type of mechanism to introduce and advance the continuous improvement program. This was accomplished by the formation of a number of committees (Central Steering Committee, Central Quality Committee and Learning Teams) whose sole responsibility was to support the quality effort. The committees' main functions were to translate the strategic quality targets into operative programs and to lead and guide the implementation. It is suggested that such a transitional group creates the supportive climate that gives members a sense of psychological safety and helps them to own the total organisational learning process (Schein, 1993).

Schein (1993) argues that parallel learning systems provide the opportunity for learning to spread across the entire organisation. He suggests that such a system will give employees the psychological safety to learn, as it provides the opportunity to make errors, to practise and to innovate in a safe environment. The committees identified in Mitki et al. (1997) represent what Schein (1993, p90) would call transition groups which are responsible for the organisational learning process and contribute to learning by:

- providing a supportive environment;
- representing the organisational culture and providing an initial test of the level of transformation possible without too much disruption of the present culture;
- monitoring the task forces and problem-solving groups – the establishment of the sub-groups will require the identification of a set of discrete and workable problems - the steering committee will also be responsible to communicate to the whole organisation of what is happening; and
- collectively and individually communicating why change is needed and how it will be accomplished.

Stata (1989) discusses the use of parallel learning mechanisms at Analog Devices. To encourage organisational learning, fifteen corporate-wide product, market and technology task forces were formed with 150 professionals from throughout the company. One

important outcome for the organisation was that a broad cross-section of their top professionals understood why some basic beliefs and assumptions that had served them well in the past needed modification.

However, Krishnan et al. (1993) warns of the potential problems with the adoption of “parallel” organisational structures. They suggest that conflicts can arise between the quality management committee and the formal structure; the potential for efforts to be stifled if parallel committees are staffed by junior personnel; increased costs; slower decision making; increased administration; and bureaucratic inertia.

Sambrook and Stewart (2000) observed a number of “coping” strategies employed by organisations in their study to enhance factors to support learning. The strategies identified were:

- improving the professionalism of human resource personnel and having them work more in partnership with managers;
- improving communications by developing a common language and sharing information;
- reorganising work and reducing work load, for example, encouraging teamwork, flexibility and using computer-based learning to overcome access problems associated with shift work; and
- valuing all forms of learning by encouraging coaching and mentoring, and creating a learning culture rather than a blame culture.

Tranfield et al. (2000) identified three key enabling routines raising the learning threshold higher. The key enabling routines identified were:

1. measuring and understanding routines – the ability of those within the organisation to access current performance data on a regular and continuing basis;
2. benchmarking others’ achievements and importing best practice – this enabled employees to be exposed to how other organisations operated and to look at

alternative models of practice. This was achieved by inter-company visits; and

3. building a vision – whereby the employees would learn to share knowledge and use conflict creatively so that their understandings could be challenged and changed.

4.4.1.2 Factors that inhibit learning

The factors that facilitate learning can be undermined by actions of individuals within the organisation. Employees can engage in defensive routines, which are behaviours that prevent people doing the right things or practising their espoused principles. Organisation members make use of defensive routines when they want to avoid embarrassment or threat (Argyris, 1992) that might result from change. Tranfield et al. (2000) have identified the following four types of defensive routine.

1. Diverting defensiveness outwards – where blame for an inability to learn and change is given to others either internal or external to the firm.
2. Diverting defensiveness upwards – whereby there is a contradiction between the “espoused theory” with the “theory in action” and the employees do not question the disparity. For example, imposing a teamwork culture and then asking employees how to implement it rather than discussing whether teamwork was appropriate.
3. Diverting defensiveness downwards – whereby management argue that employees are not willing to challenge and question senior management initiatives. Another situation of where the “espoused theory” is in conflict with “the theory in action”, management espousing the worthiness of involvement but at the same time not creating opportunities where the employees could safely disagree.
4. Depersonalising – situation whereby people do not focus on their own competencies but blame other factors, for example, “lack of training, “the poor IT system”.

It is one thing to detect and correct errors, but another to find out why errors persist, and then expose the cover-ups that occur to facilitate the persistence of errors. If learning does not take the organisation along this path then defensive routines can cover up new problems or disguise old ones. Defensive routines, either policies or action, encourage anti-learning and protect mediocrity. Examples of mixed messages in relation to: employee empowerment - “Mary, you are in charge, but check with Harry”; and innovation “Bill be creative – but for heaven’s sake be careful”. This leads employees to become cynical, “Nothing will change around here, they don’t really mean continuous improvement.”

Field (1997) found that despite management espousing organisational learning the reality he often observed was that managers act in ways that disempower employees and undermine opportunities for positive, contributive learning. He suggests that as workers develop as empowered learners, managers begin to experience the work place as unstable and unpredictable, leading to insecurity. To counter this managers implement tight controls, which lead to employees withdrawing their creative input.

Sambrook and Stewart (2000) identified other factors, which inhibit the learning process:

- an organisational culture which focuses on short-term projects;
- a bureaucratic and task-orientated organisation;
- employees that are cynical and view learning as going on a training course; or who lack confidence; or who fear exposure; or are resistant to change;
- senior management with a low opinion of training or who lack people management skills;
- a work environment where the pressure caused by the work load does not allow the time to focus on learning activities; and
- limited availability of resources.

The use of parallel learning mechanisms may overcome some of the inhibiting factors identified in Sambrook and Stewart’s (2000) study. The inhibiting factors identified were

lack of motivation, an insufficiently developed learning culture, lack of financial resources and a lack of time allocated for development. The use of steering committees and task forces may overcome these factors by showing management's commitment to the initiative by the setting up the discussion groups and providing resources.

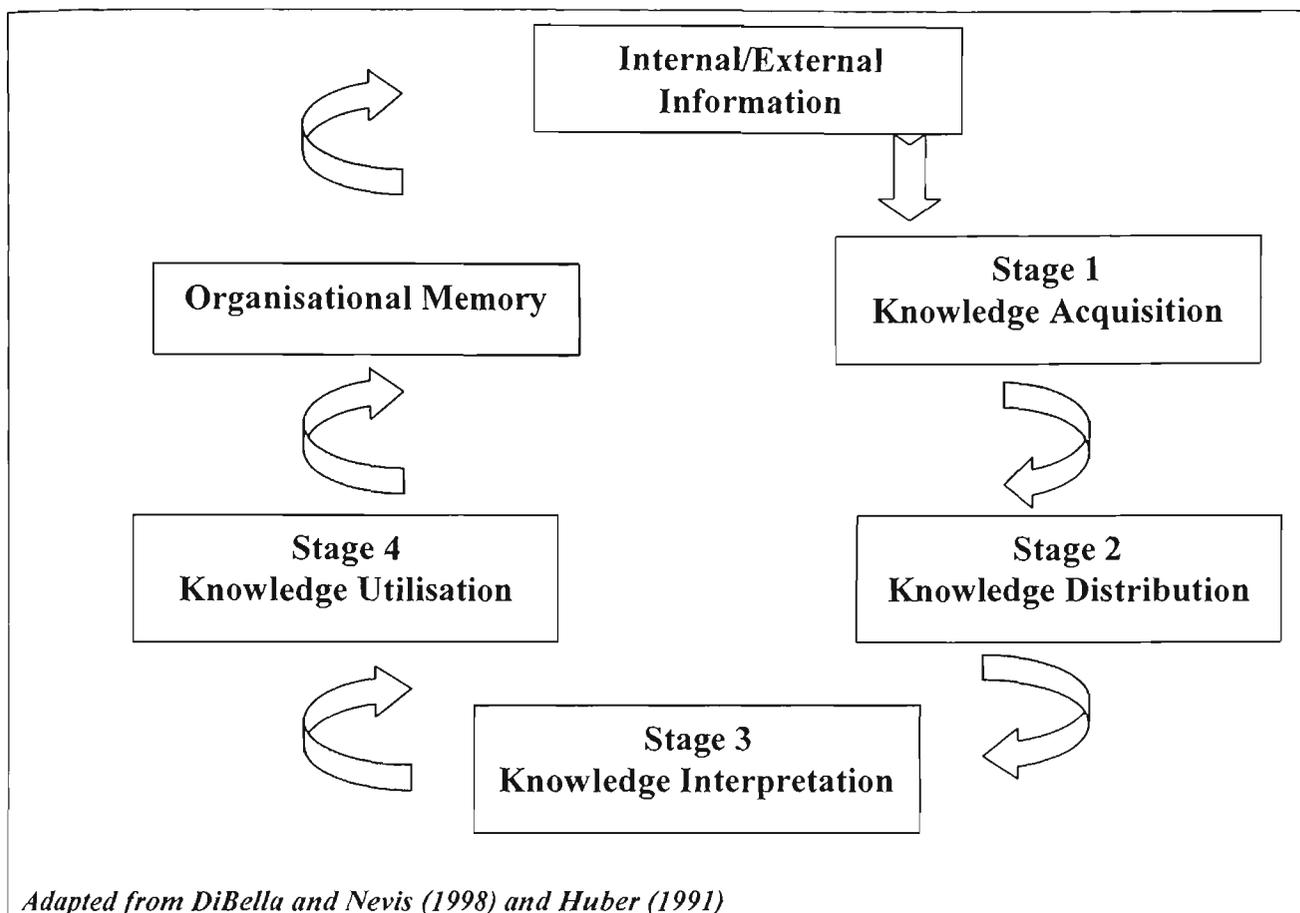
4.5 The learning process

Learning develops insights, knowledge and associations between past actions, the effectiveness of those actions, and future actions (Fiol and Lyles, 1985). As noted by Miller (1996) organisational learning is about the acquisition of new knowledge and highlights the importance of acquiring and disseminating information to assist organisation actions. In this section the focus is on the knowledge management practices, specifically addressing the acquisition and dissemination of information, together with how such practices enable organisational memory to provide information for future use by the organisation.

4.5.1 Knowledge management to facilitate learning

To understand learning within an organisation it is necessary to understand how knowledge is accessed; how it is interpreted and used in decision making; and how the type of decision influences the type of learning and knowledge put to use by those within the organisation. Drawing on the work of Huber (1991) and DiBella and Nevis (1998) the stages of learning are outlined in Figure 4.5 and represent an ongoing process within an organisation. Each of the stages will be discussed in more detail in the following sections.

Figure 4.5 – Stages of Learning



Adapted from DiBella and Nevis (1998) and Huber (1991)

4.5.1.1 Knowledge acquisition

Knowledge acquisition relates to the source of knowledge and whether it is found internally or externally. The process of collecting knowledge will be subject to resource limitations and should be directed by the organisation's strategic goals (DiBella and Nevis, 1998). The allocation of resources to knowledge-acquisition activities could indicate the commitment of the organisation to learning.

Externally the organisation could engage in environmental scanning and networking to enable the development of performance benchmarks and to identify best practice. "Boundary scanning individuals" who bring information in from outside the organisation can strengthen the process, as can "technological gatekeepers" who keep abreast of technological development (Vickers and Cordey-Hayes, 1999). Examples of other initiatives the organisation can institute internally are investment in research and

development activities; brainstorming amongst employees; and parallel organisational structures (DiBella and Nevis, 1998).

The recruitment of new employees, known as grafting (Huber, 1991), can be a source of new knowledge. Stata (1989) highlights how this technique assisted Analog Devices. Analog management understood the basic philosophy of quality improvement, “doing it right the first time”, but they did not know what rate of improvement was satisfactory or what they could do to accelerate the improvement process. Management also realised that line managers would not be able to acquire the knowledge to support the quality program by only reading books or attending seminars. Stata (1989) identified that substantial progress was made in Analog’s quality initiative once the organisation employed a staff member, specialising in quality, who was able to teach members of the organisation to tap the mainstream of experience and knowledge in the quality field.

Gomez et al. (2004) found a positive significant relationship between continuing training and learning capability. Investment in training favours the acquisition and generation of new knowledge and skills, as well as the degree of openness to new ideas. The training provided a common language and a shared vision, making communication among employees and knowledge transfer easier. They also found that team-based training and the level of commitment to learning supports the importance of this type of training as an instrument that helps create a coherent group that is committed to learning and, therefore, to the constant renewal and creation of knowledge.

Krishnan et al. (1993) consider training to have a central role in quality improvement programs with the objective of training to be the transition from individual learning to organisational learning. For training to contribute towards the quality effort the “learning” needs to be extended to the work place immediately.

4.5.1.2 Knowledge distribution

This stage involves the dissemination of what has been learned. Organisations may take a structured approach, with the use of written communications and formal training, or a more informal approach with members of the group sharing their experiences in continuing dialogue. A climate of openness will strengthen the dissemination of information. This can be achieved by accessibility of information, open communications and encouraging legitimate disagreement and debate. Huber (1991) considers that the more widely distributed information is within an organisation there will be more varied sources for it to exist. This will aid retrieval efforts for individuals and organisational units.

4.5.1.3 Knowledge interpretation

Interpretation refers to the process through which information is given meaning. Huber (1991,p102) suggests that

“...learning has occurred when more and more varied interpretations have been developed, because such development changes the range of the organisation’s potential behaviors, and this is congruent with the definition of learning...”

Organisational units can develop a common interpretation, or different interpretations, but it will be important for the units to understand the nature of the various interpretations. The development of a shared understanding of information will be affected by (Huber, 1991, p102):

- whether the information is communicated in a uniform manner;
- if the information “overloads” the “interpreting unit”;
- the uniformity of the prior cognitive maps possessed by the organisational unit;
- the richness of the communication media; and
- the amount of unlearning (that is, the discarding of obsolete and misleading knowledge) before a new interpretation can be generated.

4.5.1.4 Knowledge utilisation

Knowledge utilisation is concerned with the translation of events and develops the shared understanding of those experiences. Knowledge may be used to improve current capabilities, products or services or a preference may be given to knowledge that will assist in the development of these. The accessibility of information will be a determinant on how information can be used in any given situation.

In the following section a more detailed discussion of how an organisation stores knowledge is given.

4.5.2 Organisational memory

Organisational memory (everything in an organisation that is retrievable) is an internal source of information to the organisation. It can be defined as what people know about customers, products, processes, mistakes and successes (Grayson and O'Dell, 1998). Such knowledge is stored within the organisation in physical records such as reports, operating manuals, computer files, or through shared mental models created by employees sharing experiences and best practice. An organisation's capability to learn will rely on its ability to record organisational experience and, when needed, retrieve these organisational experiences. Knowledge is seen as a strategic asset of the organisation, which will be the key to competitive viability and growth of the learning organisation

However, this leads to the question of how knowledge is acquired and retained in organisational memory. Do individuals retain the knowledge or is it held in some format within the organisation? (Bollinger and Smith, 2001). Individual learning must be transferred to organisational learning to become embedded in an organisation's memory and its structure (Kim, 1993). The reliance on employees' memories to retain, retrieve and apply organisational experiences is vulnerable to turnover and down-sizing. Nonetheless, organisational learning is more than the aggregate learning of the individual members. Organisations have the capacity to store and mobilise knowledge and preserve

certain behaviours in the face of leadership changes and personnel turnover (Leavey, 1998). This can be accomplished by factors such as internal communication and the assimilation of individual knowledge into new work structures, routines and norms. However, Kim (1993) asserts that companies with a high annual turnover rate have a hard time accumulating learning because their experience base is continually being eroded. Kim argues that the intangible and often invisible assets of the organisation reside in individual mental models that collectively contribute to the shared mental models. The shared mental models make the rest of the organisation's memory usable.

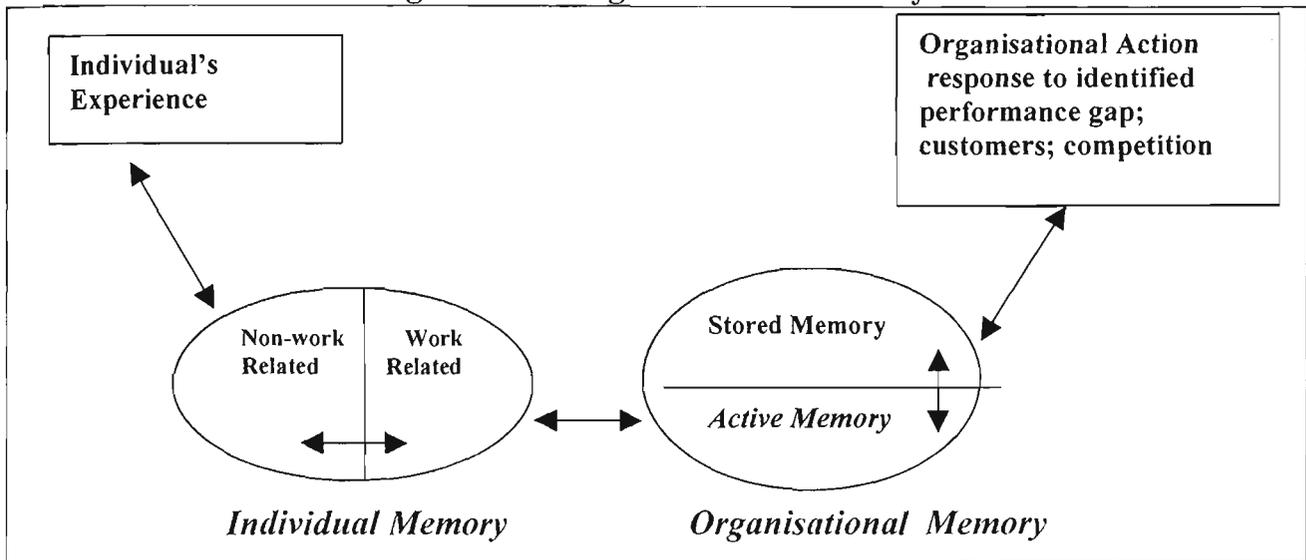
In an ideal situation all the information that comes through an organisation should be incorporated into organisational knowledge and stored. Organisations may implement database systems to manage information, e.g., electronic filing cabinets, document archive systems and knowledge sharing systems. However, a more realistic view considers constraints brought about by the resource allocation, technological capabilities and what is considered an organisational memory system by those within the firm (Ackerman, 1996).

Organisational memory can be viewed along a continuum with one end point representing archival information and the other end point representing knowledge just gained. Ackerman (1996) suggests that organisational memory is influenced by the goal-driven behaviour of organisations and that the knowledge required to meet organisational goals will be the most valued. In relation to archival knowledge, it is most likely that an organisation will only be interested in recalling knowledge that satisfies an immediate problem. A cost benefit approach will need to be applied to the retrieval and interpretation of archival knowledge.

Therefore, it is suggested that the active memory of the organisation, rather than the static memory (physical records such as the reports, operating manuals, computer files) may be more relevant for organisational learning (Kim, 1993). The active memory, both the individual and shared mental models, is what an organisation pays attention to, how it chooses to act, and what it chooses to remember from its experience. The active memory

will be important, as it will be tied to the ongoing processes and considerations of an organisation (Ackerman, 1996). Figure 4.6 illustrates the knowledge transfer to support organisational actions.

Figure 4.6 – Organisational Memory



Synthesised from ideas by Kim (1993) and Ackerman (1996)

Individuals will develop their mental models from both their work and other activities and through their interaction with other members of the organisation. The development of shared mental models will enable the construction of the organisation's memory. The organisational memory will consist of both stored (archived) memory and active memory, which relates to current experiences. Knowledge to narrow the performance gap can be retrieved from current or past experiences, both becoming knowledge of the active memory for problem solving. However, the use of knowledge stored from past experience, the stored memory, will be dependent on two factors: (1) the ability of the current generation of employees to interpret archived knowledge; and (2) the cost associated with accessing the knowledge compared with the benefit the knowledge will have in the current situation.

4.6 Types of learning

Learning can be seen to occur when organisations perform in changed and better ways, with the goal of better outcomes for the organisation. Learning is the highest form of adaptation thereby raising the probability of survival. It is argued that the learning

organisation will have goals to thrive by systematically using its learning to progress beyond mere adaptation (Dodgson, 1993). Learning will involve the process of building procedural knowledge, cognitive strategies and attitudes. Learning can concentrate on methods and tools to improve what is already being done, known as single-loop learning, or on testing the assumptions underlying what is being done, known as double-loop learning. Organisations may have a preference for one mode over the other, but a sound learning system requires both approaches (Appelbaum and Reichart, 1998).

The different types and levels of learning are noted by Argyris and Schon (1978, p.3):

“...Organisational learning involves the detection and correction of error. When the error detected and corrected permits the organisation to carry out its present policies or achieve its present objectives, then the error-detection-and-correction process is single-loop learning. Double-loop learning occurs when error is detected and corrected in ways that involve the modification of an organisation’s underlying norms, policies and objectives...”

The two types of learning have been given different names by different authors and include the following.

1. Learning to support existing practices, with a focus on immediate problem solving related to a product or an operational problem. Terms used to describe this form of learning include: **low-level learning** (Fiol and Lyles, 1985); **single-loop learning** (Argyris and Schon 1978); **operational learning** (Murkerjee et al., 1988); **tactical learning** (Murkerjee et al., 1988); and **adaptative learning** (Ansoff, 1991 and March, 1991, cited by Leavey, 1998).
2. The second type of learning is concerned with the development of abilities for future innovation. Terms used in the literature for this form of learning include: **high-level learning** (Fiol and Lyles, 1985); **double-loop learning** (Argyris and Schon, 1978); **strategic learning** (Vickers and Cordey-Hayes, 1999); **conceptual**

learning (Murkerjee et al., (1988); and *generative* learning (Ansoff, 1991 and March, 1991 cited by Leavy, 1998).

Murkerjee et al. (1988) analysed the two types of learning to identify the impact on knowledge development. As conceptual learning requires employees to try and understand why events occur they develop the “know-why”. Operational learning involves the development of skills of how to deal with experienced events, which leads to the acquisition of “know-how”.

To foster double-loop learning organisations can also make use of scenario analysis. This enables management to imagine alternative futures for its environment and proceed to evaluate its strategic options, in terms of needed products, markets and new investments (Liedtka and Rosenblum, 1996)

4.7 Summary

Overall the learning organisation is inventive, supple and responsive to change. It quickly identifies problem areas; is “hungry” for knowledge to aid decision making; values ideas regardless of the origin; will implement an organisational structure to speed the flow of internal information; and have an urgency to act (Wick and León, 1995). The key to success in today’s business environment is to have learning values as part of the organisation’s culture. Organisational learning will be the key to transform an organisation to a “learning organisation”. To facilitate the learning process organisational processes and practices must be structured as OLMs. The organisation’s environment should be open and encourage creative thinking. To capture the learning from work activities knowledge emanating from such activities should be stored within the organisational memory to have it available at a later time.

Organisational learning should underpin change within an organisation. In the next chapter linkages, which may exist, between the three concepts organisational learning, continuous improvement and the management control system, in particular the performance measurement system, will be further examined.

Chapter 5

Development of Research Framework

In this chapter a synthesis of earlier chapters will be given to explore the importance of organisational learning to continuous improvement, in particular, the role of organisational learning mechanisms, such as the performance measurement system. Reference to literature discussed in Chapters 2, 3 and 4, indicate that authors will usually only discuss two of the three concepts. The discussion given in this chapter will link the three concepts together and in so doing assist in the development of the research framework, which will guide the empirical component of the study.

5.1 Organisational learning and continuous improvement

TQM is about change and continuous improvement embodies this change process. To sustain success in a changing environment, two important factors are necessary, the ability to process information in a way that fosters learning, and the ability to encode the whole in all of the pieces (Liedtka and Rosenblum, 1996). It is suggested that the success of TQM is dependent on an organisation's ability to learn, to absorb, to adapt and to apply conceptual changes and integrate them throughout the organisation (Ford, 1991, cited by Terziovski et al., 2000). As noted in Section 2.1, an organisation will develop its mission and from this its quality philosophy. An organisation's quality philosophy, together with its learning orientation, should guide all activities undertaken within the organisation.

Egan (1993, p.182-183) provides further insight into the relationship between quality and learning. He highlights that both should co-exist within the organisation and echoes the need for organisations to be aware that opportunities for improvement are possible:

"...quality ...is not a goal but an unending quest. Everything can always be done better; quality can always be improved. A sound strategy can always be fine-tuned. Work programs can always be more cost-effective and productive. Managers can always find better ways of hiring and developing people.

Supervisors can always manage people better. Leadership can always be more deeply ingrained in the institution. Total quality and constant learning are inseparable... ” (emphasis added)

To achieve the goals of continuous improvement employees will need to possess both the experience and knowledge to undertake their roles. Drawing a relationship between people and their experiences can link quality and the learning organisation, which results in “inner-directed learning” which produces, in turn, “outwardly directed innovation” or business improvement (McAdam et al., 1998). Therefore, to achieve improvements in performance, organisations cannot underestimate the importance of their employees (Jha et al., 1996).

Organisational learning has been described as the process of improving actions through better knowledge and understanding (Fiol and Lyles, 1985). The adoption of a learning philosophy would suggest that OLMs have been integrated into business operations to both encourage and support learning. A learning focus will encourage employees to provide feedback to evaluate performance, which will enable the outcomes of the continuous improvement activities to be incorporated into the knowledge base within the organisation. From this knowledge base, future improvement can be built on past accomplishments (Noori and Michela, 1999).

Employees will need information to undertake their work activities. An organisation’s knowledge management practices can act as an OLM to support employee action to close performance gaps and allow the organisation to reach its desired performance outcomes. Knowledge gained from the work experience enables employees to learn new knowledge, which can then be stored by the organisation. The knowledge management practices enables the transfer and storing of knowledge to assist employees in their work activities.

Terziovski et al. (2000) carried out field research to examine the mutual dependence between TQM and the learning organisation. As noted in Section 4.2 such an organisation would have organisational learning embedded in all its processes. They

concluded that the success of the companies' quality programs was due to the sustained commitment to "learning". Organisations had achieved success in their quality endeavours by adopting practices that promote a learning culture and adopting OLMs to facilitate learning, and these are listed below.

1. Practices to promote a learning culture

- participation of employees in the development of the vision which lead to a high level of commitment and a sense of ownership;
- transparency of leadership – CEOs displayed full, public and continuing commitment to the program; communicated with staff; and sought direct feedback; and
- removal of status symbols – for example, no time clocks; use of first name basis; and no reserved management parking.

2. OLMs to facilitate learning

- employee training and team learning;
- sharing of knowledge - internal bulletins and bulletin boards;
- regular team briefings, monthly management meetings, cross-functional teams and a company-wide quality awareness program;
- quality circles; and
- benchmarking.

5.2 The role of MCS in continuous improvement

The management control system is a potential OLM to facilitate and promote both the learning philosophy and the quality philosophy. An organisation will have a number of individual systems that together comprise the MCS. As noted by Simons (1991) control systems allow employees to access information to undertake their tasks, and also provide direction in the accomplishment of those tasks by providing information necessary for feedback and control. Whether a control system is an organisational learning mechanism will be dependent upon its structure and embedded features.

The important role an appropriately designed control system can play in continuous improvement is noted by Stata (1989, p.710) who suggests:

*“...management information systems transform data into information and then help managers transform information into knowledge and knowledge into action. The challenge is deciding what information and knowledge in what form are needed **if we keep organisational learning in mind as a goal on information systems design**, then we are more likely to generate the information and knowledge that managers need to take effective action...” (emphasis added)*

Stata (1989) is proposing that the management information system should act as an organisational learning mechanism. As noted by Simons (1991, p.49) below, the MCS is influential on organisational activity as it represents

*“...the formalized routines and procedures that use information to **maintain or alter patterns in organisational activity...**” (emphasis added)*

Therefore, if the MCS is structured to support the learning environment it should be a system that supports decision-making, facilitates rapid and effective learning and unlearning, and enables the acquisition and development of information, knowledge and understanding.

A performance measurement system assists both groups and individuals to identify where to focus their improvement activities and to identify the extent to which performance has changed, and thereby acts as a key enabler to encourage improvement (Bessant and Francis, 1999). If an organisation does not develop an appropriate performance measurement system, improvement activities can fail (Chapman and Hyland, 2000). This can be achieved if an organisation is able to define, in specific performance terms, what it means by quality and then to measure these performance variables objectively (Krishnan et al., 1993). This assertion is supported by Banker et al. (1993) who concluded from

their review of the literature that the extent of benefits derived from continuous quality improvement in relation to the production process is dependent on the provision of shop floor information to workers and supervisors. The ability to translate performance goals into quantitative performance targets is a mechanism for revealing and directing attention towards inherent conflicts among goals (Krishnan et al., 1993). Fine (1986) argues that to achieve cost reduction and productivity improvement the performance measurement system should support quality-based learning by making use of frequently revised goals.

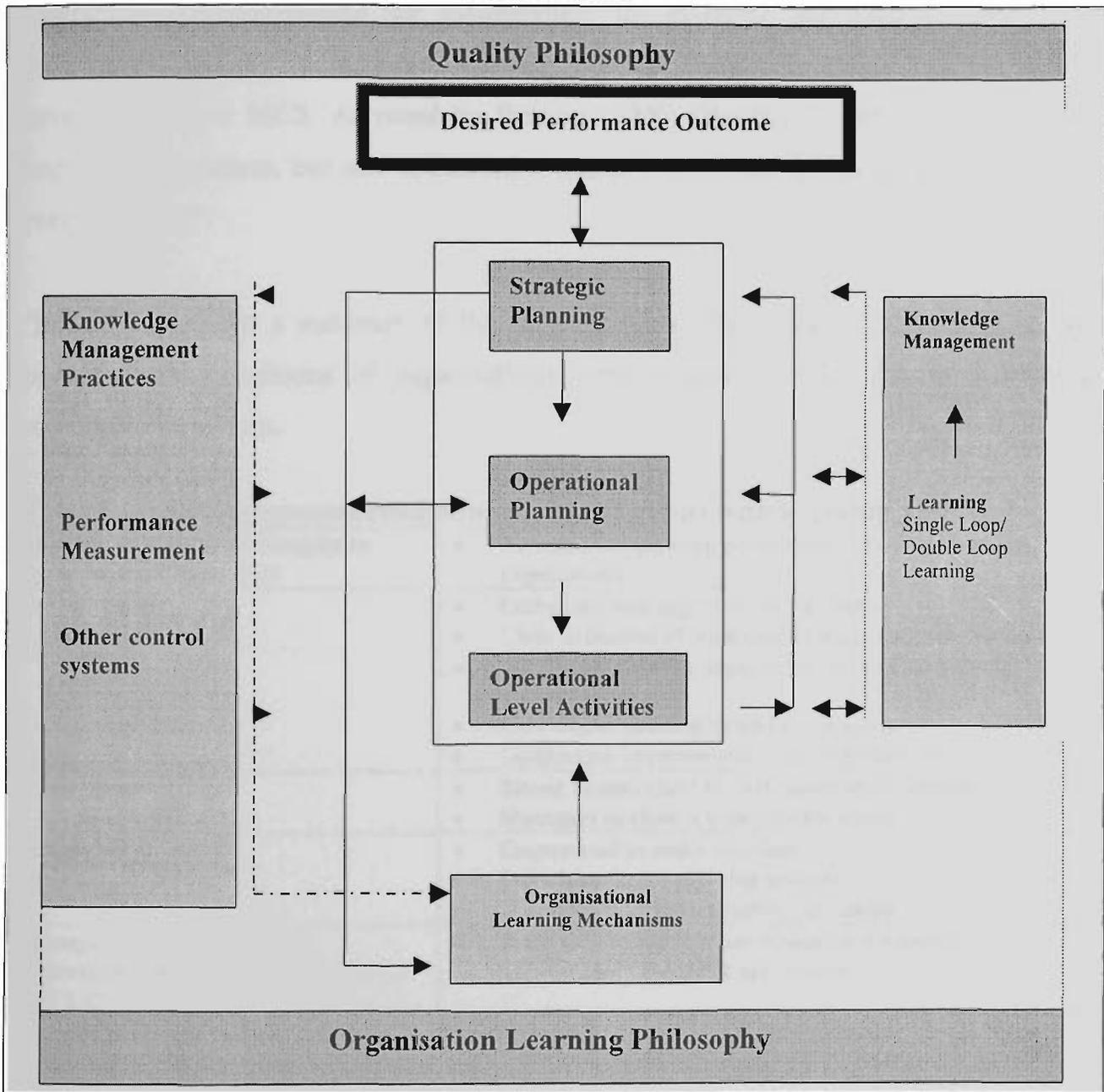
5.3 Development of research framework

It is proposed that employee actions should be guided by the operating philosophies of quality management and organisational learning. The performance measurement system can be one of the organisational learning mechanisms utilised by organisations to direct employees' actions towards achievement of the organisation's objectives and potentially lead to the closure of performance gaps. Knowledge is necessary to support employee' actions, and an organisation's knowledge management practices will enable employees both to access and store information about work activities.

Figure 5.1 illustrates the important role organisational learning mechanisms have both in organisational memory and in supporting employee activities. Through organisational learning mechanisms, such as the performance measurement system, and the knowledge management practices, employees are able both to retrieve and store knowledge for use in undertaking their organisational roles, and have performance measurement to control and evaluate performance. At the three levels of employee action identified, that is, strategic planning activities, operational planning activities and operational level activities, information will be both acquired and stored. At the planning stages, decisions will be made regarding the desired outcomes for the organisation. To support the achievement of these objectives the planning activities will identify the organisational areas where focus is needed to close the performance gap. To encourage this behaviour, performance targets and reward systems will be developed and will be used as the tool to encourage the "right" behaviour from employees. Therefore, control systems will be used to acquire, disseminate and store knowledge and also provide the mechanism for

performance feedback to all levels within the organisation and encourage either single-loop or double-loop learning. . However, the effectiveness of this process is dependent upon the choices made by each organisation in the formulation of the OLMs.

Figure 5.1 – Role of Management Control Systems as Organisational Learning Mechanisms



Developed by author from literature in Chapters 2-4

Tables 5.1 to 5.3 provide a summary of the discussion to date of the attributes of organisations operating with a quality philosophy focusing on continuous improvement. It is argued that for a continuous improvement philosophy to be successful the organisation must have in place the commitment to learning and supportive control systems that are flexible enough to meet the changing needs of the business environment. The absence of such attributes may account for the lack of success of some quality programs. It is important for management to recognise the need to create the environment, which will encourage learning to achieve continuous improvement, and to have a supportive MCS. As noted by Berling (2000) “the task is not only to start the improvement process, but also to sustain it and to incorporate it into the normal part of everyday work”.

Table 5.1 provides a summary of the ideas raised in the literature in relation to the environmental conditions of organisations with a quality philosophy underpinning organisational actions.

Table 5.1 – Environmental conditions of organisations with a quality philosophy

<i>Objective of Quality Philosophy to guide business operations</i>	<ul style="list-style-type: none"> • To improve operating performance to meet customer expectations
<i>Overall Features</i>	<ul style="list-style-type: none"> • Embedded into organisation’s culture • Clear definition of what quality means to the company • All those within the organisation knows what quality means • Continuous learning valued in company • Continuous improvement is an important goal
<i>Management</i>	<ul style="list-style-type: none"> • Strong commitment to continuous improvement • Managers to show a tolerance for errors
<i>Employees</i>	<ul style="list-style-type: none"> • Empowered to make decisions • Participate in the planning process • Encouraged to work smarter, not harder.
<i>Management Control System (discussed in more detail in Tables 5.2 and 5.3)</i>	<ul style="list-style-type: none"> • Structured to support continuous improvement • Measurement and feedback system

In Table 5.2 a summary is given of the ideas in the literature of the organisational learning attributes to support continuous improvement. The learning orientation of an organisation will determine the form and extent of the organisational learning mechanisms adopted by an organisation. As mentioned in Section 4.4 the choices made

by an organisation in the development of its learning environment assists in understanding the competitive advantage enjoyed by the organisation and helps to explain why some organisations are more successful than others.

**Table 5.2– Organisational Learning -
facilitating factors (OLMS) to support continuous improvement**

Objective of Learning Focus	<ul style="list-style-type: none"> • To improve competitive advantage and aid continuous improvement
Overall Features	<ul style="list-style-type: none"> • Organisation rather than segment focus • Team-based work structures • Flat organisational structure • Flexible rather than fixed organisational structure • Environment where the “espoused theories” match the “theories in action” • Participative work environment • Learning to include both single-loop and double-loop learning
Knowledge Management	<ul style="list-style-type: none"> • Organisational memory – both active and archived • Systems to allow retrieval of data • Environmental scanning • Information Sharing
Performance Measurement System (discussed in more detail Table 5.3)	<ul style="list-style-type: none"> • To encourage learning • Measurement and feedback system
Leadership	<ul style="list-style-type: none"> • Management conscious of need for organisational memory • Conscious effort to address defensive routines
Parallel Learning Mechanism	<ul style="list-style-type: none"> • Steering committees to oversee improvement activities – a more centralised quality management to aid coordination throughout the organisation • Use of cross-functional personnel on committees
Employees	<ul style="list-style-type: none"> • Employee training • Coaching and mentoring schemes • Employee suggestion scheme • Low staff turnover • Employee recruitment to be guided based on identified skill shortage in organisation.

In Table 5.3 a summary is given of the ideas in the literature about characteristics of the performance measurement system that might be expected to support organisations pursuing a continuous improvement strategy. The system will be one of the

organisation's learning mechanisms to encourage those within the organisation to understand and to work towards the objectives that have been set.

Table 5.3 – Characteristics of a performance measurement system in a Quality and Learning Environment

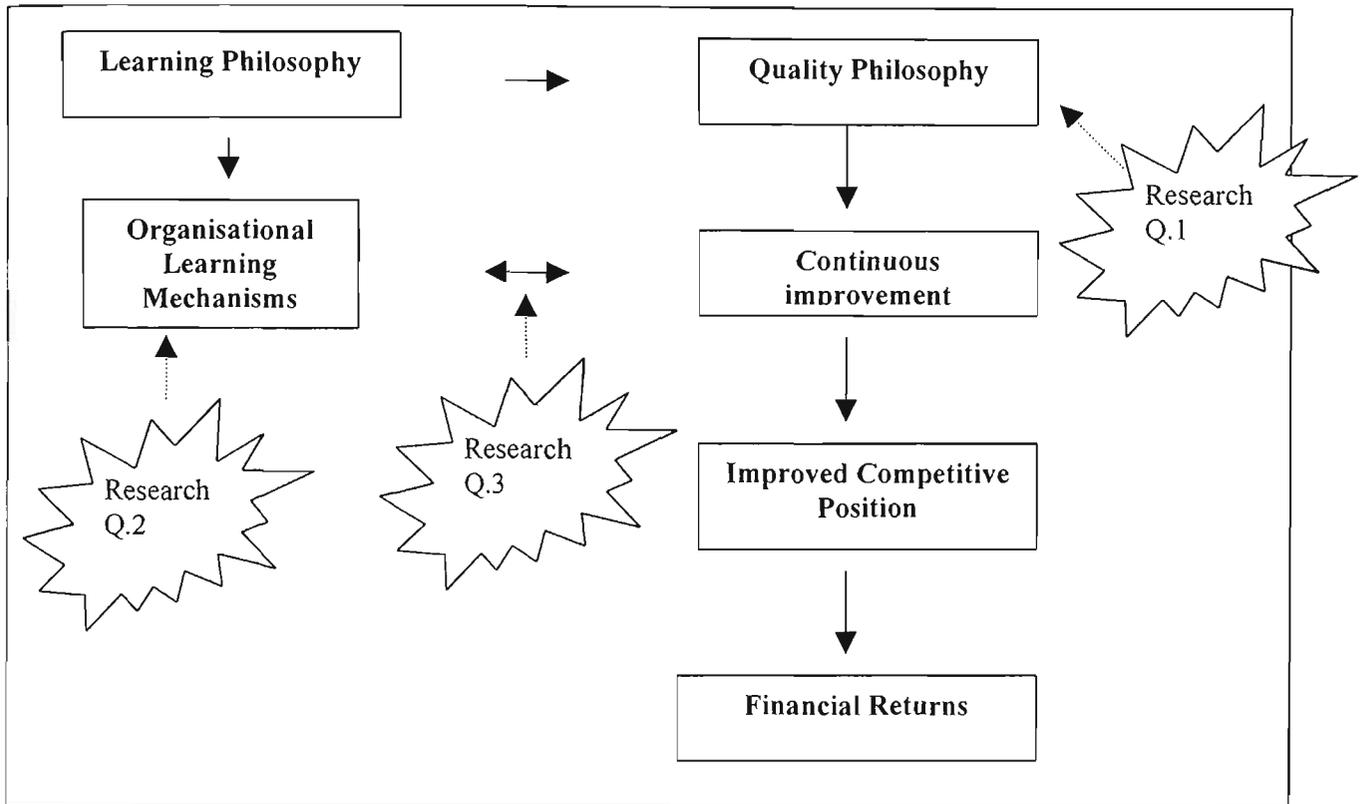
Overall features	<ul style="list-style-type: none"> • be guided by the strategic plan and enable actions to be linked to strategy • translate quality goals to operational goals • Interactive – flexible to meet changing needs of organisation and the level of task uncertainty • Focus on non-financial measures of performance • Focus on group-level appraisal and rewards rather than work systems efforts focusing on individuals, especially at lower hierarchical levels
Performance monitoring	<ul style="list-style-type: none"> • Close monitoring of employee performance • Use of benchmarking techniques • use of balance scorecard techniques • reports generated be directly relevant to quality improvement initiatives • use of cost of quality reports • Reports available when needed
Performance targets	<ul style="list-style-type: none"> • Employee involvement in goal setting • clear and consistent goals for quality program which reflect the importance of the quality improvement initiative • goal setting directed by the level of uncertainty • increased use of cooperative goals to promote dialogue and debate • concentration on the establishment of learning goals • goals frequently revised • use of stretch goals • quantifiable goals with measurement/benchmarking process to provide clear indications of progress towards the goal • objective and linked to employee compensation • be structured to encourage a particular learning outcome, either single-loop or double-loop learning.
Reward System	<ul style="list-style-type: none"> • be team-based • must not be fixed but contingent upon circumstances and performance, and therefore should work as an interactive control system. • Reward system will not only focus on results but reward the efforts taken to accomplish the improvement task

5.3.1 Research framework

The ideas from the literature outlined above have inspired the research framework shown in Figure 5.2. in order to address the specific aims shown in Section 1.4 As noted in Section 2.2.4, regardless of the specific quality outcomes identified by an organisation, all can be linked back to management's need to improve or sustain its financial position. However, it is not the intention of this study to undertake a detailed financial analysis of

organisations. The proposition guiding this research is that for this to be realised, the continuous improvement effort will need to be directed by organisational learning mechanisms.

Figure 5.2 - Research Framework



The decision to apply a continuous improvement philosophy to all activities within the organisation, in itself implies a learning approach, as the organisation would be focused on improving the way it currently operates its business. However, the learning must be nurtured and encouraged by the practices adopted within the organisation. OLMs will be instrumental in developing the learning culture, and the form and extent of the adoption of OLMs will be a determinant of the level of success achieved by an organisation in its continuous improvement endeavours.

Therefore, research questions emanating from the general proposition are:

Research Question 1 - What is the motivation for an organisation to adopt a quality approach to its operations?

- This question involves an exploration of the quality philosophy adopted by organisations to identify the importance of continuous improvement.

Research Question 2 - What are the characteristics of the organisational learning mechanisms used by quality-focused organisations?

An examination of the organisational learning mechanisms will lead to an understanding of the learning orientation of respondent organisations to assess the support given to the continuous improvement efforts.

Research Question 3 - What are the characteristics of the organisational learning mechanisms favoured by organisations with a successful quality program?

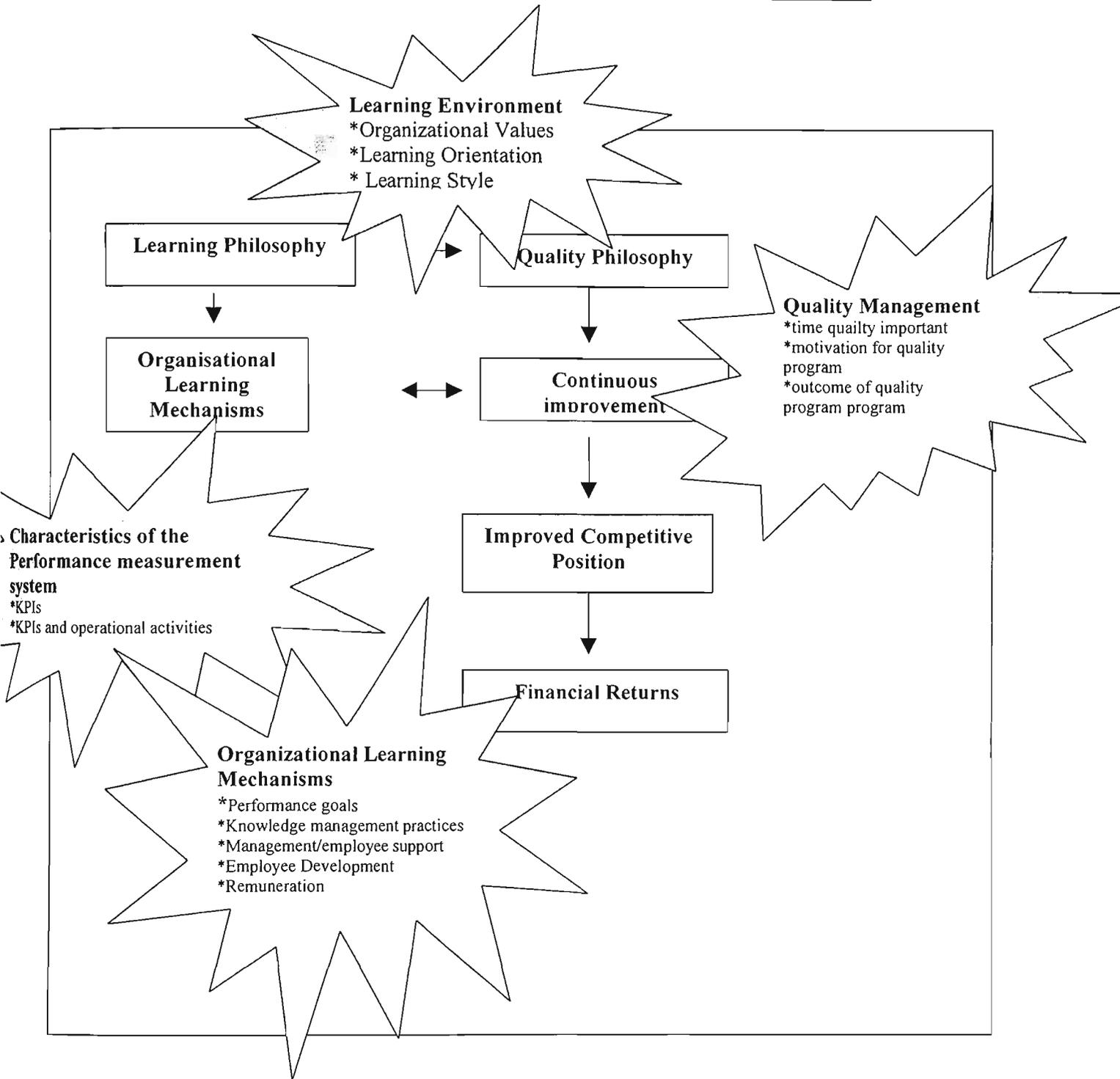
As an organisation will make choices in relation to the extent and form of the organisational learning mechanisms used, the identification of differences in OLMs between organisations with successful and unsuccessful quality programs will assist in the identification of best practice.

Figure 5.3 provides an update to the research framework incorporating the research themes that will guide the analysis of the research questions in Chapters 7 and 8.

5.4 Summary

In this chapter the research framework used to guide the research has been outlined. The research model proposed suggests a link between organisational learning and continuous improvement. An investigation of the form and extent of organisational learning mechanisms adopted by organisations will be examined to determine the importance of learning to the success of the quality program. In the next chapter the research methodology used to conduct the study will be discussed.

Figure 5.3 – Research Framework highlighting research themes



Chapter 6 – Methodology

In this chapter, a discussion is given of the research methodology used in the study. The purpose of the study and the research design are discussed and related to the objectives of the study outlined in Chapter 5.

6.1 Purpose of the study

The objective of this study is to explore organisational learning in quality-focused organisations. In particular, to examine the form and extent of organisational learning mechanisms (OLMs) to support continuous improvement and to identify the attributes that give support to continuous improvement.

6.2 Justification of research method

The research method chosen is influenced by one of the aims of the study, which is to develop an inventory of attributes of organisations with a successful quality program. In order to achieve this it was considered necessary to explore more than one organisation, as a larger number of responses will allow conclusions to be drawn with greater confidence. For this reason the decision was made to use the survey method, utilising a self-administered postal survey.

Saunders et al. (1997) commented that “questionnaires are one of the most widely used survey data collection techniques ... because each person (respondent) is asked to respond to the same set of question... it provides an efficient way of collecting responses from a large sample prior to quantitative analysis” (p.244). The use of questionnaires is considered to be the most widely used method of gathering empirical data (McClelland, 1994) and provides a snapshot of the current state of a group (Janes, 1999).

In this study the survey will seek a ‘snapshot’ of the perceptions of quality managers and finance managers employed in Australian-based organisations certified to ISO9000, on the operating characteristics of their organisation in relation to quality management and

the presence and form of organisational learning mechanisms. As noted by Collier (1992, p.277)

“...the mail questionnaire is a popular instrument for eliciting opinions in empirical accounting research...the mail questionnaire is useful whenever the desire to understand an issue through a study of the perceptions of a large number of informed persons who are geographically dispersed...”

Therefore, the postal survey allows the research questions to be administered to a large number of respondents who are able to complete it at their leisure and have confidence in the confidentiality of their responses (Duncan, 1979).

However, the survey method has a number of limitations, such as question ambiguity and non-response. In this study, precautions were taken to minimise the effect of such limitations. In relation to question ambiguity, a pilot test was conducted with both practitioners and academics. Both groups were encouraged to suggest additional relevant questions or eliminate inappropriate questions (refer sections 6.6.1 and 6.6.2 for more detail). In relation to issues regarding non-response steps were taken to encourage a high response rate, such as a follow-up mail out and anonymity afforded to respondents (refer section 6.4 for more detail).

6.3 Sample selection

The empirical research will focus on organisations that have adopted a quality focus. It would be expected that such organisations are more likely to adopt an operating philosophy of continuous improvement (Abraham et al., 1997; Terziovski et al., 2000)

Quality managers and finance managers were selected from organisations that have ISO 9000 certification. Such certification provides an independent third-party assessment that the organisation has implemented a quality approach to operations, at least in terms of the requirements of the quality standard. The use of such organisations is seen in the research of others (Claver et al., 2002; Hendricks and Singhal, 1997; Llopis and Tari, 2001). Quality managers and finance managers were considered to be the most appropriate

respondents as their work responsibilities would expose them to their organisation's operating practices in relation to quality management and the use of control systems.

Potential respondents were sourced from the publicly available on-line Joint Accreditation System of Australia and New Zealand (JAS-ANZ) database of certified organisations (www.jas-anz.com.au). The database was accessed during September and October 2003. JAS-ANZ is a not-for-profit, self-funding international organisation established under a Treaty between the Governments of Australia and New Zealand on 30 October 1991. The purpose of the organisation is to act as the joint accreditation body for Australia and New Zealand for certification of management systems, products and personnel. The mission of JAS-ANZ is to have an accreditation process that enhances trans-Tasman trade and achieves international recognition of the excellence of Australian and New Zealand goods and services.

The JAS-ANZ Register of Accredited and Certified Organisations lists all bodies accredited by JAS-ANZ, and all organisations/personnel certified under their accredited programmes. To access the list of certified organisations it is necessary to select certain characteristics from a drop-down box that include: country, state, specific organisation, quality standard of interest, Industry (ANZSIC) code and accredited body (the organisation responsible for undertaking the audit). Options selected for this study were country, Australia; each individual state was selected; no specific organisation or ANZSIC code was selected so that all organisations were listed; and the Lloyds Register Quality Assurance Limited accredited body was selected due to its focus on quality certification.

A random sample, from each state of Australia, was selected comprising 500 organisations. Surveys were posted to both the Quality Manager and Finance Manager of each organisation.

6.4 Non-response bias

One criticism of the questionnaire approach is the issue of non-response. Since the total population identified is either not included or does not respond there is, as with all survey questionnaires, an issue relating to the representativeness of the sample. This is the problem of “non-response, i.e., those observations or responses that are not available to researchers because of a failure to return questionnaires or failure to answer one or more questions” (Wallace and Mellor, 1988, p.132). Although Kanuk and Berenson (1975) note though “contrary to general belief, some very high mail questionnaire response rates have been achieved” (p.440) others have suggested that response rates for all types of surveys are declining (Tourangeau, 2004). The non-response due to non-participation may bias survey results if the views of responding Quality Managers and Finance Managers systematically differ from non-respondents. However, larger non-response rates do not necessarily imply larger biases (Curtin et al., 2000). Epstein and Freedman (1994) note that there may be a difference between those who respond to postal surveys and those who do not (p.103), while de Vaus (1992) notes that “often non -responders are different in crucial respects to responders” (p.73). It may be that those who respond may be interested in the topic, or may be more affected by the issues involved, or the issue may be too sensitive or controversial. It may be that particular industry groups are more likely to respond. The response rate is a guide to the sample’s potential representativeness of the population though what is an adequate response rate has no statistical basis. The issue is related to the extent of bias reflected in the respondent sample rather than the actual response rate (Babbie, 1989).

In an attempt to increase the response rate a second mail-out was undertaken. This is necessary, as a follow-up with non-respondents was not possible, as anonymity was assured to all participants. To encourage responses all communications were forwarded on Victoria University letterhead in an attempt to increase the response rate (Faria and Dickinson, 1996).

To test for non-response bias there was the choice either to follow-up with all non-respondents as to the reason for non-participation, or to use statistical analysis to compare

early responses to late responses. As recommended by Armstrong and Overton (1977), a statistical analysis for non-response bias was undertaken to compare early responses (respondents to the first mail out) versus late responses (respondents to the second mail out).

6.5 Questionnaire development

The questionnaire was developed based on the analysis provided in the literature review (Chapters 2 through 5). The final questionnaire comprised 8 A4 pages containing 26 questions with a total of 173 components (see Appendix 1.0). The number of questions was determined by the aim and complexity of the research objectives and the desire to make each question as simple as possible.

A Likert-style, five-point, rating scale was adopted for questions 11, 12, 13, 14, 15, 18 and 19 to gauge respondents' perceptions of either the degree of importance or level of agreement to the variable. Questions 1 to 10, 16, 17, and 20 to 25 require the respondent to select a category that best suits their organisation. In addition, there are two open-ended questions that allow respondents to add further comments and provide additional insight into quality management practices in their organisation. Respondents were given the opportunity to comment on: reasons why the success of their organisation's quality initiative either "fell short of expectations" or "was unable to be determined" (*question 7a*); and their opinion on their organisation's management control system to monitor and assess continuous improvement activities (*question 26*). The grouping of questions is shown in Table 6.1.

Table 6.1 – Grouping of questions in survey instrument

<i>Question Groups</i>	<i>Questions</i>
Profile of Respondent's Organisation	1 – 5
Characteristics of Quality Program	6 – 10
Factors influencing development of Key Performance Indicators	11
Factors influencing the ongoing nature of the quality initiative	12
Issues relating to information dissemination in relation to format and storage	13
Attributes of quality program	14
Issues relating to employee development	15
Employee remuneration & reward structure	16 – 17
Attributes in relation to organisational learning	18
Attributes in relation to performance measurement	19
Reporting timeframes	20
Profile of respondents to survey	21 – 25

The order of questions in the survey instrument was informed by the feedback given from the respondents to the pilot study. It was considered that from a respondent’s viewpoint the grouping of “like” questions would be more logical.

5.5.1 Development of survey questions

In this section the specific questions in the questionnaire will be discussed. First, the questions to understand the organisational environment will be explored, second the remainder of the questions will be linked to the ideas developed from the literature as outlined in Section 5.3. Next, the questions will be regrouped to align with the research themes outlined in the research framework in Figure 5.2 Section 5.3.1 and last, the source of questions will be given.

Survey questions to gain an overview of respondent organisations

Table 6.2 provides details of the questions that were used to obtain a profile of respondents and their organisations, and the characteristics of the quality management program.

Table 6.2– Survey questions to obtain characteristics of organisation, quality management, and respondents

	<i>Characteristic</i>	<i>Question</i>
<i>Organisational characteristics</i>	<ul style="list-style-type: none"> • Number of employees • Industry Classification • Industry Type • Competitive Environment • Competitive Edge 	<p>Q1</p> <p>Q2</p> <p>Q3</p> <p>Q4</p> <p>Q5</p>
<i>Respondent characteristics</i>	<ul style="list-style-type: none"> • Area of responsibility • Years of Work experience • Gender • Age group • Level of education 	<p>Q21</p> <p>Q22</p> <p>Q23</p> <p>Q24</p> <p>Q25</p>

Survey questions linked to ideas drawn from literature review

In Tables 5.1 to 5.3 a synthesis of the literature review was given, and this was used as the basis for the development of the survey questions. The link between the research framework and the survey questions is shown in Tables 6.3 to 6.5 which also indicate the

specific survey question to explore each characteristic.

Table 6.3 gives a list of the survey questions developed to explore the environmental conditions of organisations with a quality philosophy underpinning organisational actions. Questions were developed to identify the operating philosophy of the organisation in order to assess the importance of both quality and learning. This was measured by the extent both had been woven into the organisation's culture. Other questions explored the leadership role of management, the role and importance of the employee and the overall support of the MCS.

Table 6.3– Survey questions to explore environmental conditions of organisations with a quality philosophy

	<i>Characteristic</i>	<i>Question</i>
<i>Objective of Quality Philosophy to guide business operations</i>	<ul style="list-style-type: none"> to improve operating performance to meet customer expectation continuous improvement an important goal 	Q12, Q14.1 to Q14.6, 14.26 Q14.11, Q14.13 Q14.12
<i>Overall Features</i>	<ul style="list-style-type: none"> embedded into organisation's culture clear definition of what quality means to the company all those within the organisation knows what quality means Continuous learning valued in company 	Q14.10 Q14.8 Q14.8 Q18.4, Q18.8, Q18.12
<i>Management</i>	<ul style="list-style-type: none"> Strong commitment to continuous improvement Managers to show a tolerance for errors 	Q14.7, Q14.9, Q14.17, Q14.20, Q15.3 Q14.15
<i>Employees</i>	<ul style="list-style-type: none"> Empowered to make decisions Participate in the planning process Encouraged to work smarter, not harder. 	Q15.22 Q18.1, Q18.2 Q15.10
<i>Management Control System (discussed in more detail in Tables 6.4 and 6.5)</i>	<ul style="list-style-type: none"> Structured to support continuous improvement Measurement and feedback system 	See Table 6.5 Q15.5, Q15.24, Q19.8, Q19.26, Q19.28

Table 6.4 provides a list of the survey questions developed to explore the organisational learning attributes to support continuous improvement. Questions were asked to explore

whether continuous improvement was supported by organisational learning mechanisms.

Table 6.4– Survey questions to explore organisational learning - facilitating factors (OLMS) to support continuous improvement

	<i>Characteristic</i>	<i>Question</i>
<i>Objective of Learning Focus</i>	To improve competitive advantage and aid continuous improvement	Q12
<i>Overall Features</i>	<ul style="list-style-type: none"> • Team-based work structures • Flat organisational structure • Environment where the “espoused theories” match the “theories in action” • Participative work environment • Learning to include both single-loop and double-loop learning 	Q15.19 Q18.14 Q18.7 Q18.9, 18.20, Q18.22, 18.23, Q19.23 Q14.16, Q14.18 Q14.19, Q14.25, Q14.27, Q15.1, Q15.2, Q15.25, Q18.11
<i>Knowledge Management</i>	<ul style="list-style-type: none"> • Organisational memory – both active and archived • Systems to allow retrieval of data • Environmental scanning • Information Sharing 	Q18.21, 18.24, Q15.7, Q15.8 Q13.6, Q13.10, Q13.11 Q18.13, Q18.18, Q18.19 Q15.6, Q15.9, Q15.20, Q15.23, Q18.6, Q18.10, Q18.15, Q18.25
<i>Performance Measurement System (discussed in more detail Table 6.5)</i>	<ul style="list-style-type: none"> • To encourage learning • Measurement and feedback system 	See Table 6.5
<i>Leadership</i>	<ul style="list-style-type: none"> • Management conscious of need for organisational memory • Conscious effort to address defensive routines 	Q13.9 Q18.7
<i>Parallel Learning Mechanism</i>	<ul style="list-style-type: none"> • Steering committees to oversee improvement activities – a more centralised quality management to aid coordination throughout the organisation • Use of cross-functional personnel on committees 	Q14.14, Q14.21 to 14.23 Q14.24
<i>Employees</i>	<ul style="list-style-type: none"> • Employee training • Coaching and mentoring schemes • Employee suggestion scheme • Low staff turnover • Employee recruitment to be guided based on identified skill shortage in organisation. 	Q15.4, Q15.11, 15.15, Q15.16, Q15.17, 15.18, Q15.21, Q18.3, Q18.17 Q15.14 Q18.5 Q15.13 Q18.16

Table 6.5 – Survey questions to explore the characteristics of a performance measurement system in a TQM and Learning Environment

	<i>Characteristic</i>	<i>Question</i>
<i>Overall features</i>	<ul style="list-style-type: none"> • be guided by the strategic plan and enable actions to be linked to strategy • translate quality goals to operational goals • Interactive – flexible to meet changing needs of organisation and the level of task uncertainty • Focus on non-financial measures of performance • Focus on group-level appraisal and rewards rather than work systems efforts focusing on individuals, especially at lower hierarchical levels 	<p>Q11, Q19.1, Q19.2, Q.19.3 Q19.25 Q19.6, Q19.9</p> <p>Q19.5, Q19.11, Q19.19 Q17</p>
<i>Performance monitoring</i>	<ul style="list-style-type: none"> • Close monitoring of employee performance • Use of benchmarking techniques • Use of balance scorecard techniques • Reports generated be directly relevant to quality improvement initiatives • Use of cost of quality reports • Reports available when needed 	<p>Q19.20, Q19.27 Q19.24 Q13.5, Q13.7, Q13.8, Q20.7 Q13.1 Q20</p>
<i>Performance goals</i>	<ul style="list-style-type: none"> • Employee involvement in goal setting • Clear and consistent goals for quality program which reflect the importance of the quality improvement initiative • Goal setting directed by the level of uncertainty • Increased use of cooperative goals to promote dialogue and debate • Concentration on the establishment of learning goals • Goals frequently revised • Use of stretch goals • Quantifiable goals with measurement/benchmarking process to provide clear indications of progress towards the goal • Objective and linked to employee compensation • be structured to encourage a particular learning outcome, either single-loop or double-loop learning. 	<p>Q19.10, Q19.12 Q19.7 Q19.13, Q19.14</p> <p>Q19.22</p> <p>Q19.15, Q19.23</p> <p>Q19.4, Q19.15</p> <p>Q19.6 Q19.18 Q19.7, Q19.17</p> <p>Q16</p> <p>Q19.16. Q19.9</p>
<i>Reward System</i>	<ul style="list-style-type: none"> • be team-based • must not be fixed but contingent upon circumstances and performance, and therefore should work as an interactive control system • Reward system will not only focus on results but reward the efforts taken to accomplish the improvement task 	<p>} Q17</p>

Table 6.5 provides an outline of the survey questions to explore the characteristics of the MCS, and in particular the performance measurement system that would be expected to support organisations pursuing a continuous improvement strategy. Questions were asked to understand the philosophy behind the design of the MCS, that is, whether it was guided by the strategic objectives of the organisation, and whether the performance goals encourage both learning and continuous improvement.

Survey questions linked to research themes

For analysis purposes the questions outlined in Table 6.1 above have been regrouped in line with the themes identified in Chapter 5 (refer Figure 5.2, Section 5.3.1) and this revised grouping will guide the remainder of the study. This is shown in Table 6.6 on the next page.

Source of survey questions

In Table 6.7 details are provided of how the survey questions were developed. It can be seen that individual questions were sourced from either prior studies, or developed by the author after reviewing the literature in Chapters 2 to 5.

Table 6.7– Source of survey questions

<i>Question</i>	<i>Source</i>
Q.13.1, Q.14.27, Q.15.11, Q.15.17, Q.15.22, Q.18.2 to Q.18.3,	Adapted Zhang, Z., Waszink, Ab, and Wijngaard, J. (1999)
Q.10, Q.14.26, Q.15.4, Q.15.23,	Adapted Flynn, B., Schroeder, R.G., And Sakakibara, S. (1995)
Q.14.1 to Q14.6, Q.15.18 to. Q.15.19,	Adapted Claver, E., Tari, J., and Molina J. (2002)
Q.14.7 to Q.14.8	Adapted Ho, D.C, Duffy, V., and Shih, H.M.
Q.14.11	Adapted Douglas, T., and Judge, W., (2001)
Q.14.25, Q.15.3, Q.15.21,	Samson,D. and Terzivski, M. (1999)
Q.15.6 to Q.15.8, Q.15.12, Q.15.16, Q.18.20, Q.18.25,	Adapted Templeton, G.F., Lewis, B.R., and Snyder C.A. (2002)
Q.15.20	Adapted Jashapara., A. (2003)
All remaining questions	Developed by author from ideas in the literature review Chapters 2-4

Table 6.6– Survey questions linked to research themes

	<i>Characteristic</i>	<i>Question</i>
<i>Characteristics of Quality Management</i>	Time quality Important	Q6, Q8, Q14.10, Q14.12, Q.14.14
	Factors motivating quality	Q.12.1 to 12.14, Q.14.25 to Q.14.27. Q.19.2
	Outcomes of quality program	Q7, Q.14.1 to Q14.6,
<i>Characteristics of Performance Measurement System</i>	Key performance indicators	Q11.1 – 11.7, Q.19.1
	Key performance indicators and operational activities	Q.19.3, .19.28
<i>Organizational Learning</i>	<i>Learning Environment</i>	
	• Organizational values	Q.14.11, Q14.13, Q.14.15, Q.18.3 to Q18.4,
	• Learning Orientation	Q.18.1 to Q.18.2, Q.18.7, Q.18.12, Q.18.14 to Q.18.15
	• Learning Style	Q.14.16, Q.14.18 to Q.14.19, Q.14.25, .15.1, Q.15.2, Q.15.10, Q15.22, Q.15.25, Q.18.8, Q.18.11
<i>Organizational Learning Mechanisms</i>	<i>Management and employee support</i>	Q.14.7 to Q.14.9, Q14.17, Q.14.20, Q.15.3
	<i>Employee Development</i>	Q.15.4, Q.15.11, Q.15.14 to Q.15.19, Q.15.21, Q.18.17
	<i>Performance Goals</i>	
	• Setting of performance goals	Q.18.2, Q.19.4, Q.19.10, Q.19.12, Q.19.25, Q.19.27
	• Characteristics of performance goals	Q.19.6 to Q.19.7, Q.19.13-Q19.16, Q.19.18 to Q19.9, Q.19.21, Q.19.23
	• Performance feedback	Q.15.24, Q.18.13, Q.19.8, Q.19.20, Q.19.24, Q.19.26
	<i>Knowledge Management Practices</i>	
	Information Acquisition	Q.15.12 to Q15.13, Q.18.5, Q.18.16, to Q.18.19, Q.18.24
	• Information Storage	Q.13.5 to Q.13.6 Q13.9 to Q13.10, Q.18.21, Q.18.24 – .18.25
	• Information Sharing	Q.13.11, Q.15.6 to Q.15.9, Q15.20, Q15.23, Q.18.20, Q.18.22 to Q18.23
• Information Dissemination	Q.13.1 to Q13.5, Q13.7 to Q13.8, Q.14.21 to Q14.24 Q.18.6, Q18.9 to Q.18.10, .19.11	
• Characteristics of performance reports	Q.15.5, Q.19.9, Q.20.1 to Q.20.8	
<i>Remuneration System</i>		
• Components	Q.16	
• Performance assessment for incentive payments	Q.17	

6.6 Pre-testing the questionnaire

The purpose of pre-testing is “to discover possible weaknesses, inadequacies, ambiguities and problems in all aspects of the research” (de Vaus, 1991, p.293) and, “to avoid any problems and/or distortions in the preparatory stages of the research” (Sarantakos, 1998, p.291). Due to the potential disadvantages of mail questionnaires pre-testing of the questionnaire was undertaken to ensure suitability of the questions and to eliminate possible ambiguity with the questions. The pre-testing consisted of two stages. In the first stage, the preliminary pilot study, three academics, familiar with the concepts being researched, were asked to comment on the questionnaire. In the second stage, the pilot study, the questionnaire was sent to fifteen (15) Quality Managers and fifteen (15) Finance Managers to assess whether there were any residual problems in the questions and their format. In both stages, participants were asked to comment on specific questions in relation to the survey instrument.

6.6.1 Preliminary pilot test

In this stage of the pilot study the intention was to determine whether the questionnaire was constructed in such a way that it was likely to obtain the information sought and to ensure that the questions were clear and understandable. In addition, advice was sought on presentation and layout issues.

Three academics agreed to participate in this preliminary pilot stage. The academics selected were knowledgeable in the subject matter of the survey and had experience in undertaking data collection by survey.

Prior to being given the questionnaires the aims of the study and the types of information the questionnaire were intended to elicit were discussed with each individual. Each participant was then given a copy of the questionnaire for comment. Their advice was also sought on the layout of the questionnaire and they were asked to identify any improvements that could be made.

7.1.2 The issue of non-response

As noted in Section 6.4 non-response issues arise when responses are not available to researchers because of a failure to return questionnaires or failure to answer one or more questions. An analysis of the non-responses is given below.

7.1.2.1 Non-response bias due to missing data

Missing responses to individual questions can occur due to a number of reasons, such as: respondents refusing to answer the question, respondents being unable to answer the question due to lack of knowledge or respondents inadvertently missing a particular item.

An examination of the responses by individual respondents identified a problem with missing data for two questions, in particular, question 16 and question 17, which related to the remuneration practices of organisations. Comments on the questionnaire suggested that many respondents were unable to answer these questions because of a lack of knowledge of the subject area. Therefore, the limited responses are reported but not included in any inferential statistical analysis. Missing responses from other questions were random and suggest that the respondent may have inadvertently missed the question. However, all questionnaires have been treated as valid and, when appropriate, gaps are reported as missing data.

7.1.2.2 Non-response bias due to questionnaires not returned

An independent sample t-test was conducted and Table 7.2 shows the only significant variable was respondent gender. Further examination of this result shows that in the second mail out fewer males responded. However, this was not considered significant because of the high percentage of female responses overall. The null hypothesis was posed that the samples came from the same population and for all characteristics, except gender, the null hypothesis is not rejected at the .05% level of confidence.

Table 7.2 - Test for non-response bias

<i>Characteristic</i>	<i>N=</i>	<i>Mean</i>	<i>Significance (p>.05)</i>
<i>Number of Employees</i>			
First Mail Out	175	2.38	.092
Second Mail Out	101	2.66	
<i>Industry Group</i>			
First Mail Out	176	9.25	.160
Second Mail Out	101	11.33	
<i>Competitive Environment</i>			
First Mail Out	176	2.54	.176
Second Mail Out	101	2.65	
<i>Respondent Gender</i>			
First Mail Out	173	1.76	.018
Second Mail out	99	1.87	
<i>Respondent Area of Responsibility</i>			
First Mail Out	175	1.46	.629
Second Mail Out	101	1.5	
<i>Respondent Age</i>			
First Mail Out	176	2.99	.221
Second Mail out	100	3.12	

7.2 Characteristics of respondents

The profile of respondents to the questionnaire is detailed in Table 7.3.

Table 7.3– Profile of Respondents

Panel A: Area of Responsibility		
<i>(Question 21)</i>	<i>Number of Respondents (n=276)</i>	<i>Valid Percentage</i>
Quality Management	173	62.6%
Financial Management	74	26.8%
Joint Quality and Financial Management	27	10.0%
Joint completion of survey	2	0.01%
Panel B: Years of experience		
<i>(Question 22)</i>	<i>Number of Respondents (n=277)</i>	<i>Valid Percentage</i>
Under 10	52	18.8%
11- 20 years	117	42.1%
Over 20 years	108	39.3%
Panel C: Educational Qualification		
<i>(Question 25)</i>	<i>Number of Respondents (n=275)</i>	<i>Valid Percentage</i>
Secondary School	63	22.9
Graduate	62	22.5
Post-Graduate	89	32.4
Professional	61	22.2

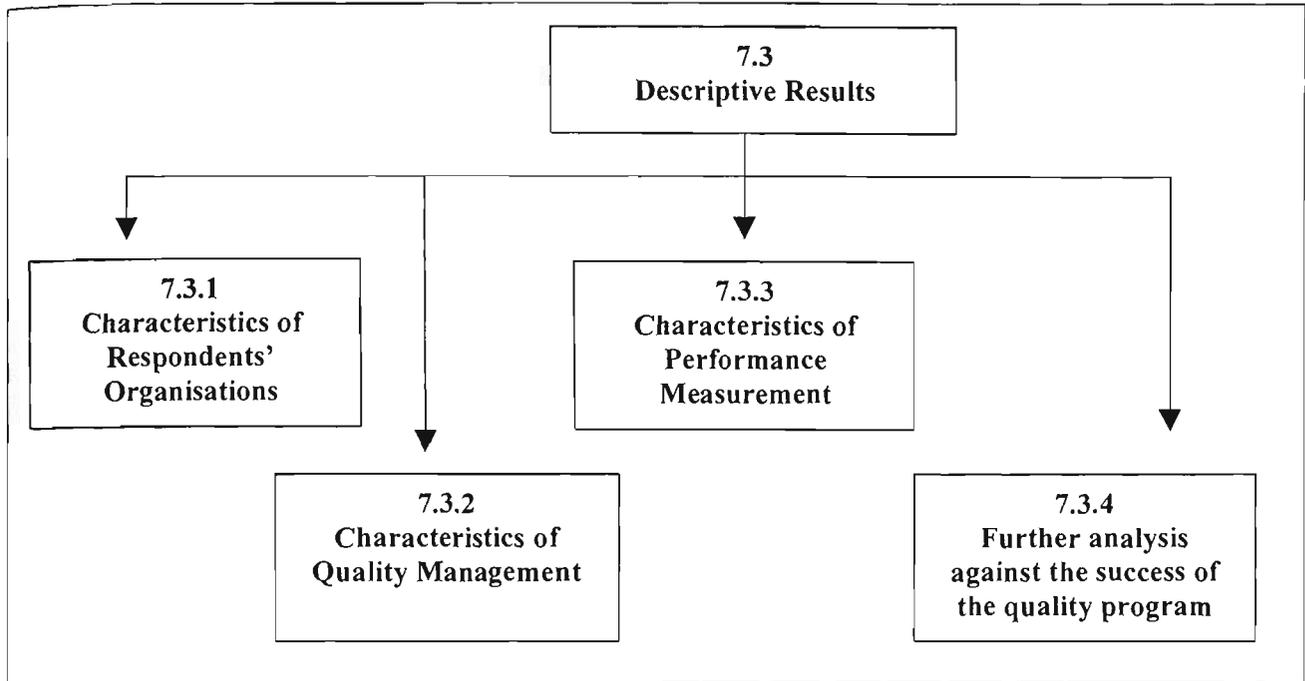
The majority of respondents (62.6%) is responsible for quality management activities, with 26.8% responsible for financial management and 10% responsible for general management, with a further 2 surveys completed jointly by the Quality Manager and the Finance Manager. Of the 10% responsible for general management, when cross-tabulated with the firm size, these respondents are from organisations of less than 50 employees. The majority of respondents are female (80.9%) of whom 138 are responsible for quality management; 62 for financial management; and 20 have general management responsibilities. Of the males responding (19.1%), 32 are responsible for quality management; 11 for financial management; and 8 have general management responsibilities.

The majority of respondents (84.1%) has more than 10 years experience in business with 77.1% of respondents having undertaken post-secondary education. Such a profile suggests that respondents have the working knowledge to comment on the issues raised in the questionnaire in relation to their organisation.

7.3 Descriptive results

The descriptive results of the survey follow and Tables 7.4 to 7.110 show the perceptions of respondents to specific issues relating to their organisation. First, there is an analysis of the respondents' organisation in relation to its structure, operating environment, quality management practices, and performance measurement system. This will be followed by an analysis of the respondents' attitudes to their organisation's learning environment to support continuous improvement. Main findings are shown in Tables and other responses are discussed where appropriate. Throughout the chapter diagrams are provided to show the structure of each section. Figure 7.1 provides the structure for this section.

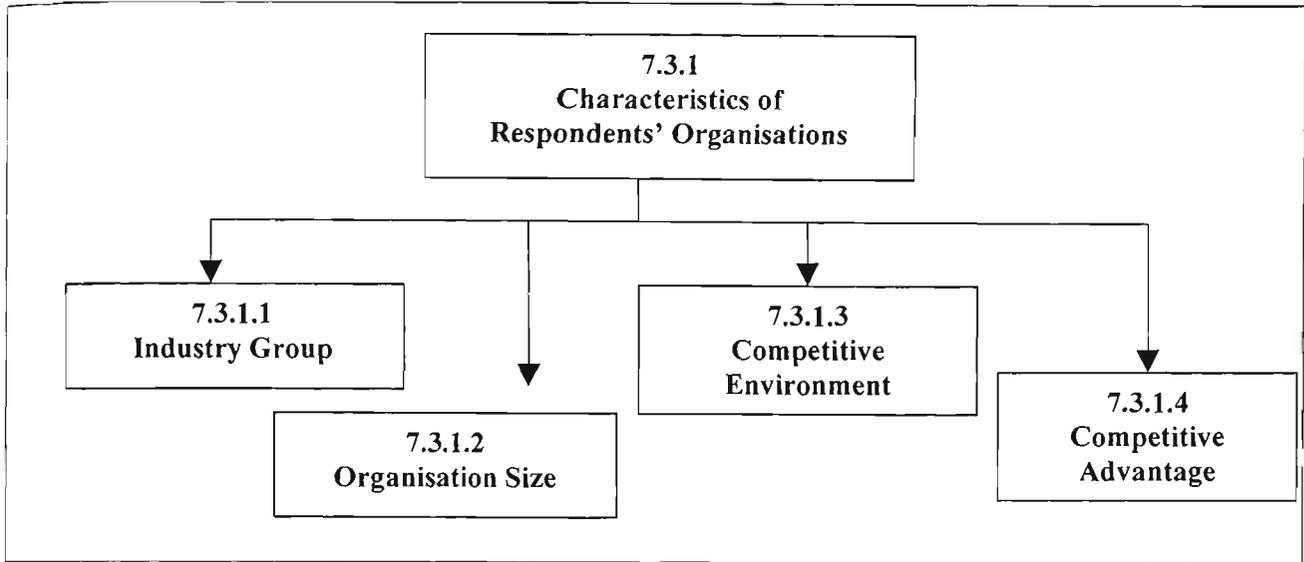
Figure 7.1 – Structure of Section 7.3



7.3.1 Characteristics of respondents' organisations

To build a profile of respondents' organisations questions were asked regarding a number of characteristics in relation to the demographics: industry group; size; competitive environment; and the source of competitive advantage. Analysis was also undertaken of the characteristics of the quality management system in order to gain a richer understanding of the motivation of businesses to adopt such an operating philosophy and to understand more about its effect on business operations. In addition, an analysis of the performance measurement system is provided to identify the philosophy, which influences the structure of the system. A well-structured measurement system will provide the linkage between strategies and actions. Figure 7.2 provides a summary of the structure of section 7.3.1

Figure 7.2 – Structure of Section 7.3.1



7.3.1.1 Industry group

Table 7.4 shows the breakdown of respondents' organisations in accordance with the Australian and New Zealand Standard Industrial Classification coding system. The categorisation of each organisation indicates that the respondents are from a cross section of industrial groups, with the majority from the manufacturing industry (57.8%). When asked about the industry type (*question 3*) the majority of respondents identified the either manufacturing/processing (68.1%) or service (24.3%).

Table 7.4 - Industry Group

<i>Industry Group</i> (<i>Question 2</i>)	<i>Respondents</i> (<i>n=277</i>)	
	<i>Number</i>	<i>Percentage</i>
Agriculture, Forestry and Fishing	7	2.5%
Mining	21	7.6%
Manufacturing	160	57.8%
Electricity, Gas and Water	4	1.4%
Construction	27	9.7%
Wholesale Trade	5	1.8%
Retail Trade	-	-
Transport and Storage	26	9.4%
Communication	7	2.5%
Finance and Insurance	1	.4%
Property and Business Services	2	.7%
Government Administration and Defence	8	2.9%
Health and Community Services	5	1.89%
Personal and Other Services	4	1.4%

7.3.1.2 Organisation size

The number of employees is used as a measure to determine the size of the organisation. Table 7.5 contains a breakdown of respondents' organisations by number of employees and shows that the respondents are from a cross section of small to large organisations.

Table 7.5 - Size of organisation as measured by number of employees

<i>Number of Employees (Question 1)</i>	<i>Number of respondents (n=276)</i>	<i>Percentage</i>	<i>Valid Percentage</i>
<i>Small to medium sized organisations</i>		49.6%	
Under 50 employees	87		31.5%
Between 51 – 100 employees	50		18.1%
<i>Medium sized organisations</i>			
Between 101 – 500 employees	87	31.5%	31.5%
<i>Large Organisations</i>			
Between 501 – 1000 employees	22	18.9%	8.0%
Over 1000 employees	30		10.9%

49.6% of respondents are employed by small to medium sized organisations (under 100 employees), 31.5% by medium sized organisations (101 – 500 employees) and 18.9% by large organisations (over 500 employees).

7.3.1.3 Competitive environment

Table 7.6 indicates that for the majority of the respondents (97.7%) their organisations are operating in a competitive environment, with 59.2% of the respondents rating the environment as very competitive. Twelve respondents (4.3%) consider that their organisation operates in a non-competitive environment.

Table 7.6 – Competitive Environment

<i>Level of Competition (Question 4)</i>	<i>Number of respondents (n=277)</i>	<i>Valid Percentage</i>
No competition – commercial	10	3.6%
No competition – government	2	0.7%
Competitive	101	36.5%
Very Competitive	164	59.2%

To assist in understanding the ability of organisations to compete in the market place and perhaps their market position respondents were asked to rate their organisation's product/service quality compared to competitors. Responses are detailed in Table 7.7.

Table 7.7 - Comparison of product/service quality compared to competitors

<i>Comparative Advantage (Question 10)</i>	<i>Number of respondents (n=274)</i>	<i>Valid Percentage</i>
Superior	158	57.7%
Similar	113	41.2%
Inferior	1	0.4%
No comparison – Government	2	0.7%

The majority of respondents (57.7%) consider their organisation has superior quality of product/service to competitors, with 41.2% ranking it as similar and only one respondent giving a ranking below competitors. Two respondents from Government organisations did not rank their organisation (*question 10*).

7.3.1.4 Competitive advantage

To gain insight into how organisations respond to the competitive environment respondents were asked to comment on the competitive advantage of their particular organisation. Table 7.8 shows that the majority of respondents (96.3% - sum of highlighted percentages) identify quality-related factors as the main source of competitive advantage. Of these, 15 respondents note a strategy based on both quality and low-cost. Nine respondents (3.3%) identify only a low-cost strategy, and seven of these respondents were employed in large organisations.

Table 7.8 - Competitive Advantage

<i>Competitive Advantage (Question 5)</i>	<i>Number of responses (n-276)</i>	<i>Valid Percentage</i>
Product/Service Differentiation	50	18.1%
Higher quality than competitors	66	23.9%
Flexible in responding to customer needs	67	24.2%
Low Cost	9	3.3%
Higher quality than competitors and responding to customer needs	29	10.5%
Combination of quality initiatives	37	13.4%
Combination of quality and low cost initiative	15	6.2%
No Competitive Edge due to government department	3	0.01%

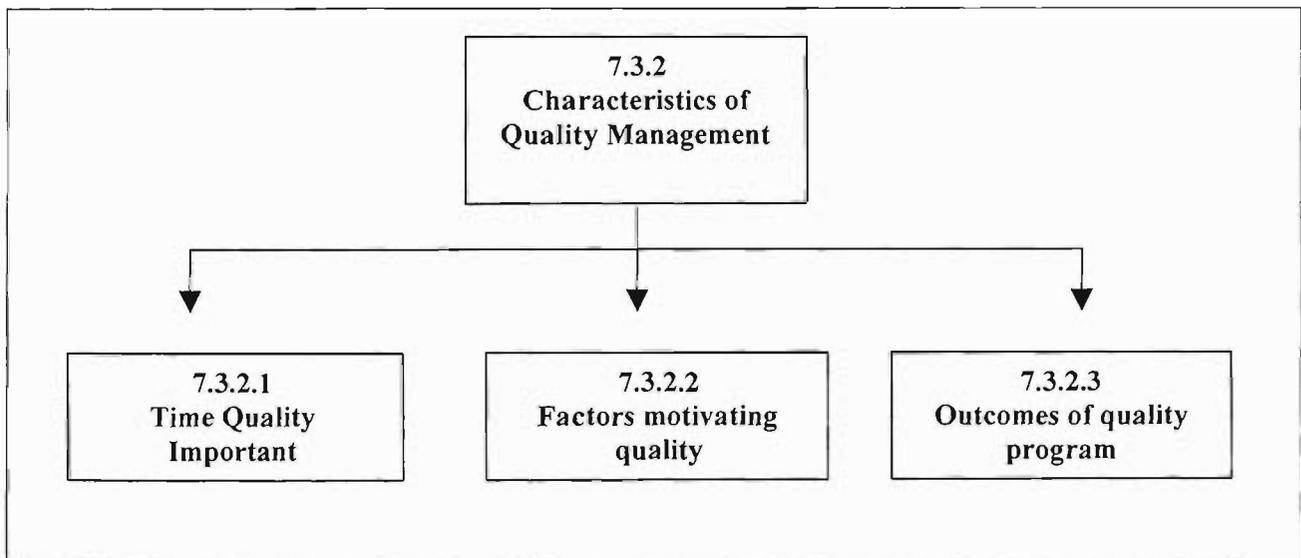
In particular, the nominated sources of competitive advantage by respondents are: flexibility in responding to customer needs (24.2%), higher quality (of product/service) than competitors (22.9%), and product/service differentiation (18.1%). A combination of these factors was nominated by 23.9% of respondents, with another 10.5% identifying a

combination of both quality and cost related factors. Only 3.3% of respondents identify a low-cost strategy. As respondents are from organisations with ISO 9000 certification it would be anticipated that a quality approach would influence the development of competitive strategies.

7.3.2 Characteristics of quality management

Respondents have identified that quality-related factors are important for their organisation's competitive positioning in the market (Table 7.8). This raises interest in how the organisation has integrated a quality approach into its operations. This will be assessed by reference to the time that quality has been important to the organisation, the motivating factors behind the continuing quality approach and respondents' perceptions of the success of the quality initiative. Figure 7.3 shows the structure of this section

Figure 7.3 – Structure of Section 7.3.2



7.3.2.1 Time quality important

Table 7.9 provides information about the length of time that respondents' organisations have taken a quality approach in its operations. For the majority of respondents' organisations (54.5%), quality has been important for more than 10 years, with a further 35.5% stating that quality has been important for more than 5 years.

Table 7.9 – Years that quality approach important to operations

<i>Time span (Question 6)</i>	<i>Number of respondents (n=276)</i>	<i>Valid Percentage</i>
Less than 5 years	27	9.8%
5 – 10 years	98	35.5%
More than 10 years	151	54.5%

Quality has been adopted organisation-wide for the majority of respondents (86.8%) with the remaining respondents (13.2%) noting its influence at either the individual work-unit level or project level (*question 8*). The majority of respondents (76.2%) note that the quality program in their organisation is centrally coordinated (*question 14.14*) Comments regarding the integration of quality practices into the organisation are noted in the following respondent comments:

“...quality is an important focus in the operations/manufacturing side of the business. Not same focus in sales side...”

“...initially ISO requirements were not well integrated into day-to-day operations management. Becoming fully integrated into all aspects of business activities...”

These comments indicate that respondents’ organisations have made choices about the integration of quality into work practices or may indicate the different stages of development of the quality initiative.

Further information was sought from respondents to gauge the stage of development of the quality program. The majority of respondents (76.2%) consider that quality is embedded into the organisational culture (*question 14.10*). Further analysis indicates that for 50.2% of these respondents, a quality approach has been important for more than 10 years, with a further 34.8% of these respondents noting 5 to 10 years. A Chi square test indicates a significant relationship ($p=.011$) between the length of time quality has been important and the embedding of quality into the organisation’s culture. As noted by one respondent:

“...culture change takes a few years...”

The stage of development of the quality program can also be viewed against whether the organisation has applied or intends to apply for an Australian Business Excellence

Award¹. This award recognises the achievements of higher performing organisations across a number of categories. Fifty respondents (18.4%) agree that their organisation has or intends to apply for this Award (*question 14.12*). A Chi square test did not indicate a significant relationship ($p=.861$) between the length of time quality has been important and the application or intention to apply for the award. This suggests that the maturity of the quality program may not be dependent on the time quality has been important.

7.3.2.2 Factors motivating quality

Respondents were asked to identify the level of importance of a range of factors that motivate their organisation to continue a quality approach to operations. The factors are listed in Table 7.10 and have been grouped into three categories: (1) customer-related; (2) strategy-related; and (3) process-improvement related.

Table 7.10 - Factors motivating a quality approach to operations

<i>Factors (Question 12)</i>	<i>Extremely Important</i>	<i>Important</i>	<i>Not Important</i>	<i>Mean</i>	<i>Responses</i>
<i>Panel A: Customer-related</i>					
To increase customer satisfaction	55.1%	44.9%	-	4.50	n=276
To reduce customer complaints	43.3%	56.0%	0.7%	4.30	n=275
To satisfy customer contractual requirements	42.4%	57.2%	.04%	4.22	n=276
<i>Panel B: Strategy-related</i>					
To gain a competitive advantage	39.4%	58.7%	1.8%	4.21	n=274
For business to survive	48.2%	48.6%	2.2%	4.15	n=274
To increase organisations profits	34.6%	63.2%	2.2%	4.11	n=272
To be adaptable to changes in the business environment	26.1%	70.3%	3.6%	3.99	n=276
To be innovative in product design/service delivery	27.2%	71.7%	1.1%	3.94	n=276
ISO9000 certification	32.2%	67.1%	0.7%	3.92	n=276
To increase market share	26.5%	69.1%	4.4%	3.81	n=275
To promote brand loyalty	24.6%	67.7%	7.7%	3.66	n=272
<i>Panel C: Process-improvement related</i>					
To achieve higher standards of performance	28.8%	70.8%	0.4%	4.15	n=274
To minimise costs	34.5%	64.7%	0.7%	4.05	n=275
To improve internal processes	22.1%	67.6%	0.4%	4.02	n=276

As mentioned earlier (Section 7.3.1.3) the majority of respondents (97.7%) note that their organisations are operating in a competitive environment. The findings indicate that the

¹ More detailed information about the Australian Business Excellence Awards can be found at <http://www.sai-global.com/AWARDS/>

competitive environment is causing organisations to consolidate their positions in the market place by focusing on customer satisfaction and process improvement. Overall, the responses suggest that continuous improvement is considered to be an important enabler for organisations to be going concerns. This is further supported by 78% of respondents noting that the quality goals are an output of the strategic planning process (*question 19.2*).

Customer-related factors (refer panel A Table 7.10) are all ranked as extremely important. The mean ranking for responses are customer satisfaction (mean 4.5), reduction of customer complaints (mean 4.3), and meeting customer contractual requirements (mean 4.22). Customer focus is further highlighted by 90% of respondents agreeing that customer feedback is important for assessment of quality and feedback performance (*question 14.27*). In relation to suppliers, 39.3% of respondents consider quality is the number one criterion for selecting suppliers (*question 14.26*). However, this may be less important for the majority of respondents as 67.5% of respondents note that their organisation works closely with suppliers to improve each other's processes (*question 14.25*). In fact, this close working relationship would support all the factors identified in Table 7.10.

The responses to the strategy-related factors (refer panel B Table 7.10) suggest that a quality approach is viewed as important for ongoing success of the organisation. Quality is seen as important: for the organisation to gain a competitive advantage (mean 4.21); for business survival (mean 4.15); to achieve higher standards of performance (mean 4.15); to increase profits (mean 4.11); to allow the organisation to be adaptable to changes in the business environment (mean 3.99); to be innovative in product design/service delivery (mean 3.94); ISO certification (3.92); market share (mean 3.81); and to promote brand loyalty (mean 3.66).

The responses to the process-improvement-related factors (refer panel C Table 7.10) indicate that the achievement of higher standards of performance is: important for organisations (mean 4.15); coupled with the desire to minimise costs (mean 4.05); and to achieve this through the improvement of internal processes (mean 4.02).

An opportunity was given to respondents to add other factors. However, only two respondents added further comment and these note the importance of product safety and dependability, and building an organisational quality culture.

7.3.2.3 Outcomes of quality program

Respondents were asked to comment on the outcomes of the quality program in their organisations. Table 7.11 lists the outcomes in order of mean score. Respondents note that overall performance has improved (82.7%), which has also suggests opportunities in the market place evidenced by the improvement of the organisations' competitive position (75.8%). However, financial benefits (50.9%) and revenue growth (56%) are still to be achieved by the majority of respondents' organisations. Nonetheless, the quality program has not had an adverse affect on profitability. In fact, 80% of respondents indicate that their organisation would not have performed as well without a quality program (*question 14.6*).

Table 7.11 - Outcome of the quality program

<i>Question</i>	<i>Outcome of Quality Program</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Responses</i>
14.4	Overall improvement in performance	82.7%	3.2%	14.1%	3.91	n=277
14.2	Improvement competitive position	75.8%	5.4%	18.4%	3.82	n=277
14.3	Excellent financial results	50.9%	10.9%	38.2%	3.50	n=275
14.1	Increased revenue	56.0%	11.5%	32.5%	3.49	n=277
14.5	Reduced profitability	4.0%	80.8%	15.2%	2.07	n=276

The success of the quality program in respondents' organisations has been mixed. Table 7.12 shows the respondents' perceptions of the success of the quality program for their organisations. For the majority of respondents (77.4%), the quality program has met the

expectations set, with 16.1% of respondents rating their organisation’s achievement as exceeding expectations. Fourteen respondents (5.1%) perceive their organisation’s disappointment with the outcome of the quality program with a further 4 respondents unable to determine the outcome of the quality program at the time of the study.

Table 7.12 –Success of quality program

<i>Level of Success (Question 7)</i>	<i>Number of respondents (n=274)</i>	<i>Valid Percentage</i>
Exceeded expectations	44	16.1%
Met expectation	212	77.4%
Fell short of expectation	14	5.1%
Unable to determine at this time	4	1.4%

It should be noted that the interpretation of success in this study is based on a subjective assessment, given that it represents each respondent’s view of success in relation to his or her own organisation. It is argued that this is an appropriate approach given that, in the end, if management is dissatisfied with the outcomes of practices/initiatives put into place, then such practices will not have longevity within the organisation, despite any external commentator suggesting differently.

Comments from respondents who rate the quality initiative as “fell short of expectations” further explain the findings and reinforce the barriers to success identified, by Kaye and Dyason (1995), Krishnan et al. (1993), Lorente et al. (1999), Sitkin et al.(1994) and Lau and Anderson (1998) detailed in Chapter 2, Sections 2.2 and 2.4. Comments given by respondents were:

“...lack of management support...”

“ (lack of) ... support of supervisors and middle management...”

“...we are constantly trying to improve our quality system, but middle management and supervisors still see it as a hindrance not a help. Unwilling to change...”

“...poor management understanding and support...”

“...lack of resources... people, plant and equipment, to maintain quality focus; productive focus instead of a market (customer) focus...”

“...culture change takes a few years...”

“...we plan well but action/review poorly...lack of resources (constant drive to reduce costs by reducing people) leaves little opportunity to explore in-depth continuous improvement...”

“...business restructuring“

“...trying to fit quality management systems to existing models...”

“...our quality initiatives have been production related rather than encompassing all business activities...”

“...we are in a high state of flux. We have had great deal of success but also have had lots of bad history working against us...”

“...workload pressures..”

“...conflict in measuring KPI's (quality vs reject rate, on-time delivery); not clearly “walking the talk...”

“...no customer threat...”

“...lack of competition resulting in focus towards financial performance only...”

“...large organisation; quality means different things to different areas. Quality is seen as an input to improve efficiency, not so much an output...”

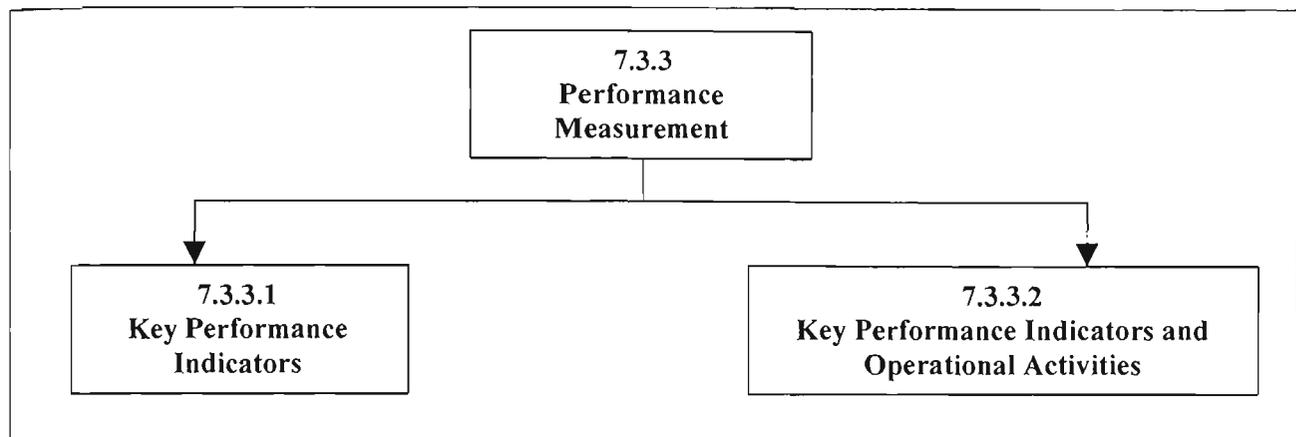
“...administrative shortfalls – not manufacturing...”

“...customers place nil premium on QA suppliers...”

7.3.3 Performance measurement

Performance measurement is the identification and continuous monitoring of the critical measures which an organisation deems important to its future success. The use of a formalised monitoring and measurement system works as a key enabler to encourage improvement (Bessant and Francis, 1999). The measurements assist both groups and individuals to identify where to focus their improvement activities and to identify the extent to which performance has changed. Figure 7.4 provides a summary of this section.

Figure 7.4- Structure of Section 7.3.3



7.3.3.1 Key performance indicators

Respondents were asked to rate the importance of certain factors in the development of the key performance indicators (KPIs) for their organisation. Table 7.13 provides a summary of the responses.

Table 7.13 - Factors influencing development of key performance indicators (KPIs)

<i>Factors in developing KPIs (Question 11)</i>	<i>Extremely Important</i>	<i>Important</i>	<i>Not Important</i>	<i>Mean</i>	<i>Responses</i>
Customer Satisfaction	69.1%	30.9%	-	4.76	n=275
Cost Efficiency	47.7%	51.9%	0.4%	4.38	n=266
Profit	46.9%	50.6%	2.6%	4.30	n=273
Revenue Growth	29.2%	69.0%	1.8%	4.00	n=274
Return on Assets	24.1%	73.0%	3.0%	3.90	n=270
Market Share	25.0%	68.7%	6.3%	3.76	n=272
Share Price	13.7%	45.7%	40.7%	2.57	n=263

Factors ranked as extremely important are customer satisfaction (mean 4.76), process improvement (by way of cost efficiency) (mean 4.38) and profit (mean 4.30). These are in line with the key factors outlined in Table 7.10 in relation to the motivation for the quality initiatives and indicate that the KPIs are supporting the organisations' objectives.

Revenue growth (mean 4.00) and return on assets (3.9) are ranked lower than other

factors. This may be due to organisations focusing on maintaining the existing customer base through improving both customer satisfaction and internal processes. Least important is the market share and share price. In relation to the market share (mean 3.76) as noted earlier many organisations are in a competitive environment which would reduce the opportunity to expand the market share. Retention of customers would be more critical. The low level of importance of the share price may indicate that many of the respondents are from private companies.

For the majority of respondents (89.2%) the key performance indicators (KPIs) are an output of the strategic planning process (*question 19.1*). Respondents' comments noting the importance of developing KPIs are:

"...there is a high development process occurring at this time in regards to strategic management (KPIs etc)..."

"...KPIs and benchmarking are the two most important areas to ensure continual improvement and financial stability..."

"...our basic quality system is solid and reliable to ensure quality of product. Our next step is to become more proactive and create more KPIs and reporting on and gauging progress with clearly identified benchmarks..."

7.3.3.2 Key performance indicators and operational activities

The link between the strategic plan and operational activities is established by the performance measurement system employed by an organisation. Table 7.14 highlights that 81.5% of respondents agree that their organisation is able to link the operational performance measurements to the strategic plan. This would suggest that employees' effort should be in line with the performance outcomes embodied within the organisation's overall strategy. However, 34.3% of respondents identify that their organisation has difficulty in translating the quality goals into operational goals, which could compromise the success of the quality program.

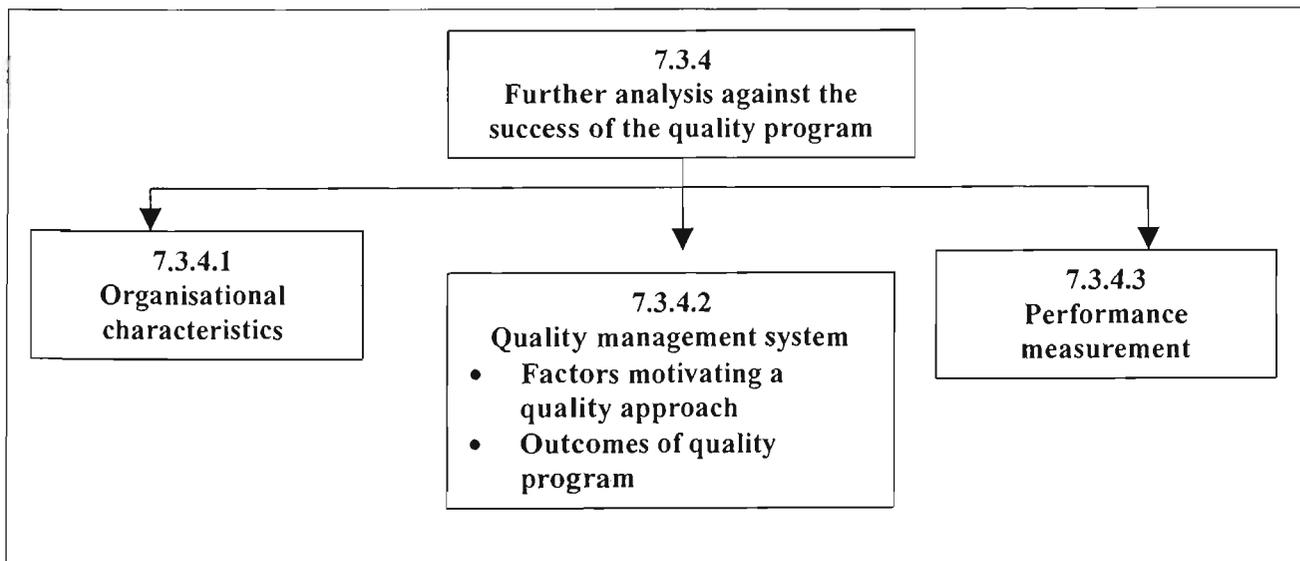
Table 7.14 – Link between KPIs and operational activities

<i>Q.</i>		<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Responses</i>
19.3	Operational performance measures link operational activities to the strategic plan	81.5%	4.4%	14.2%	3.92	n=275
19.28	Quality goals are able to be translated into operational goals	65.7%	6.5%	27.8%	3.62	n=277

7.3.4 Further analysis against the success of the quality program

As noted in Chapter 2, Section 2.4, the literature reports mixed success of quality management programs, and it is suggested that 60% - 80% of attempted TQM implementations failed to meet their objectives (Lau and Anderson, 1998, p.85). In this study, the majority of respondents (93.5%) has suggested that their organisation’s quality program has been successful with 16.1% of respondents rating the program as having exceeded expectations and 77.4% rating the program as having met expectations (Table 7.12). At the extreme only 14 respondents (5.1%) rate their organisations program as one which “fell short of expectations”. Another 1.4% of respondents is currently unable to determine the success of the quality program. Figure 7.5 provides a structure of this section.

Figure 7.5 – Structure of Section 7.3.4



Further analysis was undertaken to identify any significant relationship ($p \leq .10$) between

organisational characteristics (section 7.3.1), the quality management system (section 7.3.2) and the performance measurement system (section 7.3.3) with the level of success of the quality program.

7.3.4.1 Organisational characteristics

Organisational characteristics examined were: size of organisation; time quality important; competitive environment; and the quality of the product/service compared with competitors. Responses were cross-tabulated and the results of the chi square test are provided in Table 7.15. Significant relationships ($p \leq .10$) were identified for a number of variables: organisation size ($p = .051$); quality of product/service compared with competitors ($p = .015$); quality embedded in organisations culture ($p = .000$); organisation having or intending to apply for an Australian Business Excellence Award ($p = .001$); quality being the number one criterion for selecting suppliers ($p = .033$); and the importance of the strategic planning process to identify KPIs ($p = .000$) and quality goals ($p = .000$).

Table 7.15 – Relationship between level of success of quality program and organisational characteristics

<i>Question</i>	<i>Organisational Characteristics</i>	<i>P =</i>
1	Organisation Size	.051
4	Competitive Environment	.854
5	Sources of competitive advantage	.386
10	Quality of product/service compared with competitors	.015
8	Organisation segment which is focus of quality	.162
14.6	We could have done better (i.e. obtained better financial results) without a quality program	.448
14.10	Quality is embedded into the organisations culture	.000
14.12	The organisation has applied or intends to apply for an Australian Business Excellence Award.	.001
14.27	Customers give feedback on quality and delivery performance	.114
14.25	The organisation works closely with suppliers to improve each other's processes	.642
14.26	Quality is our number one criterion in selecting suppliers	.033
19.1	.Key Performance Indicators (KPIs) are identified as part of the strategic planning process	.000
19.2	Quality goals are an output of the strategic planning process	.000

Table 7.16 shows that the majority of respondents who rate the quality program as having “exceeded expectations” or “met expectations” are from small to medium size organisations. In contrast, the majority of respondents who rate the quality program as having “fell short of expectations” are from medium or large organisations. This finding may suggest that the size of an organisation may be a factor in the success of quality programs.

Table 7.16 – Cross-tabulation of success of quality program against organisation size

<i>Success of Quality program</i>	<i>Organisation Size</i>			
	<i>Small to Medium</i>	<i>Medium</i>	<i>Large</i>	
Exceeded Expectations	54.5%	25.0%	20.5%	n=44
Met Expectations	50.9%	32.5%	16.5%	n=210
Fell Short of Expectations	14.3%	35.7%	50.0%	n=14
Unable to determine at this time	50.0%	25.0%	25.0%	n=4

Table 7.17 shows that respondents who rate the quality of their product/service more superior than competitors also rate the quality program as exceeding expectations. It is also shown that for the majority of respondents who rate the quality program’s success as “fell short of expectations” their organisations have not been able to provide a superior product/service than competitors to the market. Also, all respondents who are unable to rate the success of the quality program, rate their organisation’s product/service as similar to competitors, which indicates the potential opportunities for this group in the market.

Table 7.17– Cross-tabulation of success of quality program against the quality of product/service compared to competitors

<i>Success of Quality program</i>	<i>Quality of product/service compared to competitors</i>			
	<i>Superior</i>	<i>Similar</i>	<i>Inferior</i>	
Exceeded Expectations	75.0%	25.0%	0%	n=44
Met Expectations	56.2%	43.3%	.05%	n=210
Fell Short of Expectations	42.8%	50.0%	.07%	n=14
Unable to determine at this time	0%	100%	0	n=4

Table 7.18 provides an insight into the importance of quality to the respondents' organisations. The majority of respondents consider quality is part of the organisation culture, and respondents who rate their organisation's quality program as having "exceeded expectations" give more agreement. The respondents who rate their organisation's quality program as "fell short of expectations" give the lowest level of agreement. This may suggest that superior outcomes may be possible if quality is part of the organisation culture.

Table 7.18 – Cross-tabulation of success of quality program against whether quality is embedded into the organisation's culture

<i>Success of Quality program</i>	<i>Quality embedded into organisation culture</i>			
	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	
Exceeded Expectations	90.0%	2.3%	6.8%	n=44
Met Expectations	74.6%	5.7%	19.7%	n=210
Fell Short of Expectations	51.7%	21.4%	21.4%	n=14
Unable to determine at this time	76.3%	5.8%	17.8%	n=4

It would be expected that the quality program would be more advanced in an organisation applying or intending to apply for an Australian Business Excellence Award. Table 7.19 indicates that only a minority of respondents agree that their organisation has or intends to apply for an award. However, respondents who rate the quality program as having "exceeded expectations" express the highest level of agreement.

Table 7.19 – Cross-tabulation of success of quality program against whether the organisation has or intends to apply for an Australian Business Excellence Award

<i>Success of Quality program</i>	<i>Organisation has or intends to apply for Australian Business Excellence Award</i>			
	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	
Exceeded Expectations	32.6%	23.3%	44.2%	n=44
Met Expectations	15.2%	39.6%	45.2%	n=210
Fell Short of Expectations	28.5%	42.9%	28.6%	n=14
Unable to determine at this time	-	50.0%	50.0%	n=4

Table 7.20 shows that the majority of respondents who are unable to determine the success of the quality program disagree that quality is the number one criterion when selecting suppliers. This was further explored by cross-tabulating the success of the quality program against whether these respondents organisations work closely with suppliers. The results indicate that only 25% of respondents who are unable to determine the success of the quality program work closely with suppliers. As noted by Kaye and Dyason (1995) a partnership with suppliers is important for an organisation to enter the fifth quality era of continuous improvement. More agreement was given by respondents who rate the quality program as having “exceeded expectations”.

Table 7.20 – Cross-tabulation of success of quality program against quality being a number one criterion in selecting suppliers

<i>Success of Quality program</i>	<i>Quality as number one criterion in selecting suppliers</i>			
	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	
Exceeded Expectations	54.6%	22.7%	22.7%	n=44
Met Expectations	37.6%	25.9%	36.6%	n=210
Fell Short of Expectations	28.6%	35.7%	35.7%	n=14
Unable to determine at this time	-	75.0%	25.0%	n=4

Table 7.21a shows the responses as to whether the KPIs are identified as part of the strategic planning process against the success of the quality program. The findings indicate that respondents who are unable to rate the success of the quality program are divided as to the link between the KPIs and the organisation’s strategy.

Table 7.21a – Cross-tabulation of success of quality program against whether the KPIs are identified as part of the strategic planning process

<i>Success of Quality program</i>	<i>KPIs identified as part of the strategic planning process</i>			
	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	
Exceeded Expectations	93.2%	-	6.8%	n=44
Met Expectations	88.7%	3.3%	8.0%	n=210
Fell Short of Expectations	92.8%	-	7.1%	n=14
Unable to determine at this time	50.0%	50.0%	-	n=4

Table 7.1b details the responses as to whether the quality goals are an output of the strategic planning process. The results may suggest that quality is more strongly associated with the strategic planning process in respondent organisations rated as having a quality program as “exceeded expectations” and “met expectations”

Table 7.21b – Cross-tabulation of success of quality program against whether the quality goals are an output of the strategic planning process

<i>Success of Quality program</i>	<i>KPIs identified as part of the strategic planning process</i>			
	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	
Exceeded Expectations	88.6%	-	11.4%	n=44
Met Expectations	77.9%	5.6%	16.4%	n=210
Fell Short of Expectations	57.2%	14.3%	28.6%	n=14
Unable to determine at this time	25.0%	50.0%	25.0%	n=4

7.3.4.2 Quality management system

Quality is an operating philosophy that will influence an organisation’s actions. However, as each organisation is different, so may be the process by which quality is integrated into operational activities be different. Therefore, it is important to explore any differences between respondent organisations’ quality management systems and the level of success of the quality programs.

First, is there a relationship between the “time quality important” (question 6, Section 7.3.2.1) and the level of success of the quality program? To explore this further a chi square test was conducted which identified a significant relationship ($p \leq .10$) between the two. A look at the responses to each question identifies that 50% of respondents who are unable to rate the success of the quality program state that the quality program has been in operation for less 5 years compared with the majority of all other respondents noting quality has been important for 5 or more years.

Factors motivating a quality approach to operations

Table 7.22 provides details of the relationship between the level of success of the quality

program and the factors motivating a quality approach to operations.

Table 7.22 - Relationship between level of success of quality program and factors motivating quality approach to operations

<i>Factors (Question 12)</i>	<i>P=</i>
<i>Panel A: Customer-related</i>	
To increase customer satisfaction	.063
To reduce customer complaints	.092
To satisfy customer contractual requirements	.971
<i>Panel B: Strategy-related</i>	
To gain a competitive advantage	.925
For business to survive	.143
To increase organisations profits	.897
To be adaptable to changes in the business environment	.034
To be innovative in product design/service delivery	.231
ISO9000 certification	.004
To increase market share	.946
To promote brand loyalty	.137
<i>Panel C: Process-improvement related</i>	
To achieve higher standards of performance	.116
To minimise costs	.961
To improve internal processes	.866

The chi square test indicates that a significant relationship exists between the success of the quality program and the organisation's desire: to increase customer satisfaction (p=.063); to reduce customer complaints (p=.092); to be adaptable to changes in the business environment (p=.034); ISO 9000 certification (p=.004).

Table 7.23 shows that more respondents who rate the quality program as "exceeded expectations" rate customer satisfaction as extremely important for their organisation. It would appear that organisations in this respondent group place more importance on the customer, which is in line with the continuous improvement philosophy of fulfilling customer expectations.

Table 7.23– Cross-tabulation of success of quality program against the importance of customer satisfaction

<i>Success of Quality program</i>	<i>Importance of customer satisfaction</i>				<i>Response</i>
	<i>Extremely Important</i>	<i>Very Important</i>	<i>Important</i>	<i>Not Important</i>	
Exceeded Expectations	70.5%	22.7%	6.8%	-	n=44
Met Expectations	53.8%	41.5%	4.7%	-	n=210
Fell Short of Expectations	28.6%	71.4%	-	-	n=14
Unable to determine at this time	50.0%	50.0%	-	-	n=4

Table 7.24 shows that respondents who rate the quality program as “exceeded expectations” rate as extremely important the need to reduce customer complaints. This is in line with the previous finding which shows the same respondent group placing more importance on customer factors.

Table 7.24 – Cross-tabulation of success of quality program against the importance of reducing customer complaints

<i>Success of Quality program</i>	<i>Importance of reducing customer complaints</i>				<i>Response</i>
	<i>Extremely Important</i>	<i>Very Important</i>	<i>Important</i>	<i>Not Important</i>	
Exceeded Expectations	63.6%	29.5%	4.5%	2.3%	n=44
Met Expectations	40.8%	46.9%	11.8%	0.5%	n=210
Fell Short of Expectations	21.4%	64.3%	14.3%	-	n=14
Unable to determine at this time	25.0%	75.0%	-	-	n=4

Table 7.25 shows the responses to the importance of the organisation being adaptable to changes in the business environment and the success of the quality program. The findings indicate that for respondents who rate their organisation’s quality program as having “exceeded expectations”, more importance is placed on their organisation being adaptable to changes in the business environment. This would better position such organisations to counter the competitive environment. These findings suggest that quality management is an important enabler for change within organisations that are successful in their quality endeavours.

Table 7.25 – Cross-tabulation of success of quality program against the importance of the organisation being adaptable to changes in business environment

<i>Success of Quality program</i>	<i>Adaptability to changes in business environment</i>				<i>Response</i>
	<i>Extremely Important</i>	<i>Very Important</i>	<i>Important</i>	<i>Not Important</i>	
Exceeded Expectations	59.1%	15.9%	15.9%	9.1%	n=44
Met Expectations	29.2%	40.2%	24.1%	6.5%	n=210
Fell Short of Expectations	-	42.9%	57.1%	-	n=14
Unable to determine at this time	25.0%	25.0%	50.0%	-	n=4

Table 7.26 provides responses as to the importance of ISO 9000 certification as a motivation to continue with the quality program. Once again respondents who rate their organisation's quality program as having "exceeded expectations" consider the certification to be extremely important. It has been evaluated as less important by respondents who have rate their organisations' quality program as "fell short of expectations".

Table 7.26 – Cross-tabulation of success of quality program against the importance of ISO 9000 certification

<i>Success of Quality program</i>	<i>ISO 9000 certification</i>				<i>Response</i>
	<i>Extremely Important</i>	<i>Very Important</i>	<i>Important</i>	<i>Not Important</i>	
Exceeded Expectations	36.4%	47.7%	9.1%	6.8%	n=44
Met Expectations	24.5%	53.3%	19.3%	2.8%	n=210
Fell Short of Expectations	14.3%	28.6%	50.0%	7.1%	n=14
Unable to determine at this time	25.0%	25.0%	50.0%	-	n=4

Outcomes of the quality program

Table 7.27 shows the results of the chi square test to identify any significant differences between the level of success of the quality program and the achievement of outcomes associated with the quality program. Two significant relationships are identified, the overall improvement in performance as a result of a quality program ($p=.064$) and increased revenue ($p=.042$).

Table 7.27 - Relationship between the level of success of quality program and the outcomes of the quality program

<i>Q</i>	<i>Outcome of Quality Program</i>	<i>P=</i>
14.4	Overall improvement in performance	.064
14.2	Improvement competitive position	.530
14.3	Excellent financial results	.553
14.1	Increased revenue	.042
14.5	Reduced profitability	.333

Table 7.28 provides a detailed breakdown of respondents' perceptions as to whether the quality program has led to an overall improvement in performance. All respondent groups show strong agreement to this. Respondents who are unable to determine the success of the quality program give the highest rating to this variable which may indicate that even in the early stages of the quality program outcomes appear positive.

Table 7.28 – Cross-tabulation of success of quality program against the outcome of the quality program –overall improvement in performance

<i>Success of Quality program</i>	<i>Outcome of Quality Program Overall improvement in performance</i>			
	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	90.9%	6.8%	2.3%	N=44
Met Expectations	81.2%	2.3%	16.4%	n=210
Fell Short of Expectations	78.6%	7.1%	14.3%	n=14
Unable to determine at this time	100.0%	-	-	n=4

A detailed analysis of the cross-tabulation of the relationship between the success of the quality program and the increase in revenue is shown in Table 7.29. This shows that for respondents rating their organisation's quality program as "exceeded expectations", 71.4% agree that their organisation has been able to increase revenue as a result of the quality program. Due to the higher neutral response for the other categories of success it suggests that a number of respondents are unable to ascertain whether or not their organisation has been able to increase revenue.

Table 7.29 – Cross-tabulation of success of quality program against the outcome of the quality program -increase in revenue

<i>Success of Quality program</i>	<i>Outcome of Quality Program – Increase in revenue</i>			
	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	77.3%	9.0%	13.6%	n=44
Met Expectations	53.6%	11.7%	34.7%	n=210
Fell Short of Expectations	35.7%	21.3%	42.9%	n=14
Unable to determine at this time	25.0%	-	75.0%	n=4

7.3.4.3 Performance measurement

As mentioned in Section 7.3.3 performance measurement is an important tool to encourage continuous improvement by the identification and measurement of the organisation’s key success factors. Table 7.30 indicates two significant relationships between the success of the quality program and factors influencing the development of the key performance indicators. These were customer satisfaction ($p=.072$) and revenue growth ($p=.034$).

Table 7.30 - Relationship between the level of success of quality program and the factors influencing the development of key performance indicators (KPIs)

<i>Question</i>	<i>Factors influencing the development of KPIs</i>	<i>P=</i>
11.1	Customer Satisfaction	.072
11.2	Cost Efficiency	.663
11.3	Profit	.459
11.4	Revenue Growth	.034
11.5	Return on Assets	.351
11.6	Market Share	.935
11.7	Share Price	.596

Table 7.31 details the responses to the importance of customer satisfaction on the development of the KPIs. All respondents rate customer satisfaction as important, however responses vary in the level of importance. All respondents who are unable to assess the success of the quality program rate customer satisfaction as extremely important. This is contrasted with only 42.9% of respondents who rate the success as “fell short of expectations”.

Table 7.31– Cross-tabulation of success of quality program against the importance of customer satisfaction in the development of KPIs

<i>Success of Quality program</i>	<i>The importance of customer satisfaction on development of KPIs</i>				
	<i>Extremely Important</i>	<i>Very Important</i>	<i>Important</i>	<i>Not Important</i>	<i>Response</i>
Exceeded Expectations	86.8%	11.4%	-	-	n=44
Met Expectations	66.1%	30.2%	3.8%	-	n=210
Fell Short of Expectations	42.9%	50.0%	7.1%	-	n=14
Unable to determine at this time	100.0%	-	-	-	n=4

Table 7.32 shows the breakdown of responses in relation to the importance of revenue growth in the development of the KPIs and the success of the quality program. Respondents who are unable to determine the success of the quality program rate the revenue growth as more important than other respondents. This may indicate that these organisations are seeking to gain a stronger position in the market.

Table 7.32– Cross-tabulation of success of quality program against the importance of revenue growth in the development of KPIs

<i>Success of Quality program</i>	<i>The importance of revenue growth on development of KPIs</i>				
	<i>Extremely Important</i>	<i>Very Important</i>	<i>Important</i>	<i>Not Important</i>	<i>Response</i>
Exceeded Expectations	22.7%	43.2%	20.5%	13.7%	n=44
Met Expectations	25.4%	44.5%	20.1%	10.0%	n=210
Fell Short of Expectations	28.6%	35.7%	7.1%	28.6%	n=14
Unable to determine at this time	25.0%	75.0%	-	-	n=4

The KPIs identified at the strategic planning stage should guide the performance measurement system. All operational measures should be a sub-set of the KPIs. To explore this issue further a chi square test was conducted to identify any relationship between operational goals and the strategic plan, and the ability of organisations to translate quality goals into operational goals against the success of the quality program. Results are shown in Table 7.33, and indicate that there was a significant relationship ($p=.000$) for both.

Table 7.33 - Relationship between level of success of quality program and the link between KPIs and Operational Measures

<i>Q</i>	<i>Link between KPIs and Operational Measures</i>	<i>P=</i>
19.3	Operational performance measures link operational activities to the strategic plan	.000
19.28	Quality goals are able to be translated into operational goals	.000

It is important to link the operational performance measures to the strategic plan to ensure that the organisation’s long-term objectives are met. Table 7.34 provides a breakdown of the individual responses to question 19.3. The findings show that for respondents rating the quality program as exceeding expectations more strongly agree that the operational measures link the operational activities to the strategic plan.

Table 7.34 – Cross-tabulation of success of quality program against the ability of the operational measures to link operational activities to the strategic plan

<i>Success of Quality program</i>	<i>Ability of the organisation to link operational measures to strategic plans</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	29.5%	65.9%	15.8%	4.5%	n=44
Met Expectations	11.4%	68.2%	15.6%	15.6%	n=210
Fell Short of Expectations	7.1%	64.3%	28.6%	28.6%	n=14
Unable to determine at this time	-	50.0%	50.0%	-	n=4

Table 7.35 shows the responses to question 19.28. Of the respondents who rate their organisation’s quality program as having “exceeded expectations”, 86.4% are able to translate the quality goals into operational goals. In contrast with 63.9% of respondents who rate their organisation’s quality program as having met expectations and 57.1% of respondents who rate the quality program as “fell short of expectations”. Respondents who were unable to rate the success of the quality program were unable to assess whether the quality goals could be translated into operational goals.

Table 7.35 – Cross-tabulation of success of quality program against the ability of the organisation to translate quality goals into operational goals

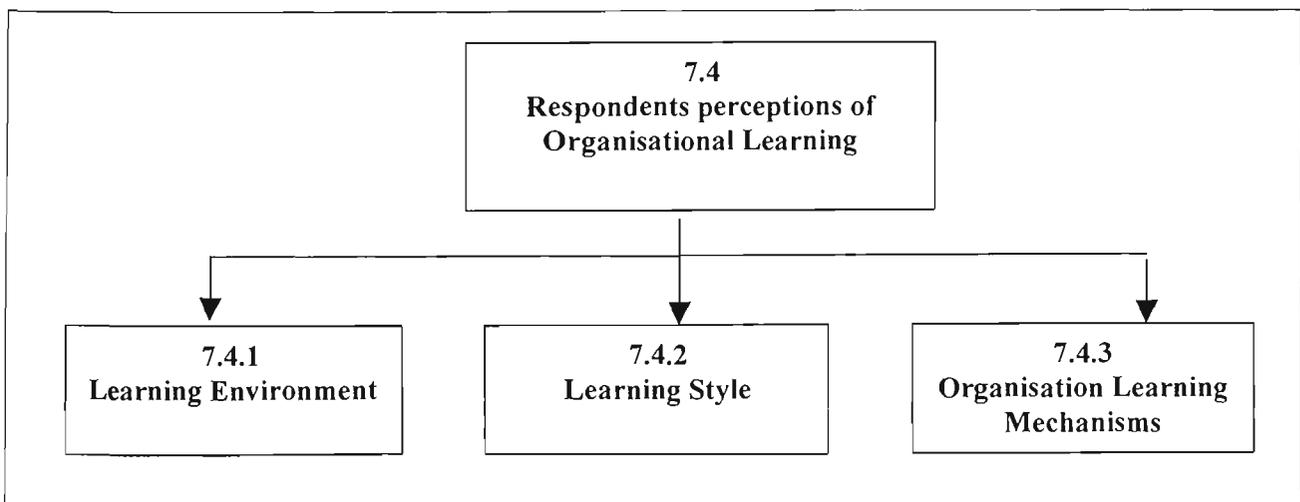
<i>Success of Quality program</i>	<i>Translation of quality goals into operational goals</i>			
	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	86.4%	-	13.6%	n=44
Met Expectations	63.9%	7.0%	29.1%	n=210
Fell Short of Expectations	57.1%	21.4%	21.4%	n=14
Unable to determine at this time	-	-	100%	n=4

In the following sections further analysis is undertaken of the survey responses in relation to the respondents’ perceptions of the organisational learning attributes of their organisation to support continuous improvement. Included in the discussion will be a comparison of the learning attributes and the organisational characteristics together with a comparison of these attributes and the success of the quality program.

7.4 Organisational learning

As noted by King (2001), the adoption of a learning focus will better equip organisations to cope with the changing business environment. The learning organisation is one that focuses on developing and using its information and knowledge capabilities in order to create higher-valued information and knowledge, to change behaviour and to improve bottom-line results. In the previous sections findings suggest that respondents’ organisations have a desire to improve both customer satisfaction and internal processes, with quality being identified as an important enabler for this to occur. Figure 7.6 provides a structure of this section.

Figure 7.6– Structure of Section 7.4



7.4.1 Learning environment

It is important for the organisation to create the environment that will encourage individuals to learn, which, in turn, may lead to organisational learning. As stated by Ahmed et al. (1999) a learning and continuously improving company requires an organisational culture to guide employees. To build a shared vision within the organisation, that is, to give everyone a common identity and sense of destiny, it is important for management to provide direction by its mission statement and its performance goals to guide activities. An understanding of an organisation's learning orientation, that is, its values and practices, will identify whether the environment created will encourage learning.

Respondents were asked to comment on particular values (espoused theories) in their organisation and the responses are in Table 7.36. The majority of respondents (93.5%) identify continuous improvement as an important goal for their organisation. The importance of continuous improvement is reinforced by 86.5% of respondents noting its influence when formulating the strategic plan. Continuous improvement implies learning, and 87.0% of respondents agree that continuous learning is valued in their organisation. 82.7% of respondents agree that their organisation is committed to building expertise in-house. In relation to management's tolerance for errors 57.2% of respondents agree that uncertain operating conditions may lead to mistakes (*question 14.15*).

Table 7.36 – Organisational values

<i>Q.</i>		<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Responses</i>
14.11	Continuous improvement is an important goal	93.5%	.08%	5.8%	4.24	n=277
14.13	Continuous improvement is important when developing the strategic plan	86.5%	13.0%	10.6%	4.05	n=274
18.4	Continuous learning is valued in organisation	87.0%	3.3%	9.7%	3.98	n=277
18.3	The organisation is committed to building expertise in-house	82.7%	4.4%	13.0%	3.88	n=277

These findings suggest that such values should encourage a learning environment in respondent organisations. However, are these values supported within the organisation?

Table 7.37 provides details of responses in relation to the learning orientations of respondents' organisations to identify whether the espoused theories are supported. The majority of respondents (51.7%) agrees that "what gets said gets done", that is, the espoused theories are in line with the theories in action. However, the findings also indicate that 33.5% of respondents are unsure, which could suggest that management inactions are inhibiting learning. A bare majority of respondents (50.2%) disagrees that operational planning only involves managers (*question 18.2*), which questions the participation of employees in the planning process in some respondent organisations. The encouragement for continuous improvement is noted by 50.9% of respondents who agree that their organisation encourages employees to look at other approaches to organisational activities. But, once again, the findings show that 30.7% of respondents are unsure about management's attitude.

Table 7.37 – Learning orientations of operating environment

<i>Q.</i>		<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Responses</i>
18.7	The organisation environment is such that what gets said gets done	51.7%	14.9%	33.5%	3.82	n=275
18.15	The organisation structure encourages ease of communication	68.5%	11.2%	20.2%	3.64	n=277
18.14	The organisation structure is flat	43.8%	32.1%	24.1%	3.18	n=274
18.1	Operational planning only involves managers	42.9%	50.2%	11.9%	2.87	n=277
18.12	There is a view in the organisation that there is only one best way (reverse coded)	18.4%	50.9%	30.7%	2.65	n=277

The 43.8% of respondents who indicate that their organisation has a flat structure suggest that the majority of respondents' organisations have a traditional hierarchical organisation structure. Lipshitz and Popper (2000) contend that flat organisational structures are more conducive to organisational learning. Nonetheless, 68.5% of respondents agree that for their organisation the structure encourages ease of communication. This may suggest that the system to distribute knowledge may counter the structural issues.

7.4.1.1 – Further analysis of learning environment against success of quality program

It would be expected that if an organisation has a successful quality program then it would have an environment that supports continuous improvement. A chi square test was carried out to determine if there was any significant relationship between the success of the quality program and the organisational values and the results are shown in Table 7.38.

Table 7.38 - Relationship between level of success of quality program and organisational values

<i>Q</i>	<i>Organisational Values</i>	<i>P=</i>
14.11	Continuous improvement is an important goal	.001
14.13	Continuous improvement is important when developing the strategic plan	.010
18.4	Continuous learning is valued in the organisation	.003
18.14	The organisation structure is flat	.910
18.3	The organisation is committed to building expertise in-house	.912

A significant relationship is identified for three values: continuous improvement is an important goal ($p=.001$); continuous improvement is important when developing the strategic plan ($p=.010$); and continuous learning is valued in the organisation ($p=.003$).

The detailed analysis of the cross-tabulations is shown in Tables 7.39 to 7.41.

The responses outlined in Table 7.39 indicate that respondents who rate their organisations quality program as having “exceeded expectations” more strongly agree that continuous improvement is an important goal.

Table 7.39 – Cross-tabulation of success of quality program against the organisational value – continuous improvement being an important goal

<i>Success of Quality program</i>	<i>Continuous improvement is an important goal</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	54.5%	43.2%	-	2.3%	n=44
Met Expectations	27.2%	65.3%	.05%	7.0%	n=210
Fell Short of Expectations	28.6%	64.3%	7.1%	-	n=14
Unable to determine at this time	25.0%	75.0%		-	n=4

As quality management is directed towards enabling change and continuous improvement (Butz, 1995; Ehrenberg and Stupak, 1994), it should be driven by the strategic plan. Table 7.40 shows that respondents who rate the quality program as having “exceeded expectations” more strongly agree (31.8%) that continuous improvement is important when developing the strategic plan.

Table 7.40 – Cross-tabulation of success of quality program against the organisational value – continuous improvement being important when developing the strategic plan

<i>Success of Quality program</i>	<i>Continuous improvement important when developing strategic plan</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	31.8%	56.8%	4.5%	6.8%	n=44
Met Expectations	21.0%	66.2%	2.4%	10.5%	n=210
Fell Short of Expectations	7.1%	71.4%	7.1%	14.3%	n=14
Unable to determine at this time	-	75.0%	-	25.0%	n=4

In contrast, only 7.1% of respondents who rate the quality program as “fell short of expectations” strongly agree that continuous improvement influences the strategic plan. More respondents who are unable to determine the success of the quality program are unsure about the integration of continuous improvement into the strategic planning process.

Continuous learning must be valued in an organisation if it is to survive in a dynamic and competitive environment (Popper and Lipshitz, 1998). As shown in Table 7.36, 87.0% of respondents agree that continuous learning is valued in their organisation. These responses were cross-tabulated with the success of the quality program, and Table 7.41 shows the results. Respondents who rate the success of the quality program as having “exceeded expectations” show more agreement to continuous learning being valued in their organisation. Respondents unable to rate the success of the quality program show the highest level of uncertainty as to whether continuous learning is valued.

Table 7.41 – Cross-tabulation of success of quality program against the organisational value – continuous learning valued

<i>Success of Quality program</i>	<i>Continuous learning valued</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	29.5%	63.6%	12.5%	7.4%	n=44
Met Expectations	12.2%	73.7%	3.3%	10.8%	n=210
Fell Short of Expectations	14.3%	71.4%	7.1%	7.1%	n=14
Unable to determine at this time	-	75.0%	-	25.0%	n=4

The learning orientation will assist in identifying whether both management action and organisational structure support the organisation’s espoused theories. Table 7.42 provides a summary of the chi square test between the learning orientations detailed in Table 7.37 and the level of success of the quality program. Significant relationships were identified with the level of success and whether “what gets said gets done” within the organisation ($p=.000$) and whether the organisation structure encourages ease of communication ($p=.056$).

Table 7.42 - Relationship between level of success of quality program and learning orientation of operating environment

<i>Q</i>	<i>Learning Orientations</i>	<i>P=</i>
18.7	The organisation environment is such that what gets said gets done	.000
18.15	The organisation structure encourages ease of communication	.056
18.14	The organisation structure is flat	.910
18.1	Operational planning only involves managers	.134
18.2	All employees are involved in developing the strategic plan	.120
18.12	There is a view in the organisation that there is only one best way (reverse coded)	.904

A further breakdown of the responses to the cross-tabulation is shown in Table 7.43. If the “espoused theory” is in conflict with “the theory in action”, management may be sending conflicting messages to employees which could inhibit learning. The responses indicate that respondents who rate the quality program as exceeding expectations more

strongly agree that “what gets said gets done” than other respondent groups. In contrast, for respondents who rate the quality program as “fell short of expectations” only 28.6% agree that “what gets said gets done” with 50.0% being undecided.

Table 7.43 – Cross-tabulation of success of quality program against the learning orientation – “what gets said gets done”

<i>Success of Quality program</i>	<i>Learning orientation – what gets said gets done</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	11.4%	59.1%	6.8%	22.7%	n=44
Met Expectations	1.9%	47.9%	15.6%	34.6%	n=210
Fell Short of Expectations	-	28.6%	21.4%	50.0%	n=14
Unable to determine at this time	-	25.0%	25.0%	25.0%	n=4

Table 7.44 details the responses regarding the organisation structure encouraging ease of communication. Respondents who rate the quality program as having “exceeded expectations” show more agreement to their organisational structure encouraging communication between employees. This would support knowledge acquisition and sharing. In contrast, the respondents who rate the success of the quality program as “fell short of expectations” show the lowest level of agreement in relation to their organisation. This may be an inhibiting factor for learning.

Table 7.44 – Cross-tabulation of success of quality program against the learning orientation – the organisation structure encourages ease of communication

<i>Success of Quality program</i>	<i>Learning orientation – organisation structure encourages ease of communication</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	9.1%	75.0%	4.5%	11.4%	n=44
Met Expectations	8.5%	58.7%	10.1%	22.1%	n=210
Fell Short of Expectations	-	42.9%	28.5%	28.6%	n=14
Unable to determine at this time	-	50.0%	50.0%	-	n=4

7.4.2 Learning style

Learning can be seen to occur when organisations perform in changed and better ways. The majority of respondents (96.4% - Table 7.10) identify the importance of their being adaptable to changes in the business environment is important for their organisation.

Learning will involve the process of building procedural knowledge, cognitive strategies and attitude. The learning style adopted can concentrate on methods and tools to improve what is already being done (single-loop learning) or on testing the assumptions underlying what is being done (double-loop learning). The majority of respondents (68.3%) demonstrate their organisation's desire to apply systematic problem solving as opposed to short-term quick fixes (*question 14.18*). Organisations may have a preference for one mode over the other, but a sound learning system requires both (Appelbaum and Reichart, 1998).

Table 7.45 gives a list of responses to questions exploring the learning style encouraged within organisations, either single-loop or double-loop learning.

Table 7.45 –Factors encouraging learning style

<i>Q.</i>	<i>Factors</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
15.10	Employees are encouraged to work smarter not harder	85.0%	2.6%	11.2%	4.07	n=277
15.1	Employees are encouraged to question current practices and find new ways of doing things	84.5%	4.3%	11.2%	3.99	n=277
18.11	Standard Operating procedures are reviewed regularly	80.2%	6.1%	13.7%	3.87	n=277
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn	74.2%	4.4%	21.4%	3.77	n=276
15.22	Employees are empowered to make decisions to enable them to immediately respond to problems	70.7%	8.1%	21.3%	3.7	n=277
15.2	Employees are focused on improving existing capabilities	58.7%	14.5%	26.8%	3.5	n=276
15.25	Employees are encourage to initiate change and take risks rather than just focus on the status quo	42.9%	22.0%	35.0%	3.21	n=277
14.19	Freedom exists to break the rules as a form of inquiry and curiosity	22.1%	48.6%	29.3%	2.65	n=276
14.16	Non-standard operating environment whereby employees need to explore/innovate to find ways to complete their assigned tasks	19.5%	62.7%	18.1%	2.47	n=276

The minority of respondents (19.5%) identifies that their organisation has a standard operating environment whereby employees are not required to explore/innovate to undertake their assigned tasks. The majority of respondents (85%) agrees that employees

are encouraged to work smarter not harder, which is in line with the motivation for management to improve performance. This suggestion is reinforced by 84.5% of respondents who agree that their organisation encourages employees to question current work practices and find new ways of doing things. In addition, 80.2% of respondents agree that in their organisation standard operating procedures are reviewed regularly, which would encourage improvement in existing capabilities and promote single-loop learning and also may encourage double-loop learning from the review process. Respondents (74.2%) note that managers do not punish mistakes but encourage employees to explore alternatives. Further encouragement is given to employees as 70.7% of respondents agree that employees have been given decision-making responsibilities to deal with problems relating to specific work activities. Double-loop learning is also encouraged in the 57.9% of respondents organisations who work closely with suppliers to improve each others processes (*question 14.25*).

However, despite the encouragement only 58.7% of respondents identify that employees are focused on improving existing capabilities. The empowerment of employees to initiate change is unclear as only 42.9% of respondents agree that this is encouraged in their organisation, and a further 35.0% of respondents are unsure about their organisation. However, this may be due to 62.7% of respondents identifying that their organisation has a standard operating environment, which does not require employee exploration or innovation to complete the assigned tasks. In addition, a number of respondents commented that their organisations are in industries, such as the aviation industry, which applies strict rules to the operations.

7.4.2.1 Further analysis of learning style against success of quality program

Learning can concentrate on methods and tools to improve what is already being done or on testing the assumptions underlying what is being done. Table 7.46 shows the results of the chi square test to identify any significant relationship between the level of success of the quality program and the factors that encourage the learning style of the organisation. A significant relationship is identified for each of the following factors: employees are encouraged to work smarter not harder ($p=.000$); managers support staff not by punishing

mistakes but by encouraging staff to learn ($p=.000$); employees are focused on improving existing capabilities ($p=.026$); employees are encouraged to question current work practices and find new ways of doing things ($p=.091$); and employees are encouraged to initiate change and take risks rather than just focus on the status quo.

Table 7.46 - Relationship between level of success of quality program and factors encouraging the learning style

<i>Question</i>	<i>Factors encouraging Learning Style</i>	<i>P=</i>
15.10	Employees are encouraged to work smarter not harder	.000
15.1	Employees are encouraged to question current practices and find new ways of doing things	.091
18.11	Standard Operating procedures are reviewed regularly	.001
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn	.000
15.22	Employees are empowered to make decisions to enable them to immediately respond to problems	.636
15.2	Employees are focused on improving existing capabilities	.026
15.25	Employees are encourage to initiate change and take risks rather than just focus on the status quo	.081
14.19	Freedom exists to break the rules as a form of inquiry and curiosity	.412
14.16	Non-standard operating environment whereby employees need to explore/innovate to find ways to complete their assigned tasks	.843
14.18	The organisation is oriented towards short-term quick fixes, as opposed to systematic problem solving	.105

A breakdown of responses to the questions with significant relationships ($p\leq .10$) is shown in Tables 7.47 to 7.52. The encouragement of employees to work smarter will encourage double-loop learning, as employees will look for better ways of performing their tasks.

Table 7.47 shows that respondents who rate the quality program as exceeding expectations more strongly agree that their organisation encourages employees to work

smarter, which may provide a competitive edge for such organisations. The strongest disagreement was from respondents who rate the quality program as “fell short of expectations”. Respondents who are unable to rate the success of the quality program are more uncertain and these results may indicate the stage of development of these organisations.

Table 7.47 – Cross-tabulation of success of quality program against the encouragement of employees to work smarter not harder

<i>Success of Quality program</i>	<i>Employees encouraged to work smarter not harder</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	20.5%	79.5%	-	-	n=44
Met Expectations	12.7%	72.5%	2.3%	12.7%	n=210
Fell Short of Expectations	14.3%	57.1%	14.2%	14.3%	n=14
Unable to determine at this time	-	50.0%	-	50.0%	n=4

Leadership must encourage learning and management must want learning to become a reality. By not punishing mistakes, management is reinforcing the message to employees that they should work smarter not harder. Table 7.48 provides the output of the cross-tabulation. It is shown that respondents who rate the quality program as exceeded expectations more strongly agree that management encourages staff to learn in their organisation. Respondents who rate the quality program as “fell short of expectations” are more uncertain about whether employees are encouraged to learn, in comparison to respondents who are unable to rate the success of the quality program. This group agree that learning is encouraged. Once again this may indicate that such organisations are in the building stage of the quality program.

Table 7.48 – Cross-tabulation of success of quality program against managers who encourage staff to learn

<i>Success of Quality program</i>	<i>Management encourage staff to learn</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	18.2%	68.0%	4.5%	9.1%	n=44
Met Expectations	5.6%	67.6%	4.2%	22.5%	n=210
Fell Short of Expectations	--	53.8%	7.7%	38.5%	n=14
Unable to determine at this time		75.0%	-	25.0%	n=4

The review of standard operating procedures would ensure that the organisation is questioning current practices. Table 7.49 shows that the strongest agreement was from the respondent group who rate the quality program as having “exceeded expectations”. Respondents from organisations who were unable to rate the success of the quality program were unanimous that standard procedures are reviewed regularly. The respondent group who rate the quality program as “fell short of expectations” expressed the highest level of disagreement and uncertainty.

Table 7.49 – Cross-tabulation of success of quality program against whether the organisation undertakes a regular review of standard operating procedures

<i>Success of Quality program</i>	<i>Regular review of standard operating procedures</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	36.4%	59.1%	-	4.5%	n=44
Met Expectations	9.9%	68.1%	7.1%	15.0%	n=210
Fell Short of Expectations	7.1%	57.1%	14.2%	21.4%	n=14
Unable to determine at this time	-	100.0%	-	-	n=4

Table 7.50 shows that respondents who rate the quality program as having “exceeded expectations” more strongly agree that employees in their organisation are focused on improving existing capabilities. This would support double-loop learning as employees would look at ways to improve current practices.

Table 7.50 – Cross-tabulation of success of quality program against employees focusing on improving existing capabilities

<i>Success of Quality program</i>	<i>Employees focusing on improving existing capabilities</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	14.0%	72.1%	-	14.0%	n=44
Met Expectations	6.1%	49.3%	16.4%	28.2%	n=210
Fell Short of Expectations	-	35.7%	28.6%	35.7%	n=14
Unable to determine at this time	-	25.0%	25.0%	50.0%	n=4

Table 7.51 gives a breakdown of respondents' views on whether their organisation encourages employees to question current practices and find new ways of doing things against the success of the quality program. The findings indicate that the least agreement was from the respondent group who is unable to rate the success of the quality program. The respondent group who rate the quality program as "exceeded expectations" more strongly agree that such practices are in their organisations, which may suggest more encouragement of double-loop learning.

Table 7.51 – Cross-tabulation of success of quality program against employees being encouraged to question current practices and find new ways of doing things

<i>Success of Quality program</i>	<i>Employees being encouraged to question current practices</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	34.1%	56.8%	-	9.1%	n=44
Met Expectations	16.0%	68.1%	4.7%	11.3%	n=210
Fell Short of Expectations	14.3%	64.3%	7.1%	14.3%	n=14
Unable to determine at this time	-	75.0%	25.0%	-	n=4

Table 7.52 details responses to whether organisations encourage employees to initiate change and take risks rather than focus on the status quo. The respondent group who is unable to rate the success of the quality program shows more agreement to this occurring in their organisations.

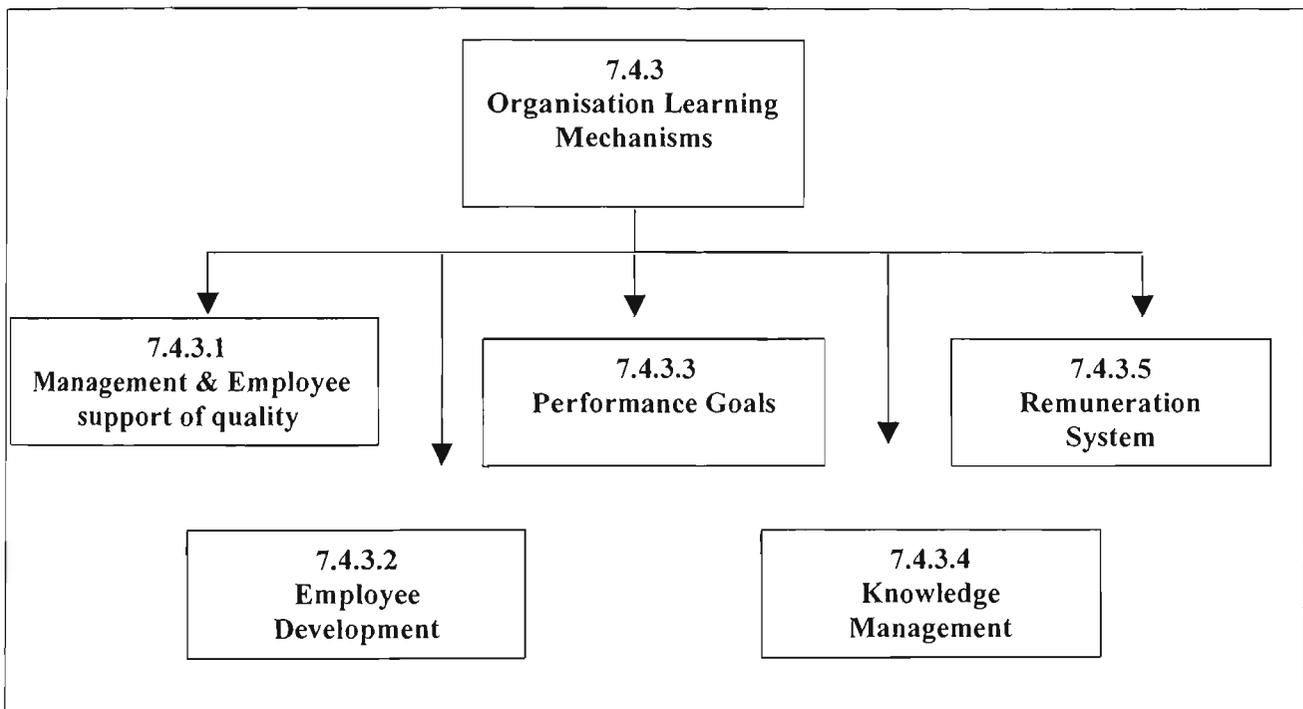
Table 7.52 – Cross-tabulation of success of quality program against employees being encouraged to initiate change and take risks rather than focusing on the status quo

<i>Success of Quality program</i>	<i>Employees encouraged to initiate change</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	9.1%	31.8%	20.3%	38.6%	n=44
Met Expectations	2.3%	42.3%	34.7%	20.7%	n=210
Fell Short of Expectations	-	28.6%	35.7%	35.7%	n=14
Unable to determine at this time	-	75.0%	25.0%	-	n=4

7.4.3 Organisational learning mechanisms

In section 7.4.1 a discussion was given of the findings in relation to the learning values of respondent organisations. Table 7.36 showed that 87.0% of respondents agree continuous learning is valued in their organisation. As such it could be expected that organisational learning mechanisms would be present to encourage learning. Facilitating factors are organisational learning mechanisms that promote and accelerate learning and represent how organisational learning is operationalised within the organisation. Facilitating factors enable learning to permeate organisational decision making. Figure 7.7 provides a structure of this section.

Figure 7.7– Structure of Section 7.4.3



7.4.3.1 Management and employee support of quality

A report jointly prepared by the Australian Quality Council² and Deloitte Touche Tohmatsu in 2000 found that the main problems in implementing a business improvement program were staff resistance and lack of management support. The leaders within the organisation must encourage learning. The positive outcomes brought about by

² The Australian Quality Council (AQC) has officially changed its name to Business Excellence Australia, a division of Standards Australia International (SAI).

management support and employee commitment in organisations is reinforced in this study with respondents commenting:

“...dramatic improvement in last 12 months with new top management appointments...”

“...from a systems /technological and recording point of view we are at the early stages, however willingness and commitment is well advanced – knowing what to get is the biggest challenge...”

Respondents were asked to comment on their perceptions of management support specifically in relation to quality management. Without such support the success of continuous improvement initiatives may be undermined. Responses are detailed in Table 7.53.

The majority of respondents (86.1%) agree that top management in their organisation is committed to the quality program. 83.4% of respondents ensure employees are aware of what quality means to the organisation. However, only 53.5% of respondents consider that management view quality as the way to increase profits. To explore this further respondents were asked to comment on whether management viewed results as more important than processes. The responses show that 22.8% agree with the statement, 45.5% disagree and 31.6% are uncertain (*question 14.17*). This could raise issues about management’s full commitment to the quality program.

Table 7.53 – Management and employee support of quality

<i>Q.</i>	<i>Factors</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
14.9	Top management is committed to the quality program	86.1%	3.6%	11.2%	4.06	n=277
14.8	Management ensure that employees are aware of what quality means to the organization	83.4%	4.7%	12.0%	3.96	n=276
14.20	Senior personnel are members of quality related committees	74.7%	14.8%	10.5%	3.71	n=277
14.7	Management view quality as the way to increase profits	53.5%	17.0%	29.6%	3.39	n=277

The ownership of the quality program is not clear, as only 58.7% of respondents indicate that employees believe that quality is their responsibility (*question 15.3*). Given that employees are an important key to success this bare majority is a concern as this relatively low level of ownership could inhibit the diffusion of quality management within the organisation. To be successful quality programs require the support of both management and employees. Respondent comments on this issue included:

“...(lack of) support of supervisors and middle management...”

“...moderately high standard of quality but needs to be pushed to get the people in the field to keep it ongoing. They think of it as a burden (cost) not a tool to help...”

“...the systems (as advised by external parties) are at the cutting edge. While senior management support is excellent intentionally it is not necessarily practised and driven with the same support. Middle managers give moderate to nil support...”

Further analysis of management and employee support against success of quality program

To encourage a shared vision within the organisation management must give the direction through their actions. A chi square test was carried out to determine any significant relationships between management support of the quality program and the success of the quality program. Results are shown in Table 7.54.

Table 7.54 - Relationship between level of success of quality program and management support of quality

<i>Q</i>	<i>Management support of quality</i>	<i>P=</i>
14.9	Top management is committed to the quality program	.000
14.8	Management ensure that employees are aware of what quality means to the organisation	.000
14.20	Senior personnel are members of quality related committees	.062
14.7	Management view quality as the way to increase profits	.118
14.17	Management view results more important than processes	.569
15.3	Employees believe that quality is their responsibility	.026

Significant relationships were identified between the success of the quality program and: top management commitment to the quality program ($p=.000$); management ensuring all employees are aware of what quality means to the organisation ($p=.000$); senior personnel being members of quality related committees ($p=.062$); and employees believing that quality is their responsibility ($p=.026$). Breakdowns of the responses to each question against the success of the quality program are shown in Tables 7.55 and 7.58.

Table 7.55 provides insight into the management commitment to the quality program.

Table 7.55 – Cross-tabulation of success of quality program against top management commitment to quality program

<i>Success of Quality program</i>	Top management commitment to quality program				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	50.0%	43.2%	-	6.8%	n=44
Met Expectations	21.1%	63.4%	3.3%	12.2%	n=210
Fell Short of Expectations	14.3%	50.0%	21.4%	14.3%	n=14
Unable to determine at this time	-	100.0%	-	-	n=4

The strongest level of agreement was from respondents who rate their organisation's quality program as "exceeded expectations". For respondents who rate the quality program as "fell short of expectations" rate the highest disagreement about management commitment. The respondent group who is unable to rate the success of their organisation's quality program showed no doubt about their management's commitment to the quality program by giving 100% agreement.

To ensure that employees are committed and work towards the organisation's quality objectives, they need to understand what quality means to the organisation. Table 7.56 provides a summary of the results of the cross-tabulation which indicate that respondents who rate the quality program as "exceeded expectations" more strongly agree that employees are aware of what quality means to the organisation. This awareness may account for why such organisations have been able to exceed expectations. In contrast,

for the respondent group who rate the quality program as “fell short of expectations”, the majority either disagrees or is unsure whether quality is understood within the organisation. Once again this could be a contributing factor to the lack of success of the quality program.

Table 7.56– Cross-tabulation of success of quality program against employee awareness of what quality means to the organisation

<i>Success of Quality program</i>	Employee awareness of what quality means to the organisation				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	38.6%	54.5%	2.3%	4.5%	n=44
Met Expectations	15.1%	69.8%	3.8%	11.3%	n=210
Fell Short of Expectations	14.3%	28.6%	14.2%	42.9%	n=14
Unable to determine at this time	-	50.0%	25.0%	25.0%	n=4

Table 7.57 shows a breakdown of responses to the question of whether senior personnel are members of quality related committees. The findings show respondents who rate their organisations quality success has “exceeded expectations” indicate more agreement for their organisation to have senior personnel members of quality related committees. As noted in Section 4.4.1.1, quality committees will have more legitimacy and effect if staffed by senior personnel rather than junior personnel

Table 7.57 – Cross-tabulation of success of quality program against senior personnel being members of quality related committees

<i>Success of Quality program</i>	Senior personnel members of quality related committees				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	18.2%	68.2%	6.8%	6.8%	n=44
Met Expectations	13.1%	59.6%	15.0%	12.2%	n=210
Fell Short of Expectations	7.1%	50.0%	42.9%	-	n=14
Unable to determine at this time	-	75.0%	25.0%	-	n=4

As noted by Jha et al. (1996 , p27)

“...continuous improvement is based on employee participation, usually at all levels across the organisation, and relies on the experience and know-how of workers assisted, rather than directed by staff experts...”

Table 7.58 gives a breakdown of the responses of whether employees believe quality is their responsibility against the success rating of the quality program.

Table 7.58 – Cross-tabulation of success of quality program against employees believing that quality is their responsibility

<i>Success of Quality program</i>	Employees believing that quality is their responsibility				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	14.0%	72.1%	-	14.0%	n=44
Met Expectations	6.1%	49.3%	16.4%	28.2%	n=210
Fell Short of Expectations	-	35.7%	28.6%	35.7%	n=14
Unable to determine at this time	-	25.0%	25.0%	50.0%	n=4

The findings show that 86.1% of the respondents who rate the quality program as “exceeded expectations” agree that employees in their organisation believe quality is their responsibility. This “ownership” of the quality program would strengthen employee commitment to achieving the organisation’s objectives. In contrast, only 35.7% of respondents who rate the quality program as “fell short of expectations” agree. For respondents who are unable to rate the success of the quality program their response to this question gave a higher neutral response than other groups.

7.4.3.2 Employee development

As shown in Table 7.36 (Section 7.4.1), the majority of respondents agrees that continuous learning is valued in their organisations and that their organisations are committed to building expertise in-house. Respondents’ views in relation to the encouragement of employee education are detailed in Table 7.59. The majority of respondents (93.2%) agrees that employee training is important for continuous improvement. 78.7% agree that flexibility, multi-skilling and training are actively used to support improved performance.

Training can either be conducted in-house or provided externally. 70.5% of respondents note that their organisations engage external organisations for employee training. A majority of respondents (60%) agree that employees are encouraged and given the opportunity to participate in external seminars. Internal training can take many forms and respondents were asked to comment on cross-training (assignment of personnel to other parts of the organisation to learn) and mentoring schemes. Cross-training is noted by only 56.9% of respondents; and only 49.1% of respondents note the use of mentoring schemes to develop employees.

Table 7.59 – Employee Education

<i>Q</i>	<i>Factors</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
15.11	Employee training is important to continuous improvement efforts	93.2%	2.1%	4.7%	4.17	n=277
15.21	Employee flexibility, multi-skilling and training are actively used to support improved performance	78.7%	5.0%	16.2%	3.83	n=277
15.15	External organisations are engaged for employee training	70.5%	17.4%	12.0%	3.61	n=275
15.17	Employees are trained in teamwork	58.9%	15.9%	25.3%	3.60	n=277
15.4	Employees are rewarded for learning new skills	57.9%	8.4%	33.8%	3.54	n=275
18.17	Employee attendance at external seminars is encouraged	60.0%	12.6%	27.4%	3.50	n=277
15.18	Employees are trained in problem solving	55.2%	15.8%	28.9%	3.42	n=276
15.16	Management assign employees to other parts of the organisation for cross-training	56.9%	17.0%	26.1%	3.42	n=276
15.14	Mentoring schemes are used to assist employees	49.1%	20.7%	30.2%	3.28	n=275

Further information was asked of respondents to identify whether training supported employee learning. Whether employees really are encouraged to learn is questioned as only 57.9% of respondents agree that employees are rewarded for learning new skills. The findings in Table 7.45 show that employees are empowered to make decisions about their work activities. 64.9% of respondents note that employee teams tackle problem solving (*question 15.19*). Whether employees possess all the skills to take on responsibilities is open for debate as only 55.2% of respondents agree that employees are trained in problem-solving and 58.9% of respondents agree that employees are trained in

team work.

Further analysis of employee education against success of quality program

Table 7.60 shows the findings of the chi square test against the employee education options detailed in Table 7.59. A significant relationship has been identified between the success of the quality program and the importance of: employee training to continuous improvement efforts (p=.063); employee teams in tackling problem solving (p=.016); employees trained in teamwork (p=.005); employees being rewarded for learning new skills (p=.001); cross-training for employees (p=.089); and employees being trained in problem solving (p=.023). Further analysis of the responses is shown in Tables 7.61 to 7.66

Table 7.60 - Relationship between level of success of quality program and employee education

<i>Q</i>	<i>Employee Education</i>	<i>P=</i>
15.11	Employee training is important to continuous improvement efforts	.063
15.21	Employee flexibility, multi-skilling and training are actively used to support improved performance	.126
15.15	External organisations are engaged for employee training	.702
15.17	Employees are trained in teamwork	.005
15.4	Employees are rewarded for learning new skills	.001
18.17	Employee attendance at external seminars is encouraged	.272
15.18	Employees are trained in problem solving	.023
15.16	Management assign employees to other parts of the organisation for cross-training	.089
15.19	Employee teams tackle problems	.016
15.14	Mentoring schemes are used to assist employees	.172

Table 7.61 shows that all respondents agree training is important for the continuous improvement effort. However, it is evident that for respondents who rate the success of the quality program as “exceeded expectations” that training is more important to enable the continuous improvement effort.

Table 7.61 – Cross-tabulation of success of quality program against whether employee training is important to continuous improvement efforts

<i>Success of Quality program</i>	<i>Employees training important for continuous improvement</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	45.5%	54.5%	-	-	n=44
Met Expectations	23.5%	68.5%	2.3%	5.6%	n=210
Fell Short of Expectations	35.7%	57.1%	7.1%	-	n=14
Unable to determine at this time	27.3%	65.8%	2.2%	4.7%	n=4

Table 7.62 shows the extent that respondent organisations train their employees in teamwork as effective teams require employees to understand group dynamics. It is shown that respondents who rate the quality program as “exceeded expectations” more strongly agree that their organisations train employees in how to work in teams. The respondent group who are unable to rate the quality program show the most disagreement, followed by the respondent group who rate the quality program as “fell short of expectations”.

Table 7.62 – Cross-tabulation of success of quality program against employees being trained in teamwork

<i>Success of Quality program</i>	<i>Employees trained in teamwork</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	15.9%	61.4%	4.6%	18.2%	n=44
Met Expectations	3.3%	51.6%	16.4%	28.6%	n=210
Fell Short of Expectations	-	71.4%	28.6%	-	n=14
Unable to determine at this time	-	25.0%	50.0%	25.0%	n=4

The encouragement for employees to learn new skills can be reinforced by an appropriate reward system. Table 7.63 shows that respondents who rate the quality program as “exceeded expectations” more strongly agree that their organisation rewards the acquisition of new skills. The respondent groups who are unable to rate the success of the quality program note more uncertainty.

Table 7.63– Cross-tabulation of success of quality program against employees rewarded for learning new skills

<i>Success of Quality program</i>	<i>Employees rewarded for learning new skills</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	15.9%	65.9%	-	18.2%	n=44
Met Expectations	2.4%	51.2%	9.5%	37.0%	n=210
Fell Short of Expectations	-	57.1%	14.3%	28.6%	n=14
Unable to determine at this time	-	25.0%	25.0%	50.0%	n=4

Table 7.64 shows that the respondent groups who are unable to rate the success of the quality program or rate it as “fell short of expectations” indicate the strongest disagreement that employees in their organisation are trained in problem solving. This is in contrast to the respondents who rate the program as having “exceeded expectations” that give the strongest agreement.

Table 7.64– Cross-tabulation of success of quality program against employees trained in problem solving

<i>Success of Quality program</i>	<i>Employees trained in problem solving</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	9.1%	65.9%	6.8%	18.2%	n=44
Met Expectations	3.8%	49.3%	15.5%	31.5%	n=210
Fell Short of Expectations	-	35.7%	42.9%	21.4%	n=14
Unable to determine at this time	-	25.0%	50.0%	25.0%	n=4

Employees can learn within their organisation by being assigned to other parts of the organisation. Table 7.65 indicates that the highest level of disagreement is given by the respondent group who rate the success of the quality program as “fell short of expectations”.

Table 7.65 – Cross-tabulation of success of quality program against cross-training of employees

<i>Success of Quality program</i>	<i>Use of cross-training for employees</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	9.1%	59.1%	4.6%	27.3%	n=44
Met Expectations	3.3%	52.1%	18.3%	26.3%	n=210
Fell Short of Expectations	-	46.2%	38.5%	15.4%	n=14
Unable to determine at this time	-	50.0%	25.0%	25.0%	n=4

Many organisational activities involve team-based work groups. Table 7.66 illustrates that the respondents who rate the quality program as having “exceeded expectations” tend to use employee teams to tackle problem solving. In contrast, for respondents who rate the success of the quality program as “fell short of expectations” team based structures are not as prevalent.

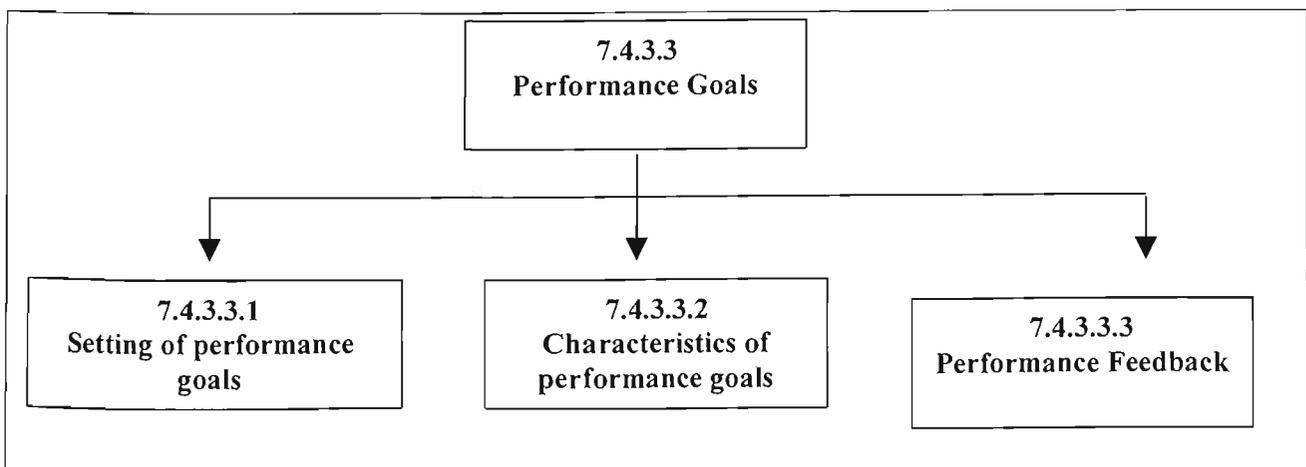
Table 7.66 – Cross-tabulation of success of quality program against employee teams used to tackle problem solving

<i>Success of Quality program</i>	<i>Employees teams to tackle problems</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	11.4%	70.5%	2.3%	15.9%	n=44
Met Expectations	5.6%	57.7%	12.2%	24.4%	n=210
Fell Short of Expectations	-	42.9%	35.7%	21.4%	n=14
Unable to determine at this time	-	50.0%	50.0%	-	n=4

7.4.3.3 Performance goals

Goals are broad statements that set the direction for the organisation in realising its mission and close the gap between where it is and where it wants to be (Evans and Lindsay, 1996). The goals need to be consistent with the key factors that drive the business and must not undermine quality. In this section the focus will be on respondents’ attitudes to the goal setting process in their organisation together with the characteristics of the performance goals chosen. The use of performance goals as a feedback mechanism will also be explored. Figure 7.8 provides an overview of this sub-section.

Figure 7.8– Structure of Section 7.4.3.3



7.4.3.3.1 Setting of performance goals

The ability of an organisation to adapt successfully to changes in the competitive environment can be seriously inhibited by a poorly designed performance measurement system (Sinclair and Zairi, 1995a). A well-structured measurement system provides the linkage between strategies and actions. The links are established by the performance goals developed to encourage employee behaviour to meet organisation objectives.

Table 7.67– Setting of performance goals

Q		Agree	Disagree	Neutral	Mean	Responses
19.4	All appropriate management and employees are made aware of the performance measures to encourage ongoing improvement	80.0%	5.5%	14.5%	3.87	n=276
19.12	Employee involvement in goal setting is important	73.3%	7.0%	19.7% %	3.79	n=274
19.27	Benchmarking (both internal and external) is used to assist with the development of performance targets	52.2%	14.5%	33.3%	3.42	n=276
19.10	Multi-disciplined teams develop both financial and non-financial targets	42.2%	19.3%	38.2%	3.23	n=275
19.25	Problems are experienced converting quality goals into performance targets (<i>reverse coded</i>)	37.1%	26.7%	36.1%	3.11	n=277

Table 7.67 highlights that 80% of respondents consider that all appropriate management and employees in their organisation are made aware of the performance measurements to encourage continuous improvement. 73.3% of respondents agree that employee involvement in goal setting is important. It is assumed that this is in relation to operational goals as only 20.9% of respondents agree that employees are involved in the development of the strategic plan (*question 18.2*).

One comment made by a respondent highlights the importance of this involvement.

“...more employee involvement in goal setting required – not enough performance review at divisional levels. Require more time to be spent on review

of performance on projects and identify lessons learnt and implement correction action and improve systems, procedures etc. Goals should also be communicated to all employees not management and this also applies to performance results – this would increase a sense of ownership and commitment at all levels... ”

In relation to the development of the financial and non-financial targets, only 42.2% of respondents agree that multi-disciplined teams tackle the task. Environmental scanning does not appear to be widely used as only 52.2% of respondents agree that benchmarking was important in the development and identification of performance targets.

However, the adaptability of the operational performance measures to changing strategy is not clear, as only 55.7% of respondents agree that the performance measurements are revised to match changing operating conditions.

Further analysis on the setting of performance goals against success of the quality program

The use of a formalised monitoring and measurement system works as a key enabler to encourage improvement (Bessant and Francis, 1999). The measurements assist both groups and individuals to identify where to focus their improvement activities and to identify the extent to which performance has changed. In Table 7.68 the outcome of chi square tests to identify any significant relationships between the success of the quality program and the setting of performance goals are shown.

Table 7.68 - Relationship between level of success of quality program and the setting of performance goals

<i>Q</i>	<i>Setting of Performance Goals</i>	<i>P=</i>
19.4	All appropriate management and employees are made aware of the performance measures to encourage ongoing improvement	.000
19.12	Employee involvement in goal setting is important	.057
19.27	Benchmarking (both internal and external) is used to assist with the development of performance targets	.289
19.10	Multi-disciplined teams develop both financial and non-financial targets	.104
19.25	Problems are experienced converting quality goals into performance targets (<i>reverse coded</i>)	.978

Significant relationships were noted between the success of the quality program and management and employee awareness of the performance measures to encourage ongoing improvement ($p=.000$) and the involvement of employees in goal setting ($p=.057$).

The responses to *question 19.4* cross-tabulated against the level of success of the quality program are shown in Table 7.69. The findings show that respondents who rate the success of the quality program as “exceeded expectations” more strongly agree that their organisations make management and employees aware of performance measures to encourage continuous improvement. Respondents who rate the success of the quality program as “fell short of expectations” are the most uncertain about whether management and employees are aware of the performance measures.

Table 7.69 – Cross-tabulation of success of quality program against awareness of performance measures to encourage ongoing improvement

<i>Success of Quality program</i>	Awareness of performance measures to encourage ongoing improvement				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	27.3%	65.9%	4.5%	2.3%	n=44
Met Expectations	10.4%	69.8%	4.2%	15.6%	n=210
Fell Short of Expectations	7.1%	50.0%	14.2%	28.6%	n=14
Unable to determine at this time	-	25.0%	50.0%	25.0%	n=4

Table 7.70 shows that respondents who rate the quality program as “exceeded expectations” indicate that employee involvement in goal setting is more valued in their organisations. The highest level of disagreement is given by the respondent group who rate the success of the quality program as “fell short of expectations”.

Table 7.70 – Cross-tabulation of success of quality program against the involvement of employees in goal setting

<i>Success of Quality program</i>	Involvement of employees in goal setting				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	25.0%	65.9%	2.3%	6.8%	n=44
Met Expectations	11.4%	59.5%	7.2%	21.9%	n=210
Fell Short of Expectations	-	57.1%	21.4%	21.4%	n=14
Unable to determine at this time	-	50.0%	-	50.0%	n=4

7.4.3.3.2 Characteristics of performance goals

Performance goals should provide the signals to employees of what actions are required to meet organisational objectives. Table 7.71 outlines the characteristics of the performance goals identified by respondents.

Table 7.71 - Characteristics of performance goals

<i>Q.</i>	<i>Characteristics</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
19.13	Clear and consistent	73.3%	6.1%	20.6%	3.75	n=277
19.14	Reflect the importance of the quality improvement activities	65.2%	7.9%	26.8%	3.64	n=276
19.7	Encourage employees to work towards quality goals	68.2%	10.5%	21.3%	3.61	n=277
19.23	Encourage cooperation and interaction between employees	56.5%	10.1%	33.3%	3.48	n=276
19.6	Performance measures are frequently revised to adapt to changes in operating conditions	55.7%	44.4%	29.1%	3.45	n=275
19.16	Encourage employees to explore new ways of doing their jobs	49.0%	18.1%	33.0%	3.33	n=276
19.15	Promote dialogue and debate among employees about operational activities	44.5%	18.5%	37.0%	3.29	n=276
19.21	Used to modify employee behaviour	48.9%	21.6%	29.6%	3.28	n=274
19.18	Stretch goals to encourage employees to explore new ways of doing their jobs	41.6%	19.0%	39.4%	3.24	n=274
19.19	Focus mainly on non-financial measures	21.8%	44.2%	34.1%	2.86	n=276

Respondents (73.3%) agree that the performance goals are clear and consistent. 65.2% of respondents suggest that the performance goals reflect the importance of quality improvement activities, which is consistent with 68.2% of respondents agreeing that performance measures encourage employees to work towards quality goals. However, these findings suggest that around 30% of respondents consider their organisation does not have the necessary performance measurements to support the improvement activities.

Of concern is that only 55.7% of respondents agree that their organisation frequently revises the performance measures to adapt to changes in operating conditions.

It could be expected that the performance goals would encourage the learning style (that is, whether double-loop or single-loop learning). Only 49% of respondents consider that the performance goals are structured to encourage employees to explore new ways of doing their jobs. The use of stretch goals as a means to encourage improved performance is only noted by 41.6% of respondents. Only 48.9% of respondents agree that performance goals are used to modify employee behaviour. The minority of respondents (44.5%) agrees that performance goals promote dialogue and debate among employees with 56.5% of respondents who agree that performance goals encourage cooperation and interaction between employees. The above findings raise doubts as to whether the performance goals would encourage double-loop learning.

Further analysis of the characteristics of performance goals against success of the quality program

Performance goals need to encourage improvement activities. Table 7.72 provides the outcomes of the chi square test to determine any significant relationships between the characteristics of the performance goals and the success of the quality program.

Table 7.72 - Relationship between level of success of quality program and the characteristics of performance goals

<i>Q</i>	<i>Characteristics of performance goals</i>	<i>P=</i>
19.13	Clear and consistent	.000
19.14	Reflect the importance of the quality improvement activities	.000
19.7	Encourage employees to work towards quality goals	.008
19.23	Encourage cooperation and interaction between employees	.955
19.6	Performance measures are frequently revised to adapt to changes in operating conditions	.171
19.16	Encourage employees to explore new ways of doing their jobs	.161
19.15	Promote dialogue and debate among employees about operational activities	.009
19.21	Used to modify employee behaviour	.593
19.18	Stretch goals to encourage employees to explore new ways of doing their jobs	.691
19.19	Focus mainly on non-financial measures	.859

Significant relationships were identified between the success of the quality program and whether the performance goals were: clear and consistent (p=.000); reflect the importance of the quality improvement activities (p=.000); encourage employees to work towards quality goals (p=.008);and promote dialogue and debate among employees about operational activities (p=.009).

Performance goals will encourage the right behaviour if they are clear and consistent. A summary of the cross-tabulation with this characteristic and the success of the quality program is shown in Table 7.73. Respondents who rate the success of the quality program as “exceeded expectations” more strongly agree that the performance goals in their organisation are clear and consistent. Respondents who rate the success of the quality program as “fell short of expectations” are uncertain about the clarity and consistency of the performance goals in their organisation.

Table 7.73 – Cross-tabulation of success of quality program against whether performance goals are clear and consistent

<i>Success of Quality program</i>	<i>Characteristic of performance goals – Clear and consistent</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	18.2%	68.2%	4.6%	9.1%	n=44
Met Expectations	7.0%	67.1%	5.2%	20.7%	n=210
Fell Short of Expectations	-	28.6%	14.2%	57.1%	n=14
Unable to determine at this time	-	25.0%	50.0%	25.0%	n=4

Performance goals direct employee action and it is important that they reflect the importance of the quality improvement activities to encourage continuous improvement. Table 7.74 shows that for respondents who rate the success of the quality program as “exceeded expectations” their organisations seem to have performance goals that better reflect the importance of the quality improvement activities.

Table 7.74 – Cross-tabulation of success of quality program against whether performance goals reflect the importance of quality improvement activities

<i>Success of Quality program</i>	<i>Characteristic of performance goals – reflect importance of quality improvement activities</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	15.9%	70.5%	4.6%	9.1%	n=44
Met Expectations	5.7%	59.0%	7.1%	28.3%	n=210
Fell Short of Expectations	7.1%	28.6%	28.5%	35.7%	n=14
Unable to determine at this time	-	-	25.0%	75.0%	n=4

It would seem that respondents who are unable to rate the success of the quality program are uncertain about the focus of the performance goals. This may reflect the early stage of development of the quality program as 50.0% of respondents from this group note the length of the quality program as less than 5 years. For respondents who rate the success of the quality program as “fell short of expectations” the majority either disagree or are uncertain about the performance goals reflecting the importance of the quality improvement activities.

Performance goals that support the quality program will encourage the achievement of the quality objectives. The goals should motivate employees to work towards the goals. Table 7.75 shows a breakdown of the results of the cross-tabulation. Respondents who rate the success of the quality program as “exceeded expectations” more strongly agree that the performance goals in their organisation encourage employees to work towards quality goals. All other respondent groups note uncertainty about the performance goals to encourage employee actions and could assist in explaining why the success rating is lower for these respondents.

Table 7.75 – Cross-tabulation of success of quality program against whether performance goals encourage employees to work towards quality goals

<i>Success of Quality program</i>	<i>Characteristic of performance goals – encourage employees to work towards quality goals</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	11.4%	72.7%	4.5%	11.4%	n=44
Met Expectations	2.8%	64.8%	9.9%	22.5%	n=210
Fell Short of Expectations	7.1%	35.7%	28.6%	28.6%	n=14
Unable to determine at this time	-	25.0%	50.0%	25.0%	n=4

Performance goals that promote dialogue and act as the catalyst for debate will overcome conflict and power plays evident when employees view themselves as being in competition with each other. The incorporation of such cooperative goals will stimulate learning in the organisation by promoting dialogue and debate. The responses in Table 7.76 show that respondents who rate the success of the quality program as “exceeded expectations” agree more than other respondent groups that performance goals in their organisation promote dialogue and debate among employees about operational activities. The respondent groups that are unable to rate the success of the program and that rate the success as “fell short of expectations” both indicate the highest level of disagreement about the performance goals promoting dialogue and debate.

Table 7.76 – Cross-tabulation of success of quality program against whether performance goals promote dialogue and debate among employees about operational activities

<i>Success of Quality program</i>	<i>Characteristic of performance goals – Promote dialogue and debate among employees about operational activities</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	4.5%	54.5%	15.9%	25.0%	n=44
Met Expectations	3.8%	38.2%	17.5%	40.6%	n=210
Fell Short of Expectations	-	42.9%	35.7%	21.4%	n=14
Unable to determine at this time	-	25.0%	50.0%	25.0%	n=4

7.4.3.3 Performance feedback

Planning and control are strengthened by the ability of employees to respond to problems. The evaluation of actual performance against targets is important for the control of operations. Table 7.77 provides a summary of responses to questions raised in relation to performance feedback. The majority of respondents (84.8%) agrees that performance feedback is important for investigating problem areas. 60% of respondents agree that feedback gained from assessing performance against target enables the instigation of rapid corrective action. The ability of employees to react to feedback may be limited as only 60% of respondents agree that employees receive regular appraisal and feedback about their work performance.

Table 7.77 – Performance Feedback

<i>Q</i>	<i>Characteristics</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
19.26	Feedback important for investigating problem areas	84.8%	15.2%	13.8%	3.95	n=276
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action	60.0%	11.7%	28.4%	3.55	n=275
15.24	Employees receive regular appraisal and feedback about their work performance	60.0%	13.0%	26.0%	3.54	n=277
18.13	Benchmarking (both internal and external) is used to assess performance	47.8%	19.0%	33.2%	3.31	n=274
19.20	Employee performance is measured against standards	45.1%	18.4%	36.5%	3.29	n=277
19.24	Balanced scorecard used for performance evaluation	43.6%	18.6%	36.7%	3.28	n=275

The responses also indicate that despite feedback being important, 28.4% of respondents are unsure whether feedback enables rapid corrective action, and 26% of respondents are unsure whether employees receive regular feedback. Only 45.1% of respondents agree that employee performance is measured against standards, however, a further 36.5% are unsure of the use of standards in their organisation.

The balanced scorecard is a performance measurement tool that provides a holistic view of events both inside and outside the organisation (Chang and Chow, 1999). Its key characteristic is that the included measures are linked to the entity's mission and strategy and are explicitly designed to inform and motivate continuous efforts towards their attainment. Only 43.6% of respondents note that their organisation makes use of such a performance feedback tool.

Environmental scanning enables organisations to identify best practice and exposes employees to how other organisations operate and forces employees to look at alternative models of practice. A minority of respondents (47.8%) agree that environmental scanning in the form of benchmarking is used for performance assessment with a further 33.2% of respondents being uncertain. Benchmarking, both internally and externally, is only rated as important by 47.8% of respondents.

Further analysis of performance feedback against success of the quality program

Performance feedback plays an important role in continuous improvement, however, in this study is there a significant relationship between it and the success of the quality program? Table 7.78 shows the result of the chi square test.

Table 7.78 - Relationship between level of success of quality program and performance feedback

Q	Characteristics of performance feedback	P=
19.26	Feedback important for investigating problem areas	.104
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action	.000
15.24	Employees receive regular appraisal and feedback about their work performance	.013
18.13	Benchmarking (both internal and external) is used to assess performance	.262
19.20	Employee performance is measured against standards	.677
19.24	Balanced scorecard used for performance evaluation	.870

A significant relationship exists between the success of the quality program and feedback in relation to: assessment of performance against target to enable rapid correction action (p=.000); and employees receiving regular and appraisal and feedback about their work performance (p=.013).

In Table 7.79 it is shown that a higher level of agreement to the use of performance feedback to enable rapid corrective action for respondents rating their organisations quality program as having “exceeded expectations”. The respondent group who rate the success of the quality program as “fell short of expectations” show the strongest disagreement to the use of feedback to enable rapid corrective action.

Table 7.79 – Cross-tabulation of success of quality program against feedback from assessing performance against targets enabling rapid corrective action

Success of Quality program	Feedback gained from assessing performance against target enables the instigation of rapid corrective action				
	Strongly Agree	Agree	Disagree	Neutral	Response
Exceeded Expectations	15.9%	63.6%	2.3%	18.2%	n=44
Met Expectations	5.7%	52.6%	10.9%	30.8%	n=210
Fell Short of Expectations	7.1%	28.6%	50.0%	14.3%	n=14
Unable to determine at this time	-	25.0%	25.0%	50.0%	n=4

Employee performance and motivation are aided by increased feedback. Table 7.80 shows that employees are more likely to receive regular appraisal and feedback in organisations where the success of the quality program is rate as having “exceeded expectations”. Employees in organisations that have a quality program rated, as “fell short of expectations” are more likely to receive less feedback.

Table 7.80– Cross-tabulation of success of quality program against regular feedback to employees about their work performance

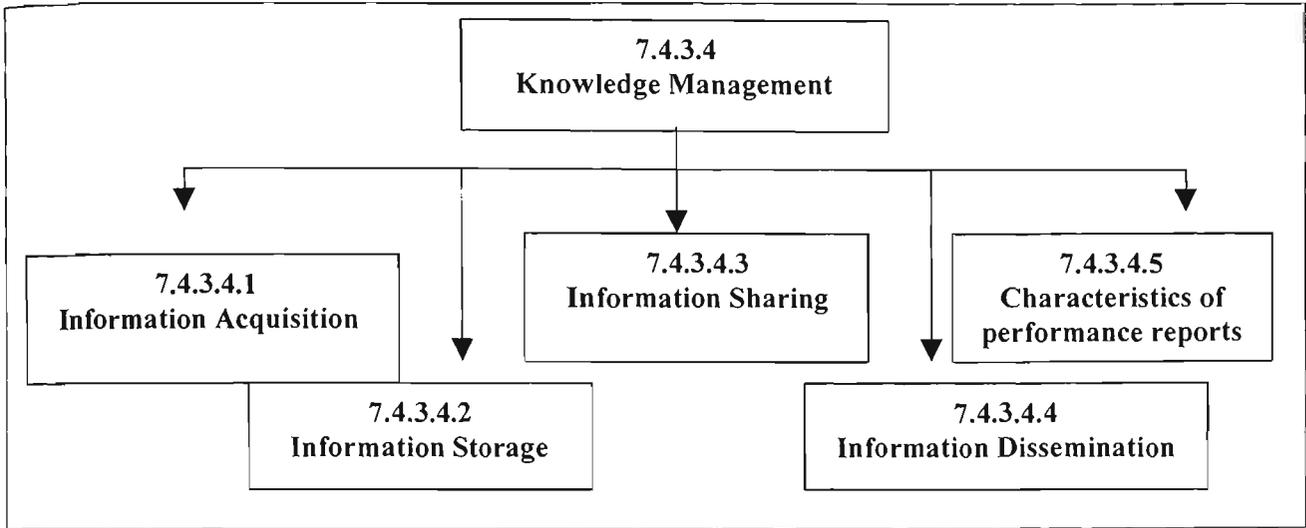
<i>Success of Quality program</i>	<i>Employees receive regular appraisal and feedback about their work performance</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	18.2%	54.5%	2.3%	25.0%	n=44
Met Expectations	5.6%	54.9%	13.6%	25.8%	n=210
Fell Short of Expectations	-	35.7%	28.6%	35.7%	n=14
Unable to determine at this time	-	50.0%	50.0%	-	n=4

7.4.3.4 Knowledge management practices

Performance gaps, the difference between where the organisation currently is in relation to its performance objectives and where it wants to be, can only be closed by employee action (Wick and Leon, 1995). Improving action through better knowledge and understanding supports continuous improvement (Fiol and Lyles, 1985), employees need to acquire new knowledge to make decisions and influence others in the organisation. To narrow the perceived performance gaps actions will need to be taken within the organisation. It is argued that such actions will involve the acquisition and use of knowledge to achieve improvement and change.

In this section the focus will be on understanding how respondents’ organisations acquire, store, share and disseminate information. In Figure 7.9 an overview of this sub-section is given.

Figure 7.9– Structure of Section 7.4.3.4



7.4.3.4.1 Information acquisition

Knowledge acquisition relates to the source of knowledge and whether it is found internally or externally. Table 7.81 provides a breakdown of the responses to questions asked to identify the source of information. The majority of respondents (93.5%) agree that employees are encouraged to offer ideas to improve performance. However, only 58.5% of respondents consider that good ideas are recorded for a later date (*question 18.24*). The lack of recording such ideas may be a deterrent to employees to continue offering suggestions. The attendance of employees at external seminars is acknowledged by only 60% of respondents, which does not suggest it is a major source of new information. More importance appears to be given to the recruitment process as 72.8% of respondents note that the recruitment policy focuses on the acquisition of skills needed to fill performance gaps in the organisation. Also notable is the relative stability of the work force, as 76.9% of respondents note low employee turnover in their organisation. This would enable the individual’s organisational knowledge to be retained within the organisation. The use of external consultants as an additional information source is limited as the minority of respondents (32.9%) notes the use of consultants in strategic planning, and only 20.2% of respondents agree that consultants are used for operational problem solving. The responses suggest a heavy reliance on the acquisition of

information generated internally either through existing employees or via the recruitment process.

Table 7.81 – Information Acquisition

<i>Q</i>		<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
18.5	New ideas are encouraged	93.5%	0.7%	5.8%	4.08	n=275
15.13	Employee turnover is low	76.9%	10.4%	12.6%	3.92	n=277
18.16	Recruitment focuses on hiring new employees with the skills and knowledge to close performance gaps	72.8%	8.8%	18.5%	3.69	n=274
15.12	Employee suggestion schemes are important for new ideas	64.5%	7.2%	28.3%	3.67	n=274
18.17	Employee attendance at external seminars is encouraged	60.0%	12.6%	27.4%	3.5	n=274
18.18	External consultants are used for strategic problem solving	32.9%	35.7%	31.4%	2.92	n=275
18.19	External consultants are used for operational problem solving	20.2%	47.0%	32.9%	2.68	n=275

Further analysis of information acquisition against success of the quality program

To determine if a significant relationship exists between the success of the quality program and the source of information chi square tests were conducted. The results are shown in Table 7.82. A significant relationship was identified in relation to the encouragement of new ideas (p=.000) and low employee turnover (p=.026).

Table 7.82 - Relationship between level of success of quality program and information acquisition

<i>Question</i>	<i>Characteristics of performance feedback</i>	<i>P=</i>
18.5	New ideas are encouraged	.000
15.13	Employee turnover is low	.026
18.16	Recruitment focuses on hiring new employees with the skills and knowledge to close performance gaps	.863
15.12	Employee suggestion schemes are important for new ideas	.367
18.17	Employee attendance at external seminars is encouraged	.272
18.18	External consultants are used for strategic problem solving	.736
18.19	External consultants are used for operational problem solving	.938

New ideas encourage learning and offer an opportunity to fill performance gaps. Table 7.83 shows that respondents who rate their organisation’s quality program as “exceeded expectations” more strongly agree that their organisation encourages new ideas. For the

respondent group unable to determine the success of the quality program give unanimous agreement that their organisations encourage new ideas to support improved performance.

Table 7.83– Cross-tabulation of success of quality program against the encouragement of new ideas

<i>Success of Quality program</i>	<i>Encouragement of new ideas</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	36.4%	61.4%	-	2.3%	n=44
Met Expectations	11.7%	81.7%	0.5%	6.1%	n=210
Fell Short of Expectations	-	78.6%	7.1%	14.3%	n=14
Unable to determine at this time	-	100.0%	-	-	n=4

Kim (1993) asserts that companies with a high annual employee turnover will have a hard time accumulating learning because their experience base is continually being eroded. Table 7.84 shows that the respondents who rate the success of the quality program as “exceeded expectations” are employed by organisations with a more stable work force. Respondents unable to rate the success of the quality program or rate it as “fell short of expectations” show the highest level of disagreement and uncertainty which may suggest that such organisations are less likely to retain employees.

Table 7.84– Cross-tabulation of success of quality program against employee turnover

<i>Success of Quality program</i>	<i>Employee turnover</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	14.0%	72.0%	-	14.0%	n=44
Met Expectations	6.1%	49.3%	16.4%	28.2%	n=210
Fell Short of Expectations	-	35.7%	28.6%	35.7%	n=14
Unable to determine at this time	-	25.0%	25.0%	50.0%	n=4

7.4.3.4.2 Information storage

An organisation’s capability to learn will be dependent on its ability to record organisational experience and, when needed, to retrieve this information. Knowledge is seen as a strategic asset of the organisation, and will be the key to competitive viability

and growth of the learning organisation. Table 7.85 provides details of responses to issues in relation to how respondents' organisations deal with the storage of organisational knowledge.

Table 7.85 – Information Storage

<i>Q.</i>	<i>Storage</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
13.9	Retention of knowledge about business activities is important to management	89.7%	3.3%	7.0%	4.17	n=270
13.10	Archival systems are in place to capture knowledge regarding business activities	81.5%	8.5%	10.5%	3.87	n=274
18.21	The organisation stores detailed information for guiding operations	76.6%	4.4%	21.1%	3.79	n=273
18.25	Management integrate information from different organisational units	67.2%	7.2%	25.6%	3.64	n=275
18.24	Good ideas are recorded for a later date	58.5%	13.0%	28.5%	3.45	n=275
13.6	Knowledge held by employees is unable to be captured in formal reports	18.2%	58.9%	22.9%	2.49	n=273

The majority of respondents (89.7%) agrees retention of knowledge is important, and this is reinforced by 81.5% of respondents agreeing that their organisations have an archival system to support this practice. 74.6% of respondents state that their organisation stores detailed information for guiding operations, with 77.2% agreeing that top management integrates information from different organisational units. 58.9% of respondents agree that knowledge held by employees can be captured in formal reports, which suggests that for many organisations the organisation's memory is held by its employees and will be lost to the organisation if the employee departs.

Further analysis of information storage against success of the quality program

To determine if a significant relationship exists between the success of the quality program and the mode of information storage chi square tests were conducted. The results are shown in Table 7.86. Significant relationships were identified between the success of the quality program and information storage in relation to the importance of knowledge retention by management (p=.085) and the existence of archival systems to store knowledge (p=.097).

Table 7.86 - Relationship between level of success of quality program and information storage

<i>Question</i>	<i>Information Storage</i>	<i>P=</i>
13.9	Retention of knowledge about business activities is important to management	.085
13.10	Archival systems are in place to capture knowledge regarding business activities	.097
18.21	The organisation stores detailed information for guiding operations	.349
18.25	Management integrate information from different organisational units	.639
18.24	Good ideas are recorded for a later date	.310
13.6	Knowledge held by employees is unable to be captured in formal reports	.194

Table 7.87 compares the importance of quality against the success of the quality program. Findings indicate that all the respondents unable to rate the success of the quality program agree that the retention of information is important to management in their organisations. Respondents who rate the quality success as “exceeded expectations and met expectations” give the strongest agreement.

Table 7.87 – Cross-tabulation of success of quality program against the importance of retention of information to management

<i>Success of Quality program</i>	<i>Retention of information important to management</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	34.1%	54.5%	4.6%	6.8%	n=44
Met Expectations	31.3%	58.7%	2.4%	7.7%	n=210
Fell Short of Expectations	7.1%	78.6%	14.3%	-	n=14
Unable to determine at this time	-	100.0%	-	-	n=4

To have knowledge available to employees an organisation will need either to have an archival system in place or to have knowledge held by current employees. Table 7.88 shows that all respondents who are unable to rate the success of the quality program agree that their organisation has archival systems in place to capture the knowledge about business activities. The respondent group who rates the success of the quality program as “fell short of expectations” notes the most level of uncertainty and disagreement.

Table 7.88– Cross-tabulation of success of quality program against the archival systems in place to capture knowledge

<i>Success of Quality program</i>	<i>Existence of archival systems</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	18.2%	68.2%	9.1%	4.5%	n=44
Met Expectations	12.7%	69.8%	7.1%	10.4%	n=210
Fell Short of Expectations	-	50.0%	21.4%	28.6%	n=14
Unable to determine at this time	-	100.0%	-	-	n=4

7.4.3.4.3 Information sharing

Organisations may take a structured approach with the distribution of information by reports, either in hard copy or on-line. A more informal approach will be seen with members of the group sharing their experiences in continuing dialogue. Dissemination of information is strengthened when there is a climate of openness. Accessibility of information, open communications and the encouragement of legitimate disagreement and debate can achieve this. The organizational structure may also influence information sharing. Respondents (43.8%) indicate that their organisation is flat (question 18.14). When asked if the organisation structure encourages ease of communication 68.5% of respondents agree (question 18.15). A crosstabulation of the results indicate that there is a significant relationship ($p=.000$) between structure and ease of communication. This suggests that a flatter organizational structure may be more conducive to information sharing.

Table 7.89 provides details of the responses to a number of questions looking at the methods used to disseminate information in organisations. The majority of respondents (86.2%) agree that an open environment is encouraged whereby sharing of knowledge and information is encouraged. This is reinforced with 72.6% of respondents who agree that employees share information and 80.3% of respondents agree that learning from experience is shared. As noted in Section 7.3.2.2, respondents' organisations also engage in information sharing with external stakeholders. The majority of respondents (90.3%) agree that customers provide feedback on quality and delivery performance, which would enable corrective action to be focused within the organisation (question 14.27).

Table 7.89 – Information Sharing

<i>Q</i>		<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
18.20	Sharing of information and knowledge is encouraged	86.2%	1.5%	12.3%	3.95	n=274
18.23	Learning from experience is shared	82.8%	2.9%	14.1%	3.86	n=274
15.8	When employees need specific information they know who will have it	77.9%	6.9%	15.2%	3.78	n=274
15.6	Employees share information	72.6%	5.8%	21.7%	3.71	n=275
15.20	Managers and employees discuss issues of cost reduction openly and constructively	70.4%	8.7%	20.9%	3.67	n=275
15.23	Inter-departmental communication between employees in relation to work issues is common	67.9%	9.8%	22.4%	3.70	n=275
15.9	Employees engage in ongoing open debate about work practices	65.3%	10.9%	23.8%	3.60	n=275
18.22	Disclosure of information is encouraged	64.9%	12.0%	23.2%	3.55	n=274
15.7	Employees retrieve archived information when making decisions	40.2%	20.8%	39.1%	3.22	n=272

To further assist operating performance 67.5% of respondents note that their organisation works closed with suppliers to improve each others processes (*question 14.25*). This suggests that there active information sharing within these organisations. However, only 64.9% of respondents agree that disclosure of information is encouraged and is supported by only 67.9% of respondents noting that inter-departmental communication between employees in relation to work issues is common. Only 65.3% agree that employees engage in ongoing open debate about work practices which raises doubts about the opportunity for double-loop learning.

Of the information stored, 44.2% of respondents do not identify a problem with employees interpreting archival data (*question 13.11*). The use of archival data is noted by 40.2% of respondents who agree employees retrieve archived information when making decisions. This suggests that both the active memory and the stored memory are used for decision making. The majority of respondents 77.2% agree that if employees need specific information they know who will have it.

Further analysis of information sharing against success of the quality program

Table 7.90 provides details of the findings of chi square tests in relation to significant relationships between the success of the quality program and information sharing

practices. The results show a significant relationship ($p \leq .10$) in relation to: the sharing of experience ($p = .002$); the sharing of information between employees ($p = .014$); the open and constructive discussion about cost reduction between managers and employees ($p = .027$); and employees being able to locate information that they need ($p = .014$).

Table 7.90- Relationship between level of success of quality program and information sharing

<i>Q</i>	<i>Information sharing</i>	<i>P=</i>
18.20	Sharing of information and knowledge is encouraged	.476
18.23	Learning from experience is shared	.002
15.8	When employees need specific information they know who will have it	.014
15.6	Employees share information	.025
15.20	Managers and employees discuss issues of cost reduction openly and constructively	.027
15.23	Inter-departmental communication between employees in relation to work issues is common	.211
15.9	Employees engage in ongoing open debate about work practices	.279
18.22	Disclosure of information is encouraged	.194
15.7	Employees retrieve archived information when making decisions	.159

The sharing of information supports life-long learning, as it encourages all employees to learn and may lead to changes in work practices that will improve performance. Table 7.91 provides output from the cross-tabulation.

Table 7.91– Cross-tabulation of success of quality program against learning from experience being shared

<i>Success of Quality program</i>	<i>Learning from experience being shared</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	9.1%	88.6%	-	2.3%	n=44
Met Expectations	6.1%	75.9%	12.8%	15.1%	n=210
Fell Short of Expectations	-	42.9%	14.3%	42.9%	n=14
Unable to determine at this time	-	100.0%	-	-	n=4

Respondents unable to rate the level of success of the quality program agree that learning from experience is shared in their organisations. The respondent group who rate the success of the quality program as “fell short of expectations” express the most

uncertainty about the learning from experience being shared in their organisations.

The responses detailed in Table 7.92 indicate that respondents who rate the quality program as having “exceeded expectations” more strongly agree that employees in their organisations know where to access information they need. Respondent groups unable to assess the quality program or rate it as “fell short of expectations” show more disagreement and uncertainty.

Table 7.92 – Cross-tabulation of success of quality program against employees knowing where to source information

<i>Success of Quality program</i>	<i>Employees knowing where to source information</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	18.2%	77.3%	-	4.5%	n=44
Met Expectations	5.7%	70.3%	7.1%	17.0%	n=210
Fell Short of Expectations	-	64.3%	14.3%	21.4%	n=14
Unable to determine at this time	-	75.0%	25.0%	-	n=4

Sharing of information encourages learning. Table 7.93 shows that the respondent group who rate the quality program as “fell short of expectations” identify the highest level of uncertainty. Respondents who rate the organisation’s quality program as “exceeded expectations” show the most agreement for employees sharing of information in their organisations.

Table 7.93 – Cross-tabulation of success of quality program against employees sharing information

<i>Success of Quality program</i>	<i>Employee sharing of information</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	6.8%	84.1%	-	9.1%	n=44
Met Expectations	5.2%	64.8%	6.6%	23.5%	n=210
Fell Short of Expectations	-	57.1%	7.1%	35.7%	n=14
Unable to determine at this time	-	50.0%	25.0%	25.0%	n=4

Dissemination of information is strengthened when there is a climate of openness. This can be achieved by accessibility of information, open communications and the encouragement of legitimate disagreement and debate. Table 7.94 indicates that the respondents rating the quality program as “exceeded expectations” more strongly agree that in their organisation there is constructive and open discussion of cost reduction. Respondents who rate the quality program as “fell short of expectations” express more uncertainty.

Table 7.94 – Cross-tabulation of success of quality program against managers and employees discussing issues of cost reduction openly and constructively

<i>Success of Quality program</i>	<i>Open and constructive discussion of cost reduction</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	13.6%	72.7%	4.5%	9.1%	n=44
Met Expectations	6.1%	63.8%	8.4%	21.6%	n=210
Fell Short of Expectations	-	35.7%	28.6%	35.7%	n=14
Unable to determine at this time	-	75.0%	-	25.0%	n=4

7.4.3.4.4 Information dissemination

Information can be distributed in either an informal or formal manner. In Section. 7.4.6.2 a more informal approach to information dissemination, that is, the information sharing between employees was discussion. The more formal dissemination of information will be in report format, either hard copy or on-line, or via committee meetings. In Table 7.95 responses regarding the more formal distribution of information is shown.

Panel A shows responses to questions in relation to information dissemination via meetings. The findings shows that 80.6% of respondents identify that their organisations hold regular team meetings to discuss operational activities, with these meetings being the means for information dissemination (81.5% of respondents). However, only 67.8% of respondents identify that regular briefings are held to enable management and employees to share experiences and progress on projects, best practice, successes and failures. Respondents (62.3%) agree that cross-functional personnel form membership of the committees managing quality initiatives. Only 58.6% of respondents agree that such activities are monitored by quality steering committees (*question 14.21*), yet 93.5% of

respondents identify continuous improvement as an important goal for the organisation, and 86.5% of respondents note that it is important when developing the strategic plan (Table 7.36). Only 56.7% of respondents agree that project-specific teams monitor continuous improvement (*question 14.23*), however, this may be explained by the majority of respondents (81.2%) who agree that continuous improvement activities are monitored as part of normal operational control (*question 14.22*).

Table 7.95 – Information Dissemination

<i>Q</i>	<i>Dissemination Mode</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Mean</i>	<i>Response</i>
Panel A – Meetings						
13.7	Regular meetings held to disseminate information	85.1%	4.0%	10.9%	4.02	n=273
18.6	Regular team meetings are held to discuss operational activities	80.6%	5.1%	9.4%	4.0	n=275
18.9	Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures	67.8%	14.5%	17.7%	3.60	n=275
14.24	Cross-functional personnel form the membership of committees addressing quality issues	62.3%	23.6%	14.1%	3.54	n=274
14.23	Continuous improvement activities are undertaken by project specific teams	56.7%	20.2%	23.1%	3.44	n=275
Panel B – Formal Reports						
19.11	Financial reports are important for operational control	85.6%	5.4%	9.0%	4.01	n=277
13.4	Standard Reports	81.0%	4.0%	15.0%	3.97	n=272
13.3	Specialised Reports	78.3%	5.1%	16.5%	3.85	n=270
13.2	Exception Reports	70.0%	12.8%	16.2%	3.76	n=270
18.10	Formal reports are available that aim to continuously assess how the organisation and managers are doing in relation to plans	63.4%	12.7%	23.9%	3.59	n=274
13.8	More reliance placed on electronic communication rather than hardcopy reports	53.1%	20.6%	26.2%	3.4	n=269
13.1	Cost of Quality Reports	33.1%	14.3%	42.7%	3.37	n=272

Panel B shows responses to questions in relation to information dissemination via formal reports. The responses to *question 18.10* indicate that reports are a mixture of hard copy and on-line. The primary focus appears to be financial reports for operational control (85.6% of respondents) with reports being suited for the specific requirement. This assertion is supported by the majority of respondents identifying that standard reports (81.0%), specialised reports (78.3%) and exception reports (70.0%) are available to those within the organisation. However, only 62.4% of respondents agree that formal reports are available continually to assess how the organisation and managers are doing in relation to plans. Also 43.1% of respondents agree that their organisation prepares cost-

of-quality reports, which is in line with the adoption rate cited in the literature (Oliver and Qu, 1999; Ramsay et al., 1991; Ross 1993). Technological issues were not considered a barrier to dissemination of information by 51.7% of respondents (question 13.5)

Further analysis of information dissemination against success of the quality program

Table 7.96 shows the results of a chi square test to establish if any significant relationship exists between the level of success of the quality program and the information dissemination mode identified by respondents. A significant relationship ($p \leq .10$) was identified between the level of success and: regular meetings to disseminate information ($p = .001$); regular team meetings to discuss operational activities ($p = .004$); regular briefings to reflect on and assess activities ($p = .001$); the use of project specific teams to address continuous improvement activities ($p = .057$); the use of standard reports ($p = .021$); the use of exception reports ($p = .054$); the availability of formal reports to continuously assess progress ($p = .001$); and the use of cost of quality reports.

Table 7.96 - Relationship between level of success of quality program and information dissemination

<i>Q.</i>	<i>Information dissemination</i>	<i>P=</i>
<i>Panel A Meetings</i>		
13.7	Regular meetings held to disseminate information	.001
18.6	Regular team meetings are held to discuss operational activities	.004
18.9	Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures	.001
14.24	Cross-functional personnel form the membership of committees addressing quality issues	.254
14.23	Continuous improvement activities are undertaken by project specific teams	.057
<i>Panel B Reports</i>		
19.11	Financial reports are important for operational control	.581
13.4	Standard Reports	.021
13.3	Specialised Reports	.086
13.2	Exception Reports	.054
18.10	Formal reports are available that aim to continuously assess how the organisation and managers are doing in relation to plans	.001
13.8	More reliance placed on electronic communication rather than hardcopy reports	.587
13.1	Cost of Quality Reports	.040

In Table 7.97 it is shown that the majority of respondents who rate the quality program as having “exceeded expectations” more strongly agree that they work in organisations where regular meetings are held to disseminate information. More disagreement and uncertainty is noted by the respondent groups who are unable to rate the success of the quality program and rate it as “fell short of expectations”.

Table 7.97 – Cross-tabulation of success of quality program against whether regular meetings are held to disseminate information

<i>Success of Quality program</i>	<i>regular meetings are held to disseminate information</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	29.5%	59.1%	-	11.4%	n=44
Met Expectations	21.3%	65.4%	3.8%	9.5%	n=210
Fell Short of Expectations	-	64.3%	14.2%	21.4%	n=14
Unable to determine at this time	-	25.0%	25.0%	25.0%	n=4

Meetings to discuss operational activities will enable information to be shared and focus discussion on ways to improve existing capabilities. Table 7.98 shows that the strongest agreement to the holding of regular team meetings to discuss operational activities is noted by the respondent group who rate the success of the quality program as having “exceeded expectations”.

Table 7.98 – Cross-tabulation of success of quality program against whether regular team meetings are held to discuss operational activities

<i>Success of Quality program</i>	<i>Holding of regular meetings to discuss operational activities</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	40.9%	54.5%	-	4.5%	n=44
Met Expectations	16.4%	68.5%	6.1%	8.9%	n=210
Fell Short of Expectations	7.1%	64.3%	-	28.6%	n=14
Unable to determine at this time	-	50.0%	25.0%	25.0%	n=4

Table 7.99 shows respondents' attitudes to whether their organisation holds regular briefings for employees to share experiences, identify best practices, together with successes and failures. Respondents who identify the success of the quality program as "exceeded expectations" have a higher level of agreement than other respondent groups. The respondent group who are unable to determine the success and who rate the success as "fell short of expectations" gives a low level of agreement.

Table 7.99 – Cross-tabulation of success of quality program against whether regular briefings are held to share experiences and progress on projects, best practices, success and failures

<i>Success of Quality program</i>	<i>Regular review briefings</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	20.5%	63.6%	11.4%	4.5%	n=44
Met Expectations	5.2%	62.9%	14.5%	17.4%	n=210
Fell Short of Expectations	-	28.6%	42.8%	28.6%	n=14
Unable to determine at this time	-	25.0%	25.0%	50.0%	n=4

Table 7.100 details the responses regarding the use of project specific teams to monitor continuous improvement activities. Such teams appear to be used more in the respondent group that rate the success of the quality program as "exceeded expectations". Mitki et al. (1997) would support the use of project specific teams as these would act as parallel learning mechanisms and provide support for the continuous improvement initiative.

Table 7.100– Cross-tabulation of success of quality program against continuous improvement activities being undertaken by project specific teams

<i>Success of Quality program</i>	<i>Use of project specific teams for continuous improvement</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	20.5%	43.2%	6.8%	29.5%	n=44
Met Expectations	6.6%	50.7%	22.5%	20.2%	n=210
Fell Short of Expectations	7.1%	28.6%	28.5%	35.7%	n=14
Unable to determine at this time	-	50.0%	25.0%	25.0%	n=4

Table 7.101 shows that the highest use of standard reports is noted by the respondent group who rate the success of the quality program as “fell short of expectations” and “met expectations”.

Table 7.101 – Cross-tabulation of success of quality program against the use of standard reports

<i>Success of Quality program</i>	<i>Standard Reports</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	20.5%	45.5%	13.6%	20.5%	n=44
Met Expectations	21.0%	63.3%	2.4%	13.3%	n=210
Fell Short of Expectations	7.1%	78.6%	-	14.3%	n=14
Unable to determine at this time	-	50.0%	-	50.0%	n=4

Table 7.102 indicates that respondents unable to rate the success of the quality program note the highest level of disagreement in the use of exception reports in their organisation.

Table 7.102 – Cross-tabulation of success of quality program against the use of exception reports

<i>Success of Quality program</i>	<i>Use of exception reports</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	16.3%	51.2%	14.0%	18.6%	n=44
Met Expectations	20.6%	49.8%	13.4%	16.3%	n=210
Fell Short of Expectations	7.1%	85.7%	-	7.1%	n=14
Unable to determine at this time	-	75.0%	25.0%	-	n=4

Table 7.103 shows that the lowest level of agreement to the use of formal reports continuously to assess the organisation in relation to plans is the respondent group who are unable to rate the success of the quality program.

Table 7.103 – Cross-tabulation of success of quality program against availability of formal reports that continuously assess how the organisation and managers are doing in relation to plans

<i>Success of Quality program</i>	<i>Formal reports that continuously assess how the organisation and managers are doing in relation to plans</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	15.9%	61.4%	2.3%	20.5%	n=44
Met Expectations	7.5%	52.8%	13.7%	25.9%	n=210
Fell Short of Expectations	7.1%	64.3%	14.2%	14.3%	n=14
Unable to determine at this time	-	50.0%	-	50.0%	n=4

As shown in Table 7.104 the respondent group unable to determine the success of the quality program of the survey shows both the strongest agreement and disagreement to the use of cost of quality reports. However, the group most likely to use cost of quality reports is the respondents who rate the success of the quality program as “exceeded expectations”.

Table 7.104 – Cross-tabulation of success of quality program against the use of cost of quality reports

<i>Success of Quality program</i>	<i>Cost of Quality Reports</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	18.2%	36.4%	18.0%	27.3%	n=44
Met Expectations	7.6%	33.3%	12.0%	47.1%	n=210
Fell Short of Expectations	7.1%	28.6%	28.6%	35.7%	n=14
Unable to determine at this time	25.0%	-	50.0%	25.0%	n=4

7.4.3.4.5 Characteristics of performance reports

Performance reports are an important method for disseminating information within organisations. Respondents were asked to state whether their organisations had reports with the features detailed in Table 7.105.

Table 7.105 - Characteristics of performance reports

Q.		Respondents		
		Yes	No	N=
	Panel A: Report Availability			
20.1	Available throughout day	51.5%	48.5%	268
20.1b	Available daily	68.4%	31.6%	257
20.2	Available weekly	77.4%	22.6%	257
20.3	Available monthly	93.5%	6.5%	263
20.4	Available on demand	71.8%	28.2%	262
	Panel B: Report Characteristics			
20.5	Only available to managers	44.5%	55.5%	265
20.6	To assess strategic quality initiatives	68.4%	31.6%	263
20.7	To assess operational quality initiatives	79.5%	20.5%	263
20.8	Report both financial and non-financial information	84.5%	15.5%	271

The findings show that for the majority of respondents reports are available to suit the demands of any user – from on demand through to monthly reports. The majority of respondents (55.5%) notes that reports are available to all within the organisation. This was confirmed by 70.3% of respondents who agree that employees (at all levels) have access to performance information (*question 15.5*). More respondents (79.5%) note that reports are available to assess operational quality initiatives, than are available to assess strategic quality initiatives (68.4% of respondents). The adaptability of reports to changes in performance measures was identified by 64.6% of respondents (*question 19.9*).

Further analysis of performance reports against success of the quality program

A series of chi square tests was conducted to identify any significant relationships between the level of success of the quality program and the format and availability of performance reports. Table 7.106 shows significant relationships exists between the success of the quality program and whether reports assess operational quality initiatives (p=.099) and whether organisations are able to adapt the performance reports to changes in performance measurement (p=.001).

Table 7.106 - Relationship between level of success of quality program and performance reports

<i>Question</i>	<i>Performance reports</i>	<i>P=</i>
	<i>Panel A: Report Availability</i>	
20.1	Available throughout day	.690
20.1b	Available daily	.127
20.2	Available weekly	.176
20.3	Available monthly	.139
20.4	Available on demand	.283
	<i>Panel B: Report Characteristics</i>	
20.5	Only available to managers	.838
20.6	To assess strategic quality initiatives	.558
20.7	To assess operational quality initiatives	.099
20.8	Report both financial and non-financial information	.984
	<i>Panel C :Other characteristics</i>	
19.9	Adaptable to changes in performance measures	.001
15.5	Employees (at all levels) have information about performance available to them	.407

Table 7.107 indicates the responses about performance reports to assess operational quality initiatives. The respondent group unable to determine the success of the quality initiative notes the highest level of disagreement. Perhaps this lack of reporting may be a determining factor in the success.

Table 7.107 – Cross-tabulation of success of quality program against whether performance reports are able to assess operational quality initiatives

<i>Success of Quality program</i>	<i>Adaptability of reports to assess operational quality initiatives</i>		
	<i>Agree</i>	<i>Disagree</i>	<i>Response</i>
Exceeded Expectations	90.2%	9.8%	n=44
Met Expectations	78.2%	21.8%	n=210
Fell Short of Expectations	78.6%	21.4%	n=14
Unable to determine at this time	25.0%	75.0%	n=4

The performance reports are the feedback mechanism both to direct and to assess

employee behaviour. As noted by Simons (1995) interactive control systems will report those measures which senior managers have decided should be emphasized for a period of time. To achieve this the performance reports must be adaptable to changes in performance measurement. Table 7.108 shows that the respondents unable to rate the success of the quality program express the most agreement that their organisation is able to adapt the reports. The majority of the respondents who either rate the success as having “met expectations” or “exceeded expectations” also agree that performance reports are adaptable in their organisations. The respondent group that rate the quality program as “fell short of expectations” have the lowest level of agreement about the adaptability of the performance reports.

Table 7.108 – Cross-tabulation of success of quality program against whether performance reports are adaptable to changes in performance measures

<i>Success of Quality program</i>	<i>Adaptability of reports to changes in performance measures</i>				
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Response</i>
Exceeded Expectations	9.3%	60.5%	4.7%	25.6%	n=44
Met Expectations	1.9%	63.0%	7.6%	27.5%	n=210
Fell Short of Expectations	7.1%	35.7%	28.5%	28.6%	n=14
Unable to determine at this time	-	75.0%	25.0%	-	n=4

7.4.3.5 Remuneration system

An appropriate reward and recognition system will be instrumental in embedding key behaviours in employees (Bessant and Francis, 1999). The motivation of the employees to achieve the measures set by the organisation is further strengthened by linking the performance measures to the pay system (Flynn et al., 1995; Kershaw and Harrell, 1999).

The survey questions that focused on remuneration issues were unanswered by many respondents. Perhaps the following comment may assist in understanding the high number of non-respondents to these particular questions:

“...difficult to answer without seeing individual employment agreements...”

Given this, respondents not answering particular questions in this section of the questionnaire may fall into one of three groups: (1) respondents who chose to ignore this question; (2) respondents who are unable to answer due to a lack of knowledge of the remuneration system for different employee levels; and (3) respondents who consider that particular components of the remuneration system for a particular employee group did not relate to their organisation. Therefore, the discussion that follows is for valid responses only and the findings are reported based on the number of respondents.

7.4.3.5.1 Components of remuneration system

Table 7.109 provides details of the components of the remuneration system. The majority of respondents identifies a base wage being payable to all employees (248 respondents), with only 81 respondents identifying a profit sharing arrangement in their organisation with this being focused at senior management level. In relation to the incentive component of the remuneration system, the majority of respondents identify that a combination of financial and non-financial measures of performance is the preferred model (160 respondents). Quality targets are only incorporated into a minority of respondents’ organisations (87 respondents). This raises the question as to whether the reward system is encouraging employees to work towards the quality targets set.

Table 7.109– Components of remuneration system

<i>Q16 – Components of Remuneration</i>	<i>Senior Management</i>	<i>Middle Management</i>	<i>Operational</i>	<i>Mixed</i>	<i>All employees</i>	<i>Responses</i>
Base Wage					248	n=248
Profit sharing	38	2	3	15	23	n=81
Incentive based on financial measures	29	6	8	35	16	n=87
Incentive based on non-financial measures	10	9	11	23	9	n=62
Incentive – combination	34	2	5	59	60	n=160
Incentive based on quality targets	18	6	12	19	32	n=87

To explore how the incentive component is rewarded further questions were asked regarding the performance assessment used to determine the incentive payment. Responses are shown in Table 7.110. The majority of respondents assesses individual performance (152 respondents), with team performance being identified by 105 respondents. 98 respondents note a combination of both individual and team performance. Only 79 respondents identify a performance assessment based on results only with this concentrated at the senior level. 86 respondents identify incentives based on employee effort and it is more concentrated at the operational level of the organisation.

Table 7.110 – Performance assessment for incentive payments

<i>Question 17</i>	<i>Senior Management</i>	<i>Middle</i>	<i>Operational</i>	<i>Mixed</i>	<i>All employees</i>	<i>Responses</i>
Individual Performance	11	12	17	61	51	n=152
Team Performance	6	10	26	31	32	n=105
Combination	7	6	9	41	35	n=98
Results only focus	20	5	10	34	10	n=79
Recognises effort	3	4	22	25	32	n=54

7.5 Summary

In this chapter a discussion of the survey findings was presented together with further analysis to identify significant relationships between the perception of respondents of a range of factors and the success of the quality initiative. A summary of all significant relationships is shown in Appendix 2 and Table 7.111 lists only those variables with a $p=.000$.

An analysis of the most significant variables suggests that there is a relationship between the level of success of a quality program and:

- quality being part of organisational culture;
- supportive leadership;
- a performance measurement system that supports the quality program;
- employee involvement encouraged;
- quality program linked to strategy; and
- transparency of information regarding quality program.

Table 7.111 - Summary of significant relationships (p=.000) between survey variables and the success of the quality program

<i>Question</i>	
14.10	Quality is embedded into the organisations culture
19.1	.Key Performance Indicators (KPIs) are identified as part of the strategic planning process
19.2	Quality goals are an output of the strategic planning process
19.3	Operational performance measures link operational activities to the strategic plan
19.28	Quality goals are able to be translated into operational goals
18.7	The organisation environment is such that what gets said gets done
15.10	Employees are encouraged to work smarter not harder
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn
14.9	Top management is committed to the quality program
14.8	Management ensure that employees are aware of what quality means to the organisation
19.4	All appropriate management and employees are made aware of the performance measures to encourage ongoing improvement
19.13	Performance Goals – clear and consistent
19.14	Performance Goals – reflect the importance of the quality improvement activities
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action
18.5	New ideas are encouraged

In the next chapter, further analysis will be undertaken to identify the attributes that discriminate between the most successful and the least successful quality programs.

Chapter 8 – Further Analysis of Findings

In this chapter a further analysis of the survey findings will be undertaken. The focus of analysis will be the two extremes of the success continuum, respondents classifying their organisations as having either “exceeded expectations” or “fell short of expectations”. The purpose is to explore differences, if any, in the characteristics identified by respondents for their organisation against the success rating of the quality program for the two extreme groups. The outcome of the analysis should meet one of the objectives of the study, the development of an inventory of attributes of organisations with a successful quality program.

8.1 Introduction

It is argued that for a continuous improvement philosophy to be successful an organisation must have in place the necessary attributes for organisational learning and that employee action should be supported by a management control system (MCS) flexible enough to meet the changing objectives of the organisation. The absence of such attributes may account for the lack of success of some quality programs. It is therefore important for management to recognise the need to create the environment that will encourage learning in order to achieve continuous improvement. Learning is viewed as the foundation for improving activities by providing the organisation with the capabilities to take action and without which any attempts at improvement will possibly fail (Bessant Francis, 1999; Wick and Leon, 1995;). As noted by Berling (2000, p.488) “the task is not only to start the improvement process, but also to sustain it and to incorporate it into the normal part of everyday work”.

8.2. Framework for analysis

The data generated from question 7 of the questionnaire was used as the basis for measuring the success of the quality program for respondents’ organisations.

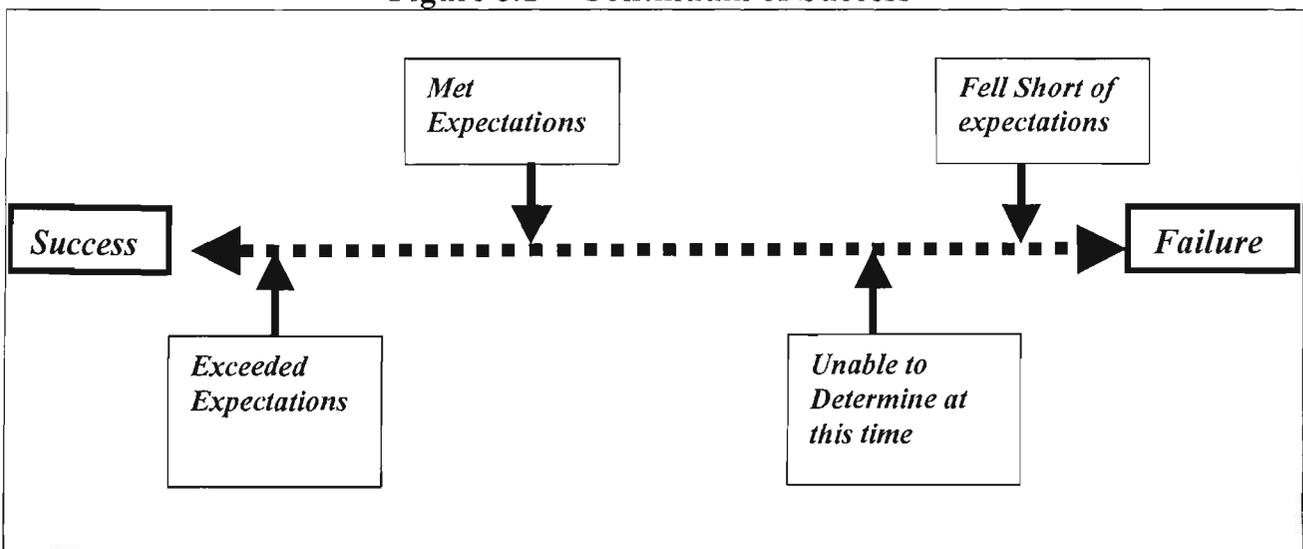
Respondents were asked to comment on their perception of the success of their organisation’s quality initiative. Table 8.1 shows that 16.1% of respondents consider that their organisation’s quality program has “exceeded expectations”, with 77.47% of respondents considering their organisations efforts has only “met expectations”. A further 5.1% of respondents rank their organisations’ quality initiative as “fell short of expectations” and 1.4% of respondents are “unable to determine” the success at the time the survey was conducted.

Table 8.1 – Respondents perceptions of the success of quality program

<i>Level of Success</i>	<i>Number of respondents (n=274)</i>	<i>Valid Percentage</i>
Exceeded expectations	44	16.1%
Met expectation	212	77.4%
Fell short of expectation	14	5.1%
Unable to determine at this time	4	1.4%

Therefore, if the level of success achieved is considered to be a continuum and the respondent groups are aligned to different stages of success, respondents rating the quality program, as “exceeded expectations” would be at the success end. Respondents who rate the success of the quality program as “fell short of expectations” would be at the failure end. This is depicted in Figure 8.1.

Figure 8.1 – Continuum of Success



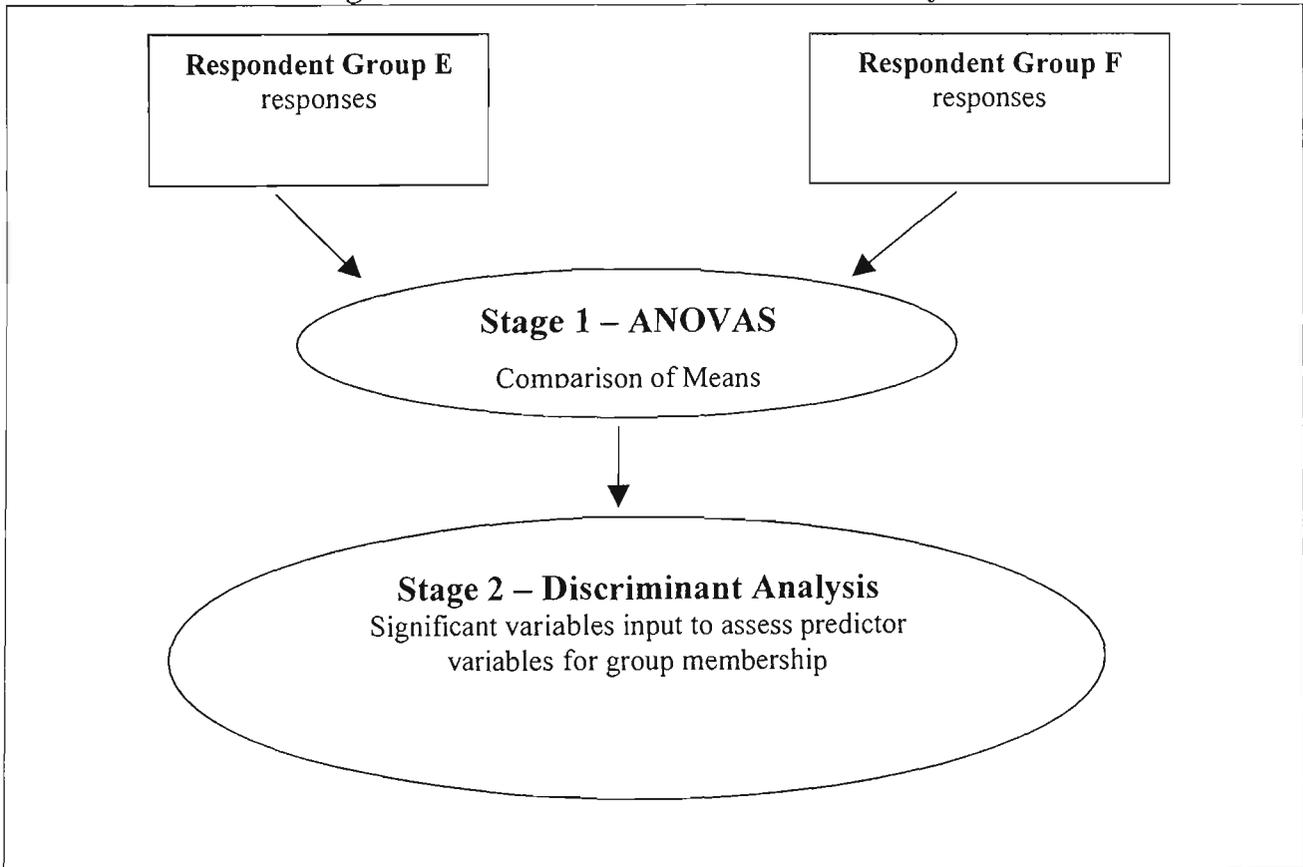
In order to explore any differences between the two groups it was decided to test statistically the different emphases given by respondents in organisations at the extremes of the level of success (exceeded expectations and fell short of expectations) on the

variables in the survey. The rationale for limiting the test to these respondent groups was based on the premise that if any differences exist, they are more likely to be found by comparing each extreme, that is, the more successful organisations (exceeded expectations) with the less successful organisations (fell short of expectations). Other studies have also compared the two extremes for drawing inferences (Lee et al., 2002, cited by O'Reagan and Ghobadian, 2004; O'Reagan and Ghobadian, 2004). For the remainder of this chapter, respondents who rate the success of the quality program as "exceeded expectations" will be referred to as respondent group E; and respondents who rate the success of the quality program as "fell short of expectations" will be referred to as respondent group F.

8.2.1 Overview of statistical analysis

The statistical analysis used in this part of the study involved two stages – Stage 1, One-way analyses of variance (ANOVAS) and Stage 2, Discriminant Analysis. An overview is shown in Figure 8.2

Figure 8.2 – Overview of Statistical Analysis



In stage 1 of the analysis, a series of ANOVAS were conducted to identify any significant differences ($p \leq .10$) in means between respondent groups in relation to the variables in the survey. A case with a missing value for either the dependent or the factor variable for a given analysis was not used in that analysis.

To further highlight differences between the groups, discriminant analysis was undertaken in Stage 2 in order to identify the predictor variables that best discriminate between the two groups. Only variables that passed the ANOVA tests in Stage 1, that is, $p < .10$, were entered into the discriminant analysis. A series of discriminant analyses were undertaken due to the independence of the different aspects of business operations explored in the study. For example, an organisation may have shown little regard to employee education, yet have a strong performance measurement system.

8.3 Stage 1 - Comparison of means between respondent groups

In this section the discussion is focused on the significant differences between the mean score for each variable for respondent group E and respondent group F.

8.3.1 Characteristics of respondent organisations

Table 8.2 shows the mean scores for variables identified as organisational attributes and highlights two attributes as statistically significant.

Table 8.2 Comparison of means - organisational attributes

<i>Q.</i>	<i>Organisational Attributes</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
1	Number of Employees	2.38	3.43	6.220	.016
4	Level of Competition	2.48	2.57	.321	.573
5	Competitive Advantage	4.36	3.07	2.211	.143
10	The quality of your organisation's product/service compared to competitors is	1.25	1.64	6.818	.012

These are the size of the organisation ($p = .016$), as measured by the number of employees, and the quality of the organisation's product/service compared with competitors ($p = .012$). A check of the means scores shows that respondent group F tends to be from larger organisations (mean 3.43), and respondent group E are more likely to belong to organisations where the quality of the product/service is considered superior to

competitors (mean 1.25). It is also noted that there is no significant difference in relation to the level of competition faced by respondents' organisations or the basis for competitive advantage.

8.3.2 Characteristics of quality management

Table 8.3 shows the variables that focus on general attributes of the quality management system. Significant differences in the mean scores were noted for two attributes: (1) quality embedded into organisation's culture ($p=.000$), and (2) quality used as a basis for selecting suppliers ($p=.062$). On checking the mean scores it can be seen that respondent group E organisations have a higher score on quality being embedded into the organisation's culture (mean 4.3) and for quality being a criterion in selecting suppliers (mean 3.53). The length of time that quality is important and the intention to apply for an Australian Quality Award are not attributes that are significantly different between the two groups. The locus of control for quality appears to be centralised for both groups.

Table 8.3 – Comparison of means - attributes of the quality program

<i>Q.</i>	<i>Attributes of Quality Management</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
6	Time quality important	2.39	2.71	2.746	.103
14.10	Quality is embedded into the organisations culture	4.3	3.21	18.531	.000
14.12	The organisation has applied or intends to apply for an Australian Business Excellence Award.	3.28	2.79	1.745	.192
14.14	Quality is centrally coordinated	4.06	3.71	2.694	.106
14.26	Quality is our number one criterion in selecting suppliers	3.53	2.93	3.626	.062

8.3.3 Factors motivating quality

Table 8.4 identifies the different factors motivating the quality approach to operations. Significant differences in means have been identified for customer-related factors and strategy-related factors. In relation to process-improvement related factors there appears to be no significant difference in the group means.

**Table 8.4 – Comparison of means –
factors motivating quality approach to operations**

<i>Factors (Question 12)</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
<i>Panel A: Customer-related</i>				
To increase customer satisfaction	4.64	4.29	3.841	.055
To reduce customer complaints	4.55	4.07	5.1742	.027
To satisfy customer contractual requirements	4.34	4.21	.278	.600
<i>Panel B: Strategy-related</i>				
To gain a competitive advantage	4.25	4.14	.155	.695
For business to survive	4.23	4.07	.241	.626
To increase organisations profits	4.07	4.28	.504	.481
To be adaptable to changes in the business environment	4.14	3.5	5.920	.018
To be innovative in product design/service delivery	4.23	3.64	4.730	.034
ISO9000 certification	4.25	3.36	9.213	.004
To increase market share	3.86	3.57	.811	.372
To promote brand loyalty	3.82	3.43	1.188	.280
<i>Panel C: Process-improvement related</i>				
To achieve higher standards of performance	4.43	4.14	2.421	.125
To minimise costs	4.14	4.0	.282	.597
To improve internal processes	4.20	3.93	2.051	.158

The findings show that respondent group E has placed more emphasis on all significant variables. Respondent group E has scored higher on customer-related factors in relation to customer satisfaction (mean 4.64) and the reduction of customer complaints (mean 4.55). Respondent group E also places more emphasis on strategy-related factors by wanting to be more adaptable to the changes in the business environment (mean 4.14) which would be supported by the emphasis placed on being innovative in the design and delivery of the product/service (mean 4.23). Respondent group E has also given a higher score to the importance of ISO 9000 certification to support the quality program (mean 4.25).

8.3.4 Outcomes of quality program

Table 8.5 shows three significant differences between the group means of the outcomes of the quality program. On checking the mean scores it can be seen that respondent group E has scored higher for all three variables. Respondent group E has placed more emphasis on achieving an improvement in their competitive position (mean 4.05) which

may suggest why the organisations record a higher score for excellent financial results (mean 3.71) which has most likely been achieved through a higher rating for increased revenue (3.73). It would appear that both groups agree that a quality approach has not had an adverse affect on financials.

Table 8.5 – Comparison of means - outcomes of the quality program

<i>Q</i>	<i>Outcome of Quality Program</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
14.6	We could have done better (i.e. obtained better financial results) without a quality program	2.02	2.21	.442	.509
14.4	Overall improvement in performance	4.07	3.71	2.694	.106
14.2	Improvement in competitive position	4.05	3.64	3.837	.055
14.3	Excellent financial results	3.70	3.08	6.925	.011
14.1	Increased revenue	3.73	3.0	6.732	.012
14.5	Reduced profitability	2.02	2.21	.461	.500

8.3.5 Organisational values

As shown in Table 8.6, a significant difference in group means was identified for continuous improvement being an important goal ($p=.035$), the importance of continuous improvement when developing the strategic plan ($p=.071$), and continuous improvement being part of normal operational control ($p=.009$). Respondent group E has placed more emphasis on each variable.

Table 8.6 – Comparison of means - organisational values

<i>Q</i>	<i>Organisational Values</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
14.11	Continuous improvement is an important goal	4.52	4.07	4.676	.035
14.13	Continuous improvement is important when developing the strategic plan	4.16	3.71	3.387	.071
18.4	Continuous learning is valued in the organisation	4.2	3.86	2.486	.120
14.22	Continuous improvement activities are part of normal operational control	4.13	3.5	7.370	.009
18.3	The organisation is committed to building expertise in-house	4.0	3.93	.132	.717
14.15	Management identify that due to uncertain operating conditions mistakes may occur	3.45	3.43	.008	.928

8.3.6 Learning Style

Learning will involve the process of building procedural knowledge, cognitive strategies and attitudes. Learning can concentrate on methods and tools to improve what is already being done (single-loop learning) or on testing the assumptions underlying what is being done (double-loop learning). The significant variables identified in Table 8.7 encourage learning and also give support to both types of learning. Respondent group E has a higher mean score for all variables. This suggests that respondent group E organisations are more focused on encouraging employees to improve their work performance.

Table 8.7 – Comparison of means - factors encouraging the learning style

<i>Q</i>	<i>Factors encouraging Learning Style</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
15.10	Employees are encouraged to work smarter not harder	4.20	3.64	.968	.005
15.1	Employees are encouraged to question current practices and find new ways of doing things	4.25	3.86	3.830	.055
18.11	Standard Operating procedures are reviewed regularly	4.32	3.5	14.721	.000
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn	4.0	3.38	7.188	.010
15.22	Employees are empowered to make decisions to enable them to immediately respond to problems	3.91	3.43	4.725	.034
14.25	The organisation works closely with suppliers to improve each other's processes	3.89	3.43	3.681	.060
15.2	Employees are focused on improving existing capabilities	4.12	3.36	15.474	.000
15.25	Employees are encourage to initiate change and take risks rather than just focus on the status quo	3.25	2.93	1.201	.278
14.19	Freedom exists to break the rules as a form of inquiry and curiosity	2.37	2.79	1.645	.205
14.18	The organisation is oriented towards short-term quick fixes, as opposed to systematic problem solving	2.85	2.15	5.031	.029
14.16	Non-standard operating environment whereby employees need to explore/innovate to find ways to complete their assigned tasks	2.43	2.5	.047	.828

Respondent group E has rated higher on their organisation's encouragement of employees to work smarter not harder (mean 4.20), which should motivate employees to learn. This is reinforced by managers supporting staff by not punishing mistakes but by

encouraging staff to learn (mean 4.0), and by having an environment where there is not an orientation towards short-term quick fixes (mean 2.85). The review of standard operating procedures (mean 4.32) would promote both single-loop and double-loop learning, and the improvement of existing capabilities (mean 4.12) would challenge employees to question what is already being done, which would encourage double-loop learning. Respondent group E scores higher on their organisations' empowering of employees to enable them to make decisions about work issues affecting them (mean 3.91). Double-loop learning is more emphasised in respondent group E as employees are encouraged to question current work practices and find new ways of doing their jobs (mean 4.25). Respondent group E also makes use of external sources to assist in the learning process as they give more emphasis to working with suppliers to improve each other's processes (mean 3.89).

8.3.7 Management and employee support of quality

The success of a quality program requires all in the organisation to work together to achieve success (Kaye and Dyason, 1995; Kossoff, 1993; Melan, 1993,). However, commitment must start at the top, management must inspire the rest of the organisation to work towards the organisation's objectives (Czuchry et al., 1997). Table 8.8 shows the significant variables in relation to the management support of the quality program. These are: the commitment of top management ($p=.000$); employee awareness of what quality means ($p=.000$); senior personnel being members of quality committees ($p= .007$); the belief by employees that quality is their responsibility ($p=.039$); the organisation environment being such that "what gets said gets done" ($p=.039$); and management seeing results more important than processes ($p=.030$). Respondent group E has placed more emphasis on each significant variable except for the last, which has been more emphasised by respondent group F. The findings suggest that for respondent group E organisations' quality has been a top-down initiative whereby management has ensured that all employees are aware of what quality means, to which employees have responded by taking responsibility for achieving quality in their work effort. Further commitment by management is shown by their membership of quality related committees and by setting a learning environment by ensuring that "what gets said gets done". It is also noted that respondent group F has emphasised that, in their organisations, management's

focus is on results rather than processes which is in line with earlier findings and which may be a barrier to success as management are not encouraging the “right” environment for continuous improvement.

Table 8.8 – Comparison of means - management support of quality

<i>Q</i>	<i>Management support of quality</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
14.9	Top management is committed to the quality program	4.43	3.5	15.058	.000
14.8	Management ensure that employees are aware of what quality means to the organisation	4.30	3.36	15.234	.000
14.20	Senior personnel are members of quality related committees	3.93	3.07	7.901	.007
14.7	Management view quality as the way to increase profits	3.43	3.07	1.438	.236
14.17	Management view results more important than processes	2.52	3.07	4.87	.030
18.7	The organisation environment is such that what gets said gets done	3.73	2.93	9.108	.004
18.12	There is a view in the organisation that there is only one best way	2.52	2.78	.869	.355
15.3	Employees believe that quality is their responsibility	4.0	3.07	4.455	.039

8.3.8 Employee development

As noted in Chapter 5 employee involvement is important to achieve improvement in performance. As stated by Jha et al. (1996, p27)

*“...continuous improvement is based on **employee participation**, usually at all levels across the organisation, and relies on the **experience and know-how of workers** assisted, rather than directed, by staff experts...”(emphasis added)*

Therefore, it would be expected that successful organisations would place more importance on employee development to ensure that all have the necessary knowledge to undertake their jobs. Earlier findings shown in Section 8.3.7 indicate that employees in respondent group E organisations are more focused on improving existing capabilities, a

task that would require certain skills and knowledge. Table 8.9 shows the significant variables in relation to employee development.

Table 8.9 – Comparison of means - employee development

<i>Q</i>	<i>Employee Education</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
15.11	Employee training is important to continuous improvement efforts	4.45	4.21	1.782	.187
15.21	Employee flexibility, multi-skilling and training are actively used to support improved performance	4.09	3.57	6.403	.014
15.15	External organisations are engaged for employee training	3.7	3.86	.323	.572
15.17	Employees are trained in teamwork	3.86	3.43	2.916	.093
15.4	Employees are rewarded for learning new skills	3.98	3.43	7.992	.007
18.17	Employee attendance at external seminars is encouraged	3.75	3.21	6.415	.014
15.18	Employees are trained in problem solving	3.75	2.93	10.794	.002
15.16	Management assign employees to other parts of the organisation for cross-training	3.70	3.0	6.996	.011
15.19	Employee teams tackle problems	3.91	3.07	15.710	.000
15.14	Mentoring schemes are used to assist employees	3.55	2.93	4.366	.041

Respondent group E has placed more emphasis on each of the significant variables. This suggests more focus on employees acquiring the necessary know-how to undertake their jobs by the development of employee's skills to support improved performance. Respondent group E has indicated a higher preference for employee training to support the continuous improvement effort (mean 4.45) and for employee flexibility and multi-skilling to support improved performance (mean 4.45). To encourage the achievement of these objectives respondent group E has given more emphasis to their organisation's preference to reward employees for learning new skills (mean 3.98) and to encourage employees to work as teams to solve problems (mean 3.91). In-house practices to promote learning are rated higher by respondent group E. Such practices are: employees being assigned to other parts of the organisation for cross-training (mean 3.7), training in teamwork to support group activities (mean 3.86); training in problem-solving to enhance analytical skills (mean 3.91); and the use of a mentoring scheme to support employees

(mean 3.55). In addition, respondent group E rates higher on their organisations' encouragement of employees to attend external seminars (mean 3.75).

8.3.9 Setting of performance goals

The performance goals should operationalise the strategic objectives and direct employee work effort. Table 8.10 shows the significant difference between group means in relation to practices involved with the setting of performance goals.

Table 8.10 – Comparison of means - setting of performance goals

<i>Q</i>	<i>Setting of Performance Goals</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
19.4	All appropriate management and employees are made aware of the performance measures to encourage ongoing improvement	4.16	3.43	9.527	.003
19.12	Employee involvement in goal setting is important	4.14	3.36	13.681	.000
19.27	Benchmarking (both internal and external) is used to assist with the development of performance targets	3.75	3.5	1.171	.284
19.10	Multi-disciplined teams develop both financial and non-financial targets	3.42	2.64	7.653	.008
19.1	Key Performance Indicators (KPIs) are identified as part of the strategic planning process	4.39	4.14	1.751	.191
19.25	Problems are experienced converting quality goals into performance targets	3.02	3.36	1.505	.225

Significant variables highlighted are: that all appropriate management and employees are made aware of the performance measures to encourage ongoing improvement (p=.003); that employee involvement in goal setting is important (p=.000); and the use of multi-disciplined teams to develop both financial and non-financial targets (p=.008). Respondent group E has scored higher on all variables. In respondent group E organisations this would encourage a climate of openness whereby all employees are made aware of the performance measurements to encourage ongoing improvement. The relevance of the performance measurements is strengthened by employee involvement in the goal setting and the use of multi-disciplined teams which would increase ownership (and understanding) of the measures across the organisation.

8.3.10 Key performance indicators

Key Performance Indicators guide the achievement of the organisational objectives. Table 8.11 highlights that the only significant variable was the influence of customer satisfaction on the development of KPIs ($p=.000$). Respondent group E has placed more emphasis on customer satisfaction (mean 4.87), that supports the customer-related outcomes, noted in Section 8.3.3

Table 8.11 – Comparison of means - factors influencing development of KPIs

<i>Q</i>	<i>Factors influencing the development of KPIs</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
11.1	Customer Satisfaction	4.87	4.36	17.269	.000
11.7	Cost Efficiency	4.48	4.36	0271	.605
11.5	Profit	4.09	4.26	.357	.553
11.6	Revenue Growth	3.93	4.21	1.051	.310
11.2	Return on Assets	3.87	4.0	.159	.692
11.3	Share Price	2.34	2.43	.037	.849
11.4	Market Share	2.64	3.64	.000	.986

8.3.11 Key performance indicators and operational activities

The performance measures selected by the organisation should be the link between the strategic objectives and the operational actions. Table 8.12 shows both variables are significant in relation to differences in group means. Respondent group E has placed more emphasis on the development of performance measures that support both the strategic plan and the quality goals (mean 4.25). This would suggest that respondent group E organisations would be better positioned to influence employee behaviour towards the achievement of strategic objectives. Respondent group E has also scored higher on the ability to translate quality goals into operational goals (mean 3.95) which would enable a clearer message to employees about how to achieve the desired quality outcomes.

Table 8.12 - Comparison of means - link between KPIs and operational measures

<i>Q</i>	<i>Link between KPIs and Operational Measures</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
19.3	Operational performance measures link operational activities to the strategic plan	4.25	3.79	7.720	.007
19.28	Quality goals are able to be translated into operational goals	3.95	3.36	11.100	.002

8.3.12 Characteristics of performance goals

To be effective the performance goals must be able to communicate the set objectives. Table 8.13 shows a number of variables that have significant differences between the group means. Respondent group E has scored higher on each attribute which suggests that their organisations are more likely to have clear and consistent goals (mean 3.98) that reflect the importance of the quality improvement activity (mean 3.95). Furthermore, such goals encourage double-loop learning by encouraging employees to explore new ways of doing their jobs (mean 3.55); to promote dialogue and debate among employees about operational activities (mean 3.48); and to encourage employees to explore new ways of doing their jobs (mean 3.55). Respondent group E also scores higher on the revision of performance measures to adapt to changes in operating conditions (mean.3.56).

Table 8.13 – Comparison of means - characteristics of performance goals

<i>Q</i>	<i>Characteristics of performance goals</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
19.13	Clear and consistent	3.98	3.07	14.394	.000
19.14	Reflect the importance of the quality improvement activities	3.95	3.07	11.943	.001
19.7	Encourage employees to work towards quality goals	3.91	3.21	9.573	.003
19.23	Encourage cooperation and interaction between employees	3.55	3.36	.807	.373
19.6	Performance measures are frequently revised to adapt to changes in operating conditions	3.56	3.07	3.890	.054
19.16	Encourage employees to explore new ways of doing their jobs	3.55	2.71	10.880	.002
19.15	Promote dialogue and debate among employees about operational activities	3.48	3.0	3.152	.081
19.21	Used to modify employee behaviour	3.39	3.36	.015	.903
19.18	Stretch goals to encourage employees to explore new ways of doing their jobs	3.43	3.43	.000	.990
19.19	Focus mainly on non-financial measures	2.70	2.86	.295	.589

8.3.13 Performance feedback

Performance feedback allows actions to be assessed and modified if necessary to maintain the achievement of set objectives. Table 8.14 shows three significant variables: (1) the use of feedback to instigate rapid corrective action (p=.000); (2) feedback to assist

employees to assess their work performance ($p=.000$); and (3) the use of standards to measure employee performance ($p=.052$). Respondent group E places more emphasis on all significant variables.

Table 8.14 – Comparison of means - performance feedback

<i>Q</i>	<i>Characteristics of performance feedback</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
19.26	Feedback important for investigating problem areas	4.09	4.0	.285	.596
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action	3.93	2.93	17.751	.000
15.24	Employees receive regular appraisal and feedback about their work performance	3.87	3.07	12.595	.001
18.13	Benchmarking (both internal and external) is used to assess performance	3.63	3.43	.616	.436
19.20	Employee performance is measured against standards	3.45	2.93	3.933	.052
19.24	Balanced scorecard used for performance evaluation	3.41	3.29	.205	.650

8.3.14 Information acquisition

Table 8.15 provides a list the significant variables when comparing the group means in relation to variables that focus on information acquisition. Significant variables noted are the encouragement of new ideas ($p=.000$) and low employee turnover ($p=.039$). Respondent group E scores higher on all significant variables and suggests a more stable work force which would lead to retention of individual's knowledge within the organisation and encourage employees to share ideas for improvement.

Table 8.15 – Comparison of means - information acquisition

<i>Q</i>	<i>Information Acquisition</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
18.5	New ideas are encouraged	4.34	3.71	13.948	.000
15.13	Employee turnover is low	4.14	3.57	4.455	.039
18.16	Recruitment focuses on hiring new employees with the skills and knowledge to close performance gaps	3.77	3.5	1.514	.224
15.12	Employee suggestion schemes are important for new ideas	3.91	3.64	1.100	.299
18.18	External consultants are used for strategic problem solving	2.86	2.79	.065	.800
18.19	External consultants are used for operational problem solving	2.57	2.64	.069	.794

8.3.15 Information storage

Table 8.16 shows significant differences in group means for the existence of an archival system to capture organisational knowledge ($p=.008$); the storing of detailed information for guiding operations ($p=.042$); the recording of good ideas ($p=.010$); and the inability to capture employee knowledge in formal reports ($p=.007$). Respondent group E has scored higher for all significant variables in relation to the capture and storing of organisational knowledge.

Table 8.16 – Comparison of means - information storage

<i>Q</i>	<i>Information Storage</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
13.9	Retention of knowledge about business activities is important to management	4.16	3.79	2.168	.146
13.10	Archival systems are in place to capture knowledge regarding business activities	3.95	3.29	7.653	.008
18.21	The organisation stores detailed information for guiding operations	3.93	3.46	4.355	.042
18.25	Management integrate information from different organisational units	3.73	3.43	1.321	.255
18.24	Good ideas are recorded for a later date	3.66	2.93	7.082	.010
13.6	Knowledge held by employees is unable to be captured in formal reports	2.25	3.0	7.918	.007

8.3.16 Information sharing

Improving actions through better knowledge and understanding supports continuous improvement (Fiol and Lyles, 1985). In line with Miller's (1996) definition of organisational learning employees need to acquire new knowledge to make decisions and influence others in the organisation. Table 8.17 highlights the significant differences in means in relation to information sharing variables. Respondent group E has given more emphasis to all variables that encourage employees to work together and share knowledge and in particular have an organisational structure that encourages ease of communication (mean 3.89). Mean scores recorded for respondent group E for the other significant variables are: employees sharing of information is encouraged (mean 4.07); disclosure of information is encouraged (mean 3.55) and learning from experience shared (mean 4.07). This sharing of information is not limited to the employees immediate work

area but involves sharing between departments (mean 4.0) and employees are more likely to know where to get the information they need (mean 4.14). To encourage the dialogue between employees, an open environment has been created that encourages constructive debate between employees about current work practices (mean 3.5) and cost reduction opportunities (mean 3.95). As well as the active memory of the organisation being used, respondent group E places more emphasis on employees retrieving archived information to assist in decision making (mean 3.49).

Table 8.17 – Comparison of means - information sharing

<i>Q</i>	<i>Information sharing</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
18.20	Sharing of information and knowledge is encouraged	4.07	3.71	6.392	.014
18.23	Learning from experience is shared	4.07	3.29	31.250	.000
15.8	When employees need specific information they know who will have it	4.14	3.5	14.438	.000
15.6	Employees share information	3.98	3.43	10.915	.002
15.20	Managers and employees discuss issues of cost reduction openly and constructively	3.95	3.07	17.284	.000
15.23	Inter-departmental communication between employees in relation to work issues is common	4.0	3.29	12.208	.001
15.9	Employees engage in ongoing open debate about work practices	3.86	3.29	7.085	.010
18.22	Disclosure of information is encouraged	3.55	3.0	3.772	.057
14.27	Customers give feedback on quality and delivery performance	4.25	4.0	2.037	.159
18.15	The organisation structure encourages ease of communication	3.89	3.07	13.453	.001
18.14	The organisation structure is flat	3.24	2.93	.937	.337
15.7	Employees retrieve archived information when making decisions	3.49	2.71	11.014	.002

8.3.17 Information dissemination

Information can be shared in an informal way, via corridor discussions, or by a more formal approach with employees meeting together or through the distribution of reports. Table 8.18 indicates those significant variables in relation to information dissemination.

Table 8.18 – Comparison of means - information dissemination

<i>Q</i>	<i>Information dissemination</i>	<i>Exceeded Expectations Mean (n=44)</i>	<i>Fell Short of Expectations Mean (n=14)</i>	<i>F-value</i>	<i>P=</i>
Panel A – Meetings					
13.7	Regular meetings held to disseminate information	4.18	3.43	12.063	.001
18.6	Regular team meetings are held to discuss operational activities	4.36	3.79	10.715	.002
18.9	Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures	4.0	2.79	25.525	.000
14.24	Cross-functional personnel form the membership of committees addressing quality issues	3.79	3.29	3.529	.066
14.23	Continuous improvement activities are undertaken by project specific teams	3.77	3.07	6.270	.015
Panel B - Reports					
19.11	Financial reports are important for operational control	4.07	3.71	2.904	.094
13.4	Standard Reports	3.73	3.93	.579	.450
13.3	Specialised Reports	3.95	3.86	.142	.707
13.2	Exception Reports	3.65	4.0	1.544	.219
18.10	Formal reports are available that aim to continuously assess how the organisation and managers are doing in relation to plans	3.91	3.57	2.051	.158
13.8	More reliance placed on electronic communication rather than hardcopy reports	3.61	3.43	.393	.533
13.1	Cost of Quality Reports	3.5	3.14	1.210	.276

Respondent group E has given more emphasis to the conduct of regular meetings to share information (mean 4.18). Such meetings not only discuss operational activities (mean 4.36), but are also a forum to allow management and employees to share experiences and progress on projects, best practice together with successes and failures (mean 4.0). This type of forum would encourage employees in both single-loop and double-loop learning. In relation to continuous improvement, respondent group E has placed more emphasis on the monitoring of activities by quality steering committees (mean 3.79) and dedicated project teams (mean 3.77). The only significant variable in relation to the use of financial reports for financial control and respondent group E have placed more emphasis on this form of reporting (p=.094).

8.3.18 Characteristics of performance reports

Table 8.19 shows that the only significant variable is the adaptability of reports to changes in performance measures. Respondent group E has placed more emphasis on this attribute (mean 3.74) which would ensure that the information is reflective of the organisation's current objectives.

Table 8.19 – Comparison of means - performance reports

Q	Performance reports	Exceeded Expectations Mean (n=44)	Fell Short of Expectations Mean (n=14)	F-value	P=
19.9	Adaptable to changes in performance measures	3.74	3.14	5.851	.019
15.5	Employees (at all levels) have information about performance available to them	3.91	3.6	1.675	.201

To emphasize the attributes of more successful organisations, the significant variables identified above, and listed in Appendix 3.0, will be further analysed using discriminant analysis.

8.4 Stage 2 – Discriminant analysis

In the second stage, discriminant analysis is used to determine which variables, if any, most discriminate between respondent group E and respondent group F. In Section 8.3 significant difference in means between the two groups were identified. These variables will be used to determine which are the best predictors of whether a respondent would perceive their organisation's quality initiative to be either successful (exceeded expectations) or unsuccessful (fell short of expectations). In other words, the emphasis is on the identification of the characteristics/practices of the organisation that have the greatest power of predicting to which group a respondent will belong (Klecka, 1980). Variables with a correlation coefficient of less than .50 are not interpreted, as a loading below this would suggest low or negligible correlation (Franzblau, 1958).

The null hypothesis posed in this analysis is:

There is no statistically significant difference in the scores between the two groups on the discriminant function.

If the null hypothesis is rejected it indicates that the variable is a discriminating variable between the two groups.

8.4.1 Characteristics of quality management

The independent variables shown in Appendix 3.0 under the headings “organisational characteristics”, “factors motivating quality”, “outcome of quality program” and “organisational values” are grouped together for the analysis in order to assess the quality management practices of organisations (Table 8.20). The purpose is to identify which variables are better predictors of group membership.

Table 8.20 – Predictor variables for organisational characteristics of quality management

<i>Q</i>	<i>Organisational Characteristics</i>	<i>P=</i>
1	Size as measured by number of Employees	.016
10	Quality of product/service compared with competitors	.012
14.10	Quality embedded in organisation culture	.000
14.26	Quality is the number one criterion in selecting suppliers	.062
	<i>Factors motivating quality</i>	
12.1	To reduce customer complaints	.027
12.2	To increase customer satisfaction	.055
12.11	To be innovative in product design/service delivery	.034
12.8	To be adaptable to changes in the business environment	.018
12.9	ISO9000 certification	.004
	<i>Outcome of Quality Program</i>	
14.1	Increased revenue	.012
14.2	Improvement in competitive position	.055
14.3	Excellent financial results	.011
	<i>Organisational Values</i>	
14.11	Continuous improvement is an important goal	.007
14.22	Continuous improvement activities are part of normal operational control	.009
14.13	Continuous improvement is important when developing the strategic plan	.002

Table 8.21 provides a summary of the canonical discriminant function for organisation characteristics. With a canonical correlation at .733, the function accounts for around 53.7% of the between-group variability. The Wilk’s Lambda value of this function is

.463 with a chi square of 35.764, $df=15$, $p=.002$. Therefore, the null hypothesis is rejected, and a statistically significant difference exists in the scores of the groups on the discriminant function.

**Table 8. 21 - Organisational characteristics of quality management
Summary of Canonical Discriminant Function**

Canonical Correlation	Wilks' Lambda	Chi square	Df	P=
.733	.463	35.764	15	.002

The structure matrix, Table 8.22, shows the correlation between the significant predictors and the discriminant function. The best predictor is “quality being embedded into organisation culture”. A check of the mean scores confirms the analysis. Respondent group E has a higher score (mean 4.3) than respondent group F (mean 3.21) (*Table 8.3*).

**Table 8.22 - Organisational characteristics of quality management –
Structure Matrix - Canonical Discriminant Function Coefficients**

<i>Q.</i>	Predictors	<i>Loading</i>
14.10	Quality embedded in organisation culture	.515
12.9	ISO9000 certification	.382
14.1	Increased revenue	.371
14.3	Excellent financial results	.333
14.22	Continuous improvement activities are part of normal operational control	.329
12.8	To be adaptable to changes in the business environment	.313
12.1	To reduce customer complaints	.214
14.11	Continuous improvement is an important goal	.265
14.2	Improvement in competitive position	.261
14.26	Quality is the number one criterion in selecting suppliers	.250
12.11	To be innovative in product design/service delivery	.235
12.2	To increase customer satisfaction	.217
14.13	Continuous improvement is important when developing the strategic plan	.214
1	Size as measured by number of Employees	-.355
10	Quality of product/service compared with competitors	-.290

As shown in Table 8.23 the discriminant function successfully predicts the outcome for 87.9% of cases, with accurate predictions being made for 40 (90.9%) of respondent group E and 11 (78.5%) of respondent group F.

Table 8.23– Organisational characteristics of quality management – Classification Results

		<i>Predicted Group Membership</i>		<i>Total</i>
		<i>Exceeded</i>	<i>Failed</i>	
<i>Original</i>	<i>Count</i>	<i>Exceeded</i>	40	44
		<i>Failed</i>	3	14
87.9% of original grouped cases correctly classified.				

8.4.2 Management and employee support of quality

The independent variables shown in Appendix 3.0 under the heading “management and employee support of quality” were used to identify which variables are better predictors of group membership (Table 8.24).

Table 8.24– Predictor variables for management and employee support of quality

<i>Q.</i>	<i>Management and employee support of quality</i>	<i>P=</i>
14.9	Top management is committed to the quality program	.000
14.8	Management ensure that employees are aware of what quality means to the organisation	.000
14.17	Management view results more important than processes	.030
14.20	Senior Personnel are members of quality-related committees	.007
18.7	The organisation environment is such that what gets said gets done	.004
15.3	Employees believe that quality is their responsibility	.039

Table 8.25 gives a summary of the canonical discriminant function for management support of quality. With a canonical correlation at .607, the function accounts for around 36.8% of the between-group variability. The Wilk’s Lambda value of this function is .631 with a chi square of 23.906, $df = 6$, $p = .001$. Therefore, the null hypothesis is rejected, and a statistically significant difference exists in the scores of the groups on the discriminant function.

**Table 8.25– Management and employee support of quality –
Summary of Canonical Discriminant Function**

Canonical Correlation	Wilks' Lambda	Chi square	Df	P=
.607	.631	23.906	6	.001

Table 8.26 provides details of the structure matrix of correlation between the predictor variables and the discriminant function. The best predictor variables are related to employees believing quality is their responsibility, management ensuring employees are aware of what quality means to organisation, the commitment of top management to the quality program, and an environment where “what gets said gets done”. A check of the mean scores for each predictor variable (*Table 8.8*) shows that respondent group E has scored higher for each variable.

**Table 8.26 – Management and employee support of quality –
Structure Matrix - Canonical Discriminant Function Coefficients**

<i>Q.</i>	<i>Predictor Variable</i>	<i>Loading</i>
15.3	Employees believe that quality is their responsibility	.863
14.8	Management ensure that employees are aware of what quality means to the organisation	.721
14.9	Top management is committed to the quality program	.686
18.7	The organisation environment is such that what gets said gets done	.523
14.20	Senior Personnel are members of quality-related committees	.489
14.17	Management view results more important than processes	-.427

As shown in Table 8.27 the discriminant function successfully predicts the outcome for 82.8% of cases, with accurate predictions being made for 38 (86.3%) of respondent group E and 10 (71.4%) of respondent group F.

Table 8.27– Management and employee support of quality - Classification Results

			<i>Predicted Group Membership</i>		<i>Total</i>
			<i>Exceeded</i>	<i>Failed</i>	
<i>Original</i>	<i>Count</i>	<i>Exceeded</i>	38	6	44
		<i>Failed</i>	4	10	14
82.8% of original grouped cases correctly classified.					

8.4.3 Learning style

The independent variables shown in Appendix 3.0 grouped under the heading “learning style” were used to identify which variables are better predictors of group membership (Table 8.28).

Table 8.28– Predictor variables for Learning style

<i>Q</i>	<i>Learning attributes</i>	<i>P=</i>
15.1	Employees are encouraged to question current practices and find new ways of doing things	.055
14.25	The organisation works closely with suppliers to improve each others processes	.060
15.22	Employees are empowered to make decisions to enable them to immediately respond to problems	.034
15.10	Employees are encouraged to work smarter not harder	.005
18.11	Standard Operating procedures are reviewed regularly	.000
15.2	Employees are focused in improving existing capabilities	.000
14.18	The organisation is oriented towards short-term quick fixes, as opposed to systematic problem solving	.029
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn	.010

In Table 8.29 the summary of the canonical discriminant function for learning attributes is given. With a canonical correlation at .578, the function accounts for around 33.4% of the between-group variability. The Wilk’s Lambda value of this function is .666 with a chi square of 20.358, $df = 8$, $p=.001$. Therefore, the null hypothesis is rejected, and a statistically significant difference exists in the scores of the groups on the discriminant function.

**Table 8. 29 - Learning style
Summary of Canonical Discriminant Function**

Canonical Correlation	Wilks' Lambda	Chi square	Df	P=
.578	.666	20.358	8	.001

Table 8.30 provides details of the structure matrix of correlation between the predictor variables and the discriminate function. The best predictor variables are the regular review of standard operating procedures, the focus of employees on improving existing capabilities, employees being encouraged to work smarter not harder and management supporting staff to learn. A check of the means (*Table 8.7*) shows that respondent group E rates all predictor variables higher.

**Table 8.30 - Learning Style – Structure Matrix
Canonical Discriminant Function Coefficients**

<i>Q</i>	<i>Learning Attributes</i>	<i>Loading</i>
18.11	Standard Operating procedures are reviewed regularly	.746
15.2	Employees are focused on improving existing capabilities	.703
15.10	Employees are encouraged to work smarter not harder	.547
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn	.509
15.22	Employees are empowered to make decisions to enable them to immediately respond to problems	.370
14.25	The organisation works closely with suppliers to improve each others processes	.346
15.1	Employees are encouraged to question current practices and find new ways of doing things	.346
14.18	The organisation is oriented towards short-term quick fixes, as opposed to systematic problem solving	-.466

As shown in Table 8.31 the discriminant function successfully predicts the outcome for 81.0% of cases, with accurate predictions being made for 38 (86.4%) of respondent group E and 9 (64.3%) of respondent group F.

Table 8.31 – Learning Style - Classification Results

		<i>Predicted Group Membership</i>		<i>Total</i>
		<i>Exceeded</i>	<i>Failed</i>	
<i>Original</i>	<i>Count</i>	<i>Exceeded</i>	<i>Failed</i>	
		38	6	44
		5	9	14
81.0% of original grouped cases correctly classified.				

8.4.4 Employee development

The independent variables shown in Appendix 3.0 under the heading “employee development” were used to identify which variables are better predictors of group membership (Table 8.32).

Table 8.32 – Predictor variables for Employee Development

<i>Q</i>		<i>P=</i>
18.17	Employee attendance at external seminars is encouraged	.014
15.21	Employee flexibility, multi-skilling and training are actively used to support improvement activities	.014
15.17	Employees are trained in teamwork	.093
15.4	Employees are rewarded for learning new skills	.007
15.18	Employees are trained in problem solving	.002
15.14	Mentoring schemes are used to assist employees	.041
15.16	Management assign employees to other parts of the organisation for cross-training	.011
15.19	Employee teams tackle problems	.000

In Table 8.33 the summary of the canonical discriminant function for performance goal attributes is given. With a canonical correlation at .595, the function accounts for around 35.4% of the between-group variability. The Wilk’s Lambda value of this function is .646 with a chi square of 22.316, $df = 8$, $p=.004$. Therefore, the null hypothesis is rejected, and a statistically significant difference exists in the scores of the groups on the discriminant function.

**Table 8. 33 - Employee Development
Summary of Canonical Discriminant Function**

Canonical Correlation	Wilks' Lambda	Chi square	Df	P=
.595	.646	22.316	8	.004

The structure matrix of correlation between the predictor variables and the discriminant function is given in Table 8.34. The best predictor variables are the use of employee teams to tackle problem solving, the training of employees in problem solving, rewarding employees for learning new skills. A check of the means (Table 8.9) highlights that respondent group E scores higher for each variable.

**Table 8.34– Employee Development
Structure Matrix -Canonical Discriminant Function Coefficients**

<i>Q</i>		<i>Loading</i>
15.19	Employee teams tackle problems	.642
15.18	Employees are trained in problem solving	.580
15.4	Employees are rewarded for learning new skills	.540
15.16	Management assign employees to other parts of the organisation for cross-training	.481
15.21	Employee flexibility, multi-skilling and training are actively used to support improvement activities	.474
18.17	Employee attendance at external seminars is encouraged	.431
15.14	Mentoring schemes are used to assist employees	.370
15.17	Employees are trained in teamwork	.331

As shown in Table 8.35 the discriminant function successfully predicted the outcome for 81.0% of cases, with accurate predictions being made for 36 (81.8.0%) of respondent group E and 11(78.5%) of respondent group F.

Table 8.35 – Employee Development - Classification Results

		<i>Predicted Group Membership</i>		<i>Total</i>	
		<i>Exceeded</i>	<i>Failed</i>		
<i>Original</i>	<i>Count</i>	<i>Exceeded</i>	36	8	44
		<i>Failed</i>	3	11	14

81.0% of original grouped cases correctly classified.

8.4.5 Performance measurement system

The independent variables shown in Appendix 3.0 grouped under “Key performance indicators”, “link between KPIs and operation activities”, “setting of performance goals”, “characteristics of performance goals” and “characteristics of performance feedback”

were used to identify which variables are better predictors of group membership (Table 8.36).

Table 8.36– Predictor variables for performance measurement system

<i>Q</i>	<i>Setting of Performance Goals</i>	<i>P=</i>
19.10	Multi-disciplined teams develop both financial and non-financial targets	.008
19.12	Employee involvement in goal setting is important	.000
19.4	All appropriate management and employees are made aware of the performance measures to encourage ongoing improvement	.003
	<i>Key Performance Indicators</i>	
11.1	Customer satisfaction	.000
	<i>Link between KPIs and operational activities</i>	
19.3	Operational performance measures link operational activities to the strategic plan	.007
19.28	Quality goals are able to be translated into operational goals	.002
	<i>Characteristics of performance goals</i>	
19.13	Clear and consistent	.000
19.14	Reflect the importance of the quality improvement activities	.001
19.7	Encourage employees to work towards quality goals	.003
19.6	Performance measures are frequently revised to adapt to changes in operating conditions	.054
19.16	(Performance measures) encourage employees to explore new ways of doing their jobs	.002
19.15	Promote dialogue and debate among employees about operational activities	.081
	<i>Characteristics of performance feedback</i>	
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action	.000
19.20	Employee performance is measured against standards	.052
15.24	Employees receive regular appraisal and feedback about their work performance	.001

Table 8.37 provides the summary of the canonical discriminant function for performance measurement system attributes. With a canonical correlation at .680, the function accounts for around 46.24% of the between-group variability. The Wilk's Lambda value of this function is .537 with a chi square of 29.531, $df = 15$, $p=.014$. Therefore, the null hypothesis is rejected, and a statistically significant difference exists in the scores of the groups on the discriminant function.

**Table 8.37 - Performance measurement system
Summary of Canonical Discriminant Function**

Canonical Correlation	Wilks' Lambda	Chi square	Df	P=
.680	.537	29.531	15	.014

The structure matrix of correlation between the predictor variables and the discriminant function is shown in Table 8.38. The best predictors are: feedback from performance targets to assess both work activity and employee performance; customer satisfaction is important when developing performance goals; performance goals are clear and consistent; and employee involvement is important when setting the goals. A check of the means (Tables 8.10 to 8.14) shows that respondent group E has scored higher on each variable.

**Table 8.38 – Performance measurement system – Structure Matrix
Canonical Discriminant Function Coefficients**

<i>Q</i>	<i>Performance Measurement System Attributes</i>	<i>Loading</i>
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action	.600
11.1	Customer satisfaction	.594
19.13	Clear and consistent	.544
19.12	Employee involvement in goal setting is important	.525
15.24	Employees receive regular appraisal and feedback about their work performance	.503
19.14	Reflect the importance of the quality improvement activities	.495
19.16	(Performance measures) encourage employees to explore new ways of doing their jobs	.469
19.28	Quality goals are able to be translated into operational goals	.477
19.7	Encourage employees to work towards quality goals	.443
19.4	All appropriate management and employees are made aware of the performance measures to encourage ongoing improvement	.436
19.10	Multi-disciplined teams develop both financial and non-financial targets	.402
19.3	Operational performance measures link operational activities to the strategic plan	.391
19.6	Performance measures are frequently revised to adapt to changes in operating conditions	.315
19.20	Employee performance is measured against standards	.311
19.15	Promote dialogue and debate among employees about operational activities	.249

As shown in Table 8.39 the discriminant function successfully predicts the outcome for 82.8% of cases, with accurate predictions being made for 37 (84.0%) of respondent group E and 11 (78.6%) of respondent group F.

Table 8.39 – Performance Measurement System - Classification Results

			<i>Predicted Group Membership</i>		<i>Total</i>
			<i>Exceeded</i>	<i>Failed</i>	
<i>Original</i>	<i>Count</i>	<i>Exceeded</i>	37	7	44
		<i>Failed</i>	3	11	14
82.8% of original grouped cases correctly classified.					

8.4.6 Knowledge management practices

The independent variables shown in Appendix 3.0 grouped under “information acquisition”, “information sharing” and “information dissemination” were used to identify which variables are better predictors of group membership (Table 8.40).

Table 8.40 – Predictor variables for knowledge management practices

<i>Q</i>	<i>Information Acquisition</i>	<i>P=</i>
18.5	New ideas are encouraged	.000
15.13	Employee turnover is low	.026
	<i>Information sharing</i>	
18.15	The organisation structure encourages ease of communication	.001
18.20	Sharing of information and knowledge is encouraged	.014
18.23	Learning from experience is shared	.000
15.8	When employees need specific information they know who will have it	.000
15.6	Employees share information	.002
15.23	Inter-departmental communication between employees in relation to work issues is common	.001
15.9	Employees engage in ongoing open debate about work practices	.010
18.22	Disclosure of information is encouraged	.057
15.7	Employees retrieve archived information when making decisions	.002
15.20	Managers and employees discuss issues of cost reduction openly and constructively	.000
	<i>Information dissemination</i>	
13.7	Regular meetings held to disseminate information	.001
18.6	Regular team meetings are held to discuss operational activities	.002
18.9	Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures	.000
19.11	Financial reports are important for operational control	.094
14.23	Continuous improvement activities are undertaken by project specific teams	.015
	<i>Information storage</i>	
13.10	Archival systems are in place to capture knowledge regarding business activities	.008
18.21	The organisation stores detailed information for guiding operations	.010
18.24	Good ideas are recorded for a later date	.007
13.6	Knowledge held by employees is unable to be captured in formal reports	.042
	<i>Performance reports</i>	
19.9	Adaptable to changes in performance measures	.019

Table 8.41 details the summary of the canonical discriminant function for knowledge management practices. With a canonical correlation at .749, the function accounts for around 56.1% of the between-group variability. The Wilk's Lambda value of this function is .439 with a chi square of 34.612, $df = 22$, $p = .043$. Therefore, the null hypothesis is rejected, and a statistically significant difference exists in the scores of the groups on the discriminant function.

**Table 8. 41 – Knowledge management practices
Summary of Canonical Discriminant Function**

Canonical Correlation	Wilks' Lambda	Chi square	Df	P=
.749	.439	34.612	22	.043

In Table 8.42 the structure matrix of correlation between the predictor variables and the discriminant function is shown. The best predictor variables relate to: organisations having regular briefings to share experiences and progress on projects, best practices, success and failures; a general environment where learning from experience is shared; and an organisation structure that encourages ease of communication. A check of the means (*Tables 8.15 to 8.19*) shows that respondent group E has scored higher on each variable.

As shown in Table 8.43 the discriminant function successfully predicts the outcome for 91.4% of cases, with accurate predictions being made for 41 (93.1%) of respondent group E and 12 (85.7%) of respondent group F.

**Table 8.42 – Knowledge management practices –
Structure Matrix - Canonical Discriminant Function Coefficients**

<i>Q.</i>	<i>Knowledge Management Practices</i>	<i>Loading</i>
18.9	Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures	.648
18.23	Learning from experience is shared	.626
18.15	The organisation structure encourages ease of communication	.519
15.8	When employees need specific information they know who will have it	.469
18.5	New ideas are encouraged	.457
13.7	Regular meetings held to disseminate information	.452
15.20	Managers and employees discuss issues of cost reduction openly and constructively	.440
18.6	Regular team meetings are held to discuss operational activities	.399
15.23	Inter-departmental communication between employees in relation to work issues is common	.387
15.7	Employees retrieve archived information when making decisions	.367
15.6	Employees share information	.356
18.24	Good ideas are recorded for a later date	.342
13.6	Knowledge held by employees is unable to be captured in formal reports	.320
18.20	Sharing of information and knowledge is encouraged	.311
15.9	Employees engage in ongoing open debate about work practices	.290
19.9	Adaptable to changes in performance measures	.285
13.10	Archival systems are in place to capture knowledge regarding business activities	.275
18.21	The organisation stores detailed information for guiding operations	.262
15.13	Employee turnover is low	.259
18.22	Disclosure of information is encouraged	.250
14.23	Continuous improvement activities are undertaken by project specific teams	.246
19.11	Financial reports are important for operational control	.209

Table 8.43 – Knowledge management practices - Classification Results

		<i>Predicted Group Membership</i>		<i>Total</i>
		<i>Exceeded</i>	<i>Failed</i>	
<i>Original</i>	<i>Count</i>	41	3	44
		<i>Exceeded</i>	<i>Failed</i>	
		2	12	14
91.4% of original grouped cases correctly classified.				

8.4.7 Summary of discriminant analysis

Table 8.44 provides a summary of the best predictor variables for each discriminant function.

**Table 8.44–Summary – Best Predictor Variables
Canonical Discriminant Function Coefficients**

<i>Predictor Variables</i>		<i>Loading</i>
<i>Organisational Attributes</i>		
14.10	Quality embedded in organisation culture	.515
15.3	Employees believe that quality is their responsibility	.863
14.8	Management ensure that employees are aware of what quality means to the organisation	.721
14.9	Top management is committed to the quality program	.686
18.7	The organisation environment is such that what gets said gets done	.523
<i>Learning Attributes</i>		
18.11	Standard Operating procedures are reviewed regularly	.746
15.2	Employees are focused on improving existing capabilities	.703
15.10	Employees are encouraged to work smarter not harder	.547
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn	.509
<i>Employee Education</i>		
15.19	Employee teams tackle problems	.642
15.18	Employees are trained in problem solving	.580
15.4	Employees are rewarded for learning new skills	.540
<i>Performance Goals</i>		
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action	.600
11.1	Customer satisfaction	.594
19.13	Clear and consistent	.544
19.12	Employee involvement in goal setting is important	.525
15.24	Employees receive regular appraisal and feedback about their work performance	.503
<i>Information Management Practices</i>		
18.9	Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures	.648
18.23	Learning from experience is shared	.626
18.15	The organisation structure encourages ease of communication	.519

A review of the predictor variables suggests that respondent group E considers their organisations are able to create an environment that encourages learning. Many of the predictor variables relate to the organisation's philosophy and practice rather than the processes themselves.

The findings suggest that the more successful organisations are able to embed quality into the operations and this is accomplished by management ensuring that all employees are aware of what quality is to the organisation, with management showing their own

commitment to quality by ensuring that “what gets said gets done”. It appears that respondent group E considers that their organisations place more value on the contribution of employees. Employees in respondent group E organisations have taken ownership of the quality program through the belief that quality is their responsibility. Employees are more focused on improving existing capabilities to support continuous improvement. Both single-loop and double-loop learning are supported by standard operating procedures being reviewed regularly together with employees being trained in problem solving techniques. Employees are encouraged to learn by working smarter not harder and not being “punished for mistakes”.

The learning environment is supported by performance goals. Performance measures are clear and consistent and support the strategic objectives of customer satisfaction. The relevance of the performance goals is strengthened by employee involvement in the goal setting process. Performance goals play an important role in assessing operational activities and employee performance.

Sharing of information is encouraged in successful organisations. To encourage communication between employees, successful companies are more likely to have a supportive organisational structure, coupled with regular meetings to disseminate information where employees discuss experiences and progress on projects, best practice, together with successes and failures.

8.5 Summary

In this chapter there has been a focus on further analysis of the survey findings to identify variables that discriminate between successful and unsuccessful quality programs. The classification of success was based on respondent’s answers to Question 7 of the survey. This was then followed by discussion of the statistical testing. Stage 1 focused on the output of the ANOVA in order to identify any significant differences in means between respondent group E and respondent group F. Variables that passed the ANOVA tests of significance were then used in Stage 2, the Discriminant Analysis. The purpose of this

testing was to identify the best predictor variables that discriminate between respondent group E and respondent group F. A review of the predictor variables suggests that respondent group E organisations have been able to create an environment that encourages learning. A discussion of the key issues emanating from the study follows in Chapter 9.

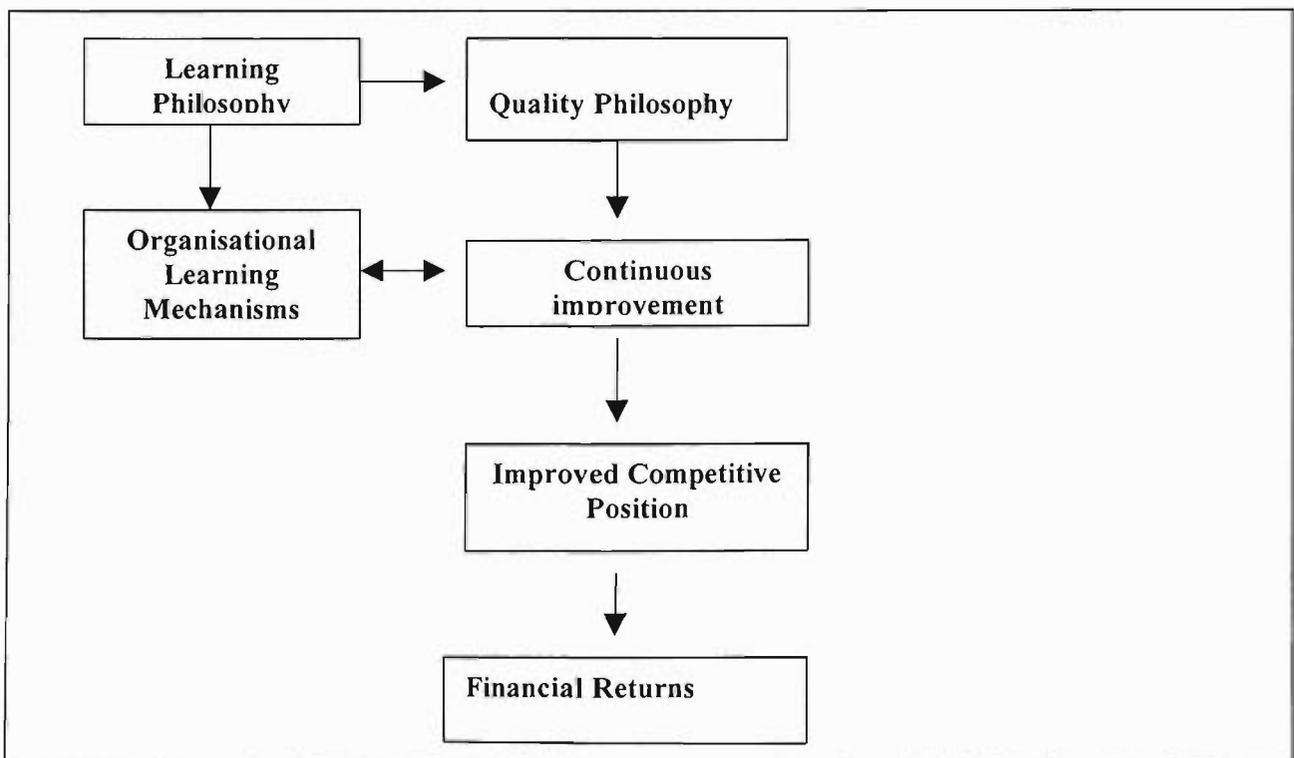
Chapter 9 – Summary

In this final chapter the results emanating from the study are discussed. The discussion will focus on the key issues arising from the detailed analysis of findings in Chapters 7 and 8 and, in so doing, respond specifically to the research questions posed in Chapter 5. First, there is a review of the research framework followed by a discussion relating to each research question. Next, concluding comments are given.

9.1 Introduction – review of research framework

The objective of this study was to explore organisational learning in quality-focused organisations. In particular, to examine the form and extent of organisational learning mechanisms (OLMs) to support continuous improvement. The conceptual framework of the research study proposed in Chapter 5 is restated in a diagrammatic representation in Figure 9.1. The literature review given in Chapters 2 to 4 formed the basis for the development of the framework.

Figure 9.1 - Research Framework



Restated from Figure 5.3

Ultimately, for any profit-making organisation the motive behind any action taken is to gain a financial return either by an increase in profits or, at the least, to maintain existing profits. One strategy adopted by an organisation to improve or maintain its financial position is to adopt a quality approach to operations. As noted in Section 2.3, a continuous improvement approach to business activities will enable an organisation to improve its competitive position either by increasing its revenue by improved relationships with customers or by achieving cost efficiencies through process improvement. It is suggested that the achievement of such goals is dependent upon the organisation having a learning culture to promote improved performance. The decision to adopt continuous improvement in itself implies a learning approach, as the organisation will be focused on improving its current business operations. This prompts the first research question.

RQ 1 - What is the motivation for an organisation to adopt a quality approach to its operations?

It is suggested that the procedures and policies utilised by an organisation are the potential OLMs to nurture and encourage learning and lead to continuous improvement in business activities. The learning orientation adopted by an organisation will be seen in the choices made about the form and extent of OLMs. Therefore, if the procedures and policies have been structured as OLMs, then it would be expected that they would support learning, and be instrumental in developing the learning culture and motivating employee actions. This leads to the second research question.

RQ 2 - What are the characteristics of the organisational learning mechanisms used by quality-focused organisations?

It will be important for the organisation's culture to encourage employees both to strive for continuous improvement and to pursue life-long learning. This will rely on management developing the capabilities necessary to integrate creative thinking and problem solving throughout the organisation. OLMs are facilitating factors through which the operating philosophies can be integrated into the day-to-day activities of the organisation. It is suggested that the form and the extent of adoption of OLMs will be determinants of the level of success achieved by an organisation in its continuous improvement endeavours. This proposition motivates research question 3.

RQ 3 - What are the characteristics of the organisational learning mechanisms favoured by an organisation with a successful quality program?

The research questions were explored with data collected from a questionnaire forwarded to quality managers and finance managers of organisations certified to ISO9000. In Chapter 7 a detailed analysis of the survey findings was given and in Chapter 8 further analysis was undertaken of the characteristics that discriminate between organisations that have either a successful or an unsuccessful quality program.

9.2 Organisation of chapter

The major findings are summarised in Section 9.3. This is followed by a more detailed discussion in relation to each research question in Sections 9.4 to 9.7

9.3 Summary of major findings

The major finding of this study supports the propositions of Yong and Wilkinson (2001). That is, to maximise the benefits of a quality program with a focus on continuous improvement organisations should be conscious of the "soft-side" of quality. This will require consideration of qualitative aspects, such as employees and customers, with

business activities supported by teamwork and better management of employees.

Respondents who consider their organisation's quality program has met or exceeded expectations have identified the importance of:

- key performance indicators (KPIs) linked to customer satisfaction;
- investment in employee training;
- reward systems to promote employee skill development;
- transformational management style;
- regular meetings for employees to share knowledge and experience;
- knowledge management practices that support organisational learning; and
- performance measurement systems structured as organisational learning mechanisms to support continuous improvement and learning.

9.4 RQ 1 - What is the motivation for an organisation to adopt a quality approach to its operations?

As discussed in Section 2.3 there are numerous factors that motivate organisations to pursue quality management practices. In this study, the interest was in examining OLMs in the context of a continuous improvement business environment. An examination of the findings discussed in Chapter 7 enables an understanding of the reasons behind a quality focus in respondents' organisations. Specifically the discussion will focus on:

- Section 9.4.1 - The motivating factors behind the quality focus;
- Section 9.4.2 - The outcomes of having a quality approach to operations.

9.4.1 – The motivating factors behind the quality focus

In line with Evans and Lindsay (1996), Kaye and Dyason (1995), Kaye and Anderson (1999), Kossoff (1993), Lillifrank et al. (2001), Melan (1993), the findings indicate that quality has been embraced by respondents' organisations as a key competitive weapon to enable survival in the market place. For the majority of respondents (97.5%) their organisations are operating in a competitive environment and have chosen a competitive

strategy built on quality (96.3% of respondents). The specific focus of the strategy is to meet customer needs and improve business processes, both of which suggest a strategy built on continuous improvement. This is reinforced by 86.5% of respondents noting the importance of continuous improvement in the development of the strategic plan for their organisation.

As noted by Butz (1995), Ehrenberg and Stupak (1994), and Bessant and Francis (1999) continuous improvement must be embodied within the strategy if it is to achieve the desired outcomes. The strategic focus given to quality suggests that respondents' organisations consider quality to be an integral component of their future success, and in so doing strengthens the opportunity to have expectations met as a strategic quality focus will assist organisations in improving their competitive advantage (Reitsperger and Daniel, 1991). This will be particularly important for a number of respondents' organisations, especially for the 42.3% of respondents who consider their organisation's product/service is similar or inferior to competitors. This indicates that an opportunity exists for such organisations to improve their operations and close the performance gap thereby improving their position in the market place.

The majority of respondents (76.2%) considers that their organisation has embedded quality into the organisation's culture, there is a suggestion that 33.6% of respondents' organisations still have some way to go to achieve this. The infusion of quality into the culture may have been assisted by management ensuring that all employees are aware of what quality means to the organisation (83.4% of respondents), and by showing their own commitment to the quality initiative (86.1% of respondents). As continuous improvement is about change, employee awareness of what quality means to the organisation will enable employees to evaluate its contribution to the organisation (Srinidhi, 1998).

It is interesting to note that respondents who rate their organisation's quality initiative as less successful ("fell short of expectations") comment on the lack of employee commitment to the quality program. As noted in the literature, the loss of morale or an

increase in cynicism among employees is a major factor in TQM failures (Beck and Yeager, 1996; Dooley and O'Sullivan, 1999).

The depth of management commitment to quality in some respondents' organisations is also questioned. The findings indicate that only 51.7% of respondents consider that "what gets said gets done"; only 53.5% consider that management view quality as the way to increase profits; and only 54.5 % of respondents agree that management view processes as more important than results. As noted by Srinidhi (1998) it is unlikely that any quality initiative will be successful without the full commitment of management.

The above discussion indicates that respondents consider their organisations have a continuous improvement focus, however, for some respondents' organisations its impact may be compromised by the lack of management and employee commitment.

9.4.2 The outcomes of having a quality approach

Customer-related factors and process-improvement-related factors motivate the quality initiative in respondents' organisations. This suggests that quality is seen as an important enabler for ongoing business operations and is in line with the literature outlined in Section 2.2.4. The specific factors motivating the quality approach are shown in Section 7.3.2.2. The findings support the proposition put forth in the research framework that a continuous improvement approach to operations is the result of an organisation's desire to improve its financial position, through either an increase in revenue, or a decrease in costs, or by the desire to maintain current profits.

The analysis of the findings suggests that the quality program has assisted organisations in meeting the strategic objectives. For the majority of respondents (82.7%) performance has improved with 75.8% of respondents noting an overall improvement in their organisation's competitive position in the market. The majority of respondents (80.8%) did not consider that the quality program has had an adverse affect on profitability. However, 49.1% of respondents note the lag in the improvement in operations and it being recognised in the financial reports.

The above discussion suggests that respondent organisations have adopted a continuous improvement philosophy to underpin business activities in order to improve the competitive position. Strong motivational factors are the need to satisfy customers and improve business processes. Quality is seen as an important enabler of business success.

In order to meet the objectives of customer satisfaction and process improvement it would be expected that an organisation would have in place mechanisms to encourage employees both to strive for continuous improvement and to pursue life-long learning. In the next section, discussion will focus on the form and extent of organisational learning mechanisms to support continuous improvement.

9.5 RQ 2 - What are the characteristics of the organisational learning mechanisms used by quality-focused organisations?

As noted in Section 9.4, organisations are adopting quality as a means of surviving in a competitive business environment. However, the success of the quality program is dependent on an organisation's ability to learn, to absorb, to adapt and to apply conceptual changes and integrate them throughout the organisation (Terziovski et al., 2000). Therefore, organisational learning should be integral to the achievement of the desired quality outcomes. As discussed in Section 4.4, to facilitate learning an organisation will need to employ organisational learning mechanisms to "operationalise" learning to cope with the ever-increasing complexity of the environment. The discussion in this section examines the form and extent of OLMs, and is structured as follows:

- Section 9.5.1 - The importance of learning to the organisation; and
- Section 9.5.2 - Organisational Learning Mechanisms;
 - Section 9.5.2.1 – Knowledge Management Practices;
 - Section 9.5.2.2 – Employee Development System; and
 - Section 9.5.2.3 – Performance Measurement System.

9.5.1 The importance of learning to the organisation

The majority of respondents (87%) considers that continuous learning is valued in their organisation. This is considered to be an important first step if organisations are to survive in a competitive environment (Popper and Lipshitz, 1998). This is supported by 93.4% of respondents noting the importance for their organisation to be adaptable to change in the business environment.

However, potential barriers were identified that may affect the learning potential and inhibit innovation and creative thinking for some organisations. 49.1% of respondents agree that there is a view in their organisation that there is only one best way. This may discourage employees from looking for alternatives to current work practices and thus not engage in double-loop learning. On the surface, respondents' organisations appear to value the contribution of employees, however, only a bare majority of respondents (51.7%) considers that "what gets said gets done" and only 50.9% agree that operational planning involves employees.

9.5.2 Overview of organisational learning mechanisms

Learning is facilitated by organisational learning mechanisms. If learning were valued in an organisation it would be expected that practices and procedures would be structured as organisational learning mechanisms to support and encourage the learning culture and thereby support continuous improvement. In this study, the practices and procedures specifically examined were the knowledge management practices; employee development system and performance measurement system. An organisation's learning potential will be influenced by the philosophy behind the development of these systems and the system characteristics chosen by an organisation. Each system is now discussed.

9.5.2.1 Knowledge management practices

Improving actions through better knowledge and understanding supports continuous improvement (Fiol and Lyles, 1985; Miller, 1996). Therefore, employees will need to acquire knowledge to make decisions and influence others in the organisation in order to improve performance. Overall, the findings imply that the majority of respondents'

organisations have created an environment that encourages information acquisition and dissemination. However, on further examination of the practices it is questioned whether this is, in fact, the case for many organisations. Following is a discussion of knowledge management practices in relation to information acquisition, information storage, information sharing and information dissemination.

Information acquisition

An organisation is able to acquire information either internally or externally. The findings indicate that respondents' organisations have a preference for information generated internally. The responses show that new ideas are encouraged (93.5% of respondents). However, whether this is fully supported in practice is questionable as only 58.5% of respondents note that good ideas are recorded for a later date and only 64.5% note the importance of employee suggestion schemes. When a skill or knowledge gap is identified the majority of respondents (72.8%) agree that this influences their organisation's recruitment strategy. The use of external consultants as a source of knowledge is limited as a minority of respondents note the use of external consultants in their organisation to assist in either strategic (32.9%) or operational (20.2%) problem solving.

The preference for internally acquired information may be influenced by the knowledge base currently held within individual respondent organisations. The majority of respondents (76.9%) agree that employee turnover is low in their organisation, which would enable the knowledge and experience of the individual to be retained by the organisation. The stability of the work force may explain why only 40.2% of respondents agree that employees retrieve archived information in contrast to 77.9% of respondents who note that employees are aware of how to access the information they need.

Information storage

The majority of respondents (89.7%) note the importance of retaining knowledge within the business. This is evidenced by 81.5% of respondents who agree that archival systems are present in their organisations. However, only 58.9% of respondents' note that their organisation is able to capture the knowledge held by individual employees and, as noted

earlier, only 58.5% of respondents agree that their organisation records good ideas. However, once again such practices may be influenced by the relative stability of the work force in respondents' organisations.

Information sharing and information dissemination

The majority of respondents (86.2%) considers information sharing is encouraged. 72.6% of respondents agree that employees share information and 70.4% of respondents agree that managers and employees discuss issues of cost reduction openly and constructively. However, inter-departmental communication about work issues is common for only 67.9% of respondent organisations, and only 64.9% of respondents agree that disclosure of information is encouraged.

The majority of respondents (85.1%) agrees that regular meetings are held to disseminate information. However, only 67.8% agree that such meetings enable management and employees to share experiences and progress on projects, best practices, successes and failures. The majority of respondents (79.5%) agrees that reports are available to assess operational quality initiatives. However, only 64.6% of respondents agree that the reports are adaptable to changes in performance measures.

9.5.2.2 Employee development

The majority of respondents (82.7%) note their organisation's commitment to building expertise in-house. This suggests that the majority of respondents' organisations has a preference to generate knowledge in-house and is supported by the earlier discussion in Section 9.5.2.1. This is encouraged by management who advocate that employees should work smarter not harder (85% of respondents) and, engage in training activities (93.2% of respondents). Employee skill development is important as 70.7% of respondents note that employees are given decision-making responsibilities to deal with problems relating to their specific work activities

The importance of employee training to assist continuous improvement efforts is noted by 93.2% of respondents. An investment in training will favour the acquisition and

generation of new knowledge and skills, as well as the degree of openness to new ideas (Gomez et al., 2004).

However, despite 82.7% of respondents noting their organisation's commitment to building expertise in-house a number of factors were highlighted that could be barriers to learning in some of the respondents' organisations. Only 57.9% of respondents note that their organisation rewards employees for learning new skills. Similar response rates were noted for employee training in teamwork (58.9% of respondents); employee training in problem solving (55.2% of respondents); use of cross-training within the organisation (56.9% of respondents); and use of mentoring schemes (49.1%). As noted by Abraham et al. (1999) and Dunphy and Stace (1990) unless management encourages learning it will not be realised.

Learning style

The learning style of respondents' organisations supports both single-loop and double-loop learning. Single-loop learning is encouraged in the majority of respondents' organisations by practices such as employees reviewing both current work practices (84.5% of respondents) and operating standards (80.2% of respondents). The majority of respondents' organisations promotes double-loop learning by encouraging employees to explore alternatives (74.2% of respondents) and by giving employees decision-making responsibilities to deal with problems relating to specific work activities (70.7% of respondents).

9.5.2.3 Performance measurement system

The use of a monitoring and measurement system works as a key enabler to encourage improvement (Bessant and Francis, 1999). The majority of respondents (80.0%) agrees that all employees in their organisation are made aware of the performance measurements which will enable employees to link their actions with their organisation's strategies.

Following is an analysis of the performance measurement system in relation to its link to the strategic plan and operational activities, goal setting, characteristics of performance goals and performance feedback features.

Link with strategy

It would be expected that the performance measurement system would be structured to encourage employees to meet the objectives identified earlier in Section 9.4 of meeting customer needs and improving business processes. Importantly, the majority of respondents agrees that key performance indicators (KPIs) are developed as an output of the strategic planning process (89.2% of respondents) and that the most important factors influencing the development of the KPIs are customer satisfaction and cost efficiency. This indicates that KPIs are in line with the strategic objectives.

Link with operational activities

81.5% of respondents agree that the KPIs can be cascaded down to operational goals. However, whether the operational goals support the quality goals is in question as only 26.7% of respondents note that their organisation does not have problems converting quality goals to operational goals. The inability to translate the quality goals can lead to potential problems with the quality management program (Krishnan et al., 1993).

Goal setting

To encourage employee “ownership” of performance goals, 73.3% of respondents agree that employee involvement in goal setting is important. However, the use of multi-disciplined teams is noted by a minority of respondents (42.2%), and environmental scanning is not widely used by respondent organisations (52.2% of respondents agree) to assist in goal setting.

Characteristics of performance goals

The characteristics of the performance goals will assist in determining whether the performance measurement system acts as a learning system to encourage continuous

improvement. However, an analysis of the findings raises doubts as to whether the performance measurement system has been developed to encourage this outcome.

Only 65.2% of respondents agree that the performance goals reflect the importance of the quality improvement activities and only 68.2% note that the performance goals encourage employees to work towards quality goals. The majority of respondents (73.3%) consider that the performance measures are clear and consistent, yet it is questioned whether a response rate of less than 100.0% is acceptable given the importance of performance goals to direct employee action.

In Section 9.4.1 it was noted that 93.4% of respondents rate as important their organisation being adaptable to changes in the business environment, yet only 55.7% of respondents note that performance measures are frequently revised to adapt to changes in operating conditions.

The motivational aspects of performance goals are questioned as barriers identified suggest a number of respondents' organisations are not using the performance measurement system effectively to encourage and support learning. In fact, the minority of respondents (48.9%) considers their organisation makes use of performance measures to modify employee behaviour. Whether a cooperative work environment is encouraged is also unclear. Only a bare majority of respondents considers the performance goals encourage cooperation and interaction between employees (56.5% of respondents) or encourage employees to explore new ways of doing their jobs (49.0% of respondents) or promote dialogue and debate among employees (44.5% of respondents). The minority of respondents (41.6%) uses stretch goals to motivate employees to improve their work performance.

Such barriers could also have an impact on the learning style encouraged in the organisation and impede double-loop learning. This will have a negative impact on continuous improvements at the operational level.

Performance feedback

The majority of respondents notes that performance feedback is important for investigating problem areas (84.8%). However, only 60% of respondents agree that feedback enables instigation of rapid corrective action and 60% agree employees receive regular appraisal and feedback.

9.6 RQ 3 - What are the characteristics of the organisational learning mechanisms favoured by organisations with a successful quality program?

The focus of discussion in this section is on the key findings in Chapter 8 in which the differences in the characteristics of OLMs between the respondent groups at either end of the success continuum were discussed. The two extreme groups, determined by responses to Question 7, are respondents who rate their organisation's quality effort as having "exceeded expectations" (respondent group E) and those who rate it as "fell short of expectations" (respondent group F). The discussion that follows highlights the variables that discriminate respondent group E.

9.6.1 Organisational characteristics

Respondent group E organisations have been more successful at embedding quality into the organisation's culture. Strong management support and management who view processes as more important than results have achieved this. The leadership displayed by management has led to employees believing that quality is their responsibility. An organisational environment of "what gets said gets done" has further supported this.

9.6.2 Knowledge management practices

Respondent group E organisations make use of regular briefings to enable management and employees to share experiences and progress on projects, best practices, success and failure. This is a result of respondent group E rating more highly the value their organisations place on learning from experience and having an organisation culture that encourages ease of communication.

9.6.3 Employee development

Respondent group E organisations encourage employees to learn by rewarding them for learning new skills. Respondent group E rate more highly the use of employee teams to tackle problems, which should enable the sharing of experience and knowledge. Importantly it is more likely that respondent group E organisations will train employees to undertake their problem-solving role.

9.6.4 Performance measurement system

Respondent group E organisations have developed a performance measurement system that encourages employees in their work effort. Performance goals are clear and consistent and are more focused on customer satisfaction. The encouragement of employees is seen by the importance placed on their involvement in the setting of goals and by the receipt of regular appraisal and feedback about their work performance. The feedback gained from assessing performance against target has enabled respondent group E organisations to instigate rapid corrective action.

Respondent group E rate higher on all attributes in line with the characteristics of an organisation that has moved into the fifth quality dimension of continuous improvement (Kaye and Dyason, 1995). The predictor variables output from the discriminant analysis support this and further suggest that one of the keys to a successful quality program is developing the “right mind set” within the organisations as suggested by Yong and Wilkinson (2001). This requires a shift in the responsibility of producing quality work from a functional department towards the individual employee, also to have OLMs that support the continuous improvement endeavours. An important predictor variable that differentiated respondent group E was the embedding of quality into the organisation’s culture. This implies that respondent group E organisations have been able to build a shared vision within the organisation and in so doing develop a systems-thinking approach to activities.

Table 9.1 relates the predictor variables to Senge’s (1990) “prerequisites” for establishing organisational learning. It can be seen that respondent group E considers their

organisations have implemented practices that have facilitated learning and have lead to superior performance. These assist in explaining why more success is being achieved and why higher-level learning outcomes will be possible for respondent group E organisations.

Table 9.1 – Variables that discriminate respondent group E against Senge’s attributes for organisational learning

<i>Senge’s Attributes</i>	<i>Variables that discriminate respondent group E</i>
<i>Personal mastery</i>	<ul style="list-style-type: none"> • Employees trained in problem solving • Employees are rewarded for learning new skills • Employees focused on improving existing capabilities • Employees encouraged to work smarter not harder
<i>Mental models</i>	<ul style="list-style-type: none"> • Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures • learning from experience shared • organisational structure encourages ease of communication • employees receive regular feedback about their work performance • performance feedback stimulates action
<i>Building a shared vision</i>	<ul style="list-style-type: none"> • management commitment • espoused theories equal the theories in use – that is “what gets said gets done” • employee involvement in goal setting • performance measurement system linked to strategic plan • clear and consistent performance measures • all within the organisation knows what quality means
<i>Team learning</i>	<ul style="list-style-type: none"> • use of employee teams to tackle problem-solving

9.7 Inventory of attributes for a successful quality program

Therefore, respondents who perceive their organisation’s quality program as “exceeded expectations” consider that their organisation has a culture that encourages both continuous improvement and learning. It could be argued that such organisations have become a learning community, whereby, as the individuals learn, the organisation learns

its way forward. This has been achieved by a number of facilitating factors, and these are discussed next.

- Respondents note the *strong management commitment* in their organisations. It appears that a transformational management approach is taken in respondent group E organisations due to the creation of an environment where employees are encouraged to question work practices, to look for opportunities for improvement and to share experiences.
- *Both single-loop and double-loop learning are encouraged* as employees are more proactive than reactive.
- The structure of the *performance measurement system also promotes double-loop learning*.
- The performance measurement system acts as an integrated OLM (as it involves individuals who are directly part of the work activity) and a dual purpose OLM (as it not only informs current work activity but also assists with future planning). As suggested by Popper and Lipshitz (1998) *higher-level learning, is more likely* when all members of the organisation are continually engaged in learning, helping others to learn and sharing their learning with others.
- Employees are *rewarded for learning new skills*
- *Cooperation between employees* is encouraged with the *use of teams* to tackle problems and the holding of *regular briefings for reflection*.
- The *performance measurement system is aligned to the strategic objectives* which tend to have a customer focus.

- Employee “ownership” of the performance measures is encouraged by *participation in goal setting*.
- In line with comments by Bessant and Francis (1999) respondent group E organisations appear to have developed a performance measurement system to support continuous improvement. *Goals have been established to monitor the rate and direction of improvement*, and it is carried out by those directly involved in the continuous improvement process.
- *Continuous improvement data are both designed and recorded by groups and individuals* and this involvement is critical in embedding the behaviour necessary to support continuous improvement.

9.8 Limitations

There are a number of limitations to this study that need to be noted. As the methodology of this study focused on the postal survey there will always be inherent problems associated with this type of research. Notably, the issues of the adequacy of the response rate, whether the questions are interpreted in the way intended, whether the intended recipient responds to the questionnaire, whether there are sufficient questions to expose the information sought. In this study pilot tests of the questionnaire were conducted to increase the clarity for the respondents and non-response testing indicated that there was no significant difference in responses between early and late responders.

9.9 Opportunities for future research

Several areas for future research have been identified from this study.

- A case approach. This would involve interviews with employees of organisations that perceive their organisation’s quality program to be either successful or unsuccessful to gather more rich data to understand the organisational attributes that enable organisations to have quality expectations met.

- Consideration of how an organisation's size and its industry group effects the adoption of organisational learning mechanisms to support continuous improvement. In addition, whether these influence the form and extent of organizational learning mechanisms.

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Appendix 1.0 – Questionnaire

11th November 2003

Dear Sir/ Madam

I am working towards a Doctor of Philosophy degree through the School of Accounting and Finance at Victoria University. My research project is an investigation into quality management practices and the characteristics of the management control systems to support continuous improvement.

Your organisation has been chosen to participate in this study due to its success in achieving ISO9000 certification. This certification demonstrates your organisation's commitment to integrating quality into its operations. Your organisation was randomly selected from the publicly available, online JAS-ANZ database of certified organisations (www.jas-anz.com.au). The survey has been directed to the Quality Manager and Finance Manager of each organisation.

The research project will examine the features of the management control systems used by quality-focused organisations. In particular, the analysis will endeavor to identify whether organisational learning mechanisms are in place to support and encourage continuous improvement.

I invite you to be a participant in this study. Your contribution by way of completing the attached survey would be greatly appreciated. The completion of the survey instrument should take no more than thirty minutes of your time. I assure you that all responses will be anonymous and that any data will only be used in aggregate form. The return of the survey instrument will be your consent to participate in this study.

Thank you in anticipation of your involvement in the study.

Yours sincerely,



Judy Oliver
Research Student

Any queries about your participation in this project may be directed to the Research Supervisor Dr. Bob Clift (phone 96884333 or email bob.clift@vu.edu.au) or the research student Judy Oliver (phone 96884637 or email judy.oliver@vu.edu.au). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MCMC, Melbourne, 8001 (telephone no: 03-9688 4710).

1. The organisation has the following number of employees:

- | | |
|--------------------------|-----------------------|
| <input type="checkbox"/> | a. Under 50 |
| <input type="checkbox"/> | b. Between 51 – 100 |
| <input type="checkbox"/> | c. Between 101 – 500 |
| <input type="checkbox"/> | d. Between 501 – 1000 |
| <input type="checkbox"/> | e. over 1000 |

2. Which industry group does your organisation belong to?

- | | |
|---|---------------------------------|
| <input type="checkbox"/> | a. Chemical |
| <input type="checkbox"/> | b. Construction and Development |
| <input type="checkbox"/> | c. Food and Household |
| <input type="checkbox"/> | d. Industrial |
| <input type="checkbox"/> | e. Mining |
| <input type="checkbox"/> | f. Oil/Gas/Petroleum |
| <input type="checkbox"/> | g. Transport |
| <input type="checkbox"/> | h. Tourism |
| Other please specify: <input type="text"/> | |

3. What industry type best describes your organisation?

- | | |
|---|-----------------------------|
| <input type="checkbox"/> | a. Manufacturing/Processing |
| <input type="checkbox"/> | b. Service |
| <input type="checkbox"/> | c. Retail |
| Other please specify: <input type="text"/> | |

4. How would you describe your organisation's competitive environment?

- | | |
|---|------------------------------|
| <input type="checkbox"/> | a. No competition – monopoly |
| <input type="checkbox"/> | b. Competitive |
| <input type="checkbox"/> | c. Very Competitive |
| Other please specify: <input type="text"/> | |

5. How would you describe your organisation's competitive edge?

- | | |
|---|---|
| <input type="checkbox"/> | a. Product/service differentiation |
| <input type="checkbox"/> | b. Higher quality than competitors |
| <input type="checkbox"/> | c. Flexible in responding to customer needs |
| <input type="checkbox"/> | d. Low cost |
| Other please specify: <input type="text"/> | |

6. How long has a quality approach been important for your organisation?

- | | |
|--------------------------|-----------------------|
| <input type="checkbox"/> | a. Less than 5 years |
| <input type="checkbox"/> | b. 5 – 10 years |
| <input type="checkbox"/> | c. More than 10 years |

7. How would you rate the success of your organisation's overall quality initiative?

- | | |
|--------------------------|-------------------------------------|
| <input type="checkbox"/> | a. Exceeded expectations |
| <input type="checkbox"/> | b. Met expectations |
| <input type="checkbox"/> | c. Fell short of expectations |
| <input type="checkbox"/> | d. Unable to determine at this time |

7a. If your answer above was "fell short of expectations" or "unable to determine at this time" can you identify the factors affecting the success of the quality initiative.

8. The focus of the quality initiative for your organisation is:

- | | |
|--------------------------|---|
| <input type="checkbox"/> | a. Organisation wide |
| <input type="checkbox"/> | b. Particular segment – division/subsidiary |
| <input type="checkbox"/> | c. Individual work unit |
| <input type="checkbox"/> | d. Individual project based |
| <input type="checkbox"/> | e. All of above |

9. The quality initiatives in your organisation focus on the achievement of : (more than one option can be selected)

- | | |
|--------------------------|--|
| <input type="checkbox"/> | a. Short term projects (less than 12 months) linked to strategic plan |
| <input type="checkbox"/> | b. Short term projects (less than 12 months) <i>not</i> linked to strategic plan |
| <input type="checkbox"/> | c. Long term projects (more than 12months) linked to strategic plan |
| <input type="checkbox"/> | d. Long term projects (more than 12 months) <i>not</i> linked to strategic plan |

10. The quality of your organisation's product/service compared to competitors is:

- | | |
|--------------------------|-------------|
| <input type="checkbox"/> | a. Superior |
| <input type="checkbox"/> | b. Similar |
| <input type="checkbox"/> | c. Inferior |

11. Please *rate the importance*, in your opinion, of the following factors in *the development of the Key Performance Indicators* for your organisation.

	Not Important	Of little Importance	Moderately Important	Very Important	Extremely Important
1. Customer satisfaction	<input type="checkbox"/>				
2. Return on Assets	<input type="checkbox"/>				
3. Share Price	<input type="checkbox"/>				
4. Market Share	<input type="checkbox"/>				
5. Profit	<input type="checkbox"/>				
6. Revenue Growth	<input type="checkbox"/>				
7. Cost Efficiency	<input type="checkbox"/>				

Others (please specify):

12. In your opinion please *rate the importance* of the following factors in your organisation's *continuing quality approach* to its operations.

	Not Important	Of little Importance	Moderately Important	Very Important	Extremely Important
1. To reduce customer complaints	<input type="checkbox"/>				
2. To increase customer satisfaction	<input type="checkbox"/>				
3. To gain a competitive advantage	<input type="checkbox"/>				
4. To increase market share	<input type="checkbox"/>				
5. To promote brand loyalty	<input type="checkbox"/>				
6. To satisfy customer contractual requirements	<input type="checkbox"/>				
7. For business to survive	<input type="checkbox"/>				
8. To be adaptable to changes in the business environment	<input type="checkbox"/>				
9. To maintain ISO9000 certification	<input type="checkbox"/>				
10. To minimise costs	<input type="checkbox"/>				
11. To be innovative in product design/service delivery	<input type="checkbox"/>				
12. To improve internal processes	<input type="checkbox"/>				
13. To achieve higher standards of performance	<input type="checkbox"/>				
14. To increase organisation's profits	<input type="checkbox"/>				
<i>Other (please specify):</i>					

13. Please rate *your level of agreement* with the following statements regarding *information dissemination* within your organisation.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. "Cost of Quality" reports are important to measure quality activities	<input type="checkbox"/>				
2. Focus of reporting is on "Exception Reports" which highlight deviations from the norm	<input type="checkbox"/>				
3. Specialised reports can be obtained to suit specific information needs of employees to assist with their assigned tasks	<input type="checkbox"/>				
4. Standard (routine) reports are the primary reporting tool	<input type="checkbox"/>				
5. Technology constraints restrict the ability to report information in a format required for operational personnel	<input type="checkbox"/>				
6. Knowledge about organisational activities is held by employees and the organisation is unable to capture this in formal reports	<input type="checkbox"/>				
7. Regular meetings are held for information dissemination	<input type="checkbox"/>				
8. The organisation places more reliance on electronic communication than hardcopy reports	<input type="checkbox"/>				
9. Retention of knowledge about business activities is important to management	<input type="checkbox"/>				
10. Archival systems are in place to capture knowledge regarding business activities	<input type="checkbox"/>				
11. Current employees experience difficulty with the interpretation of archival data	<input type="checkbox"/>				

14. What is your level of agreement to the following general statements regarding quality and your organisation?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Our quality program has increased our revenue	<input type="checkbox"/>				
2. Our quality program has improved our competitive position	<input type="checkbox"/>				
3. Our financial results have been excellent	<input type="checkbox"/>				
4. Our quality program has improved our performance in general	<input type="checkbox"/>				
5. Our quality program has had a negative impact on our profitability	<input type="checkbox"/>				
6. We could have done better (i.e. obtained better financial results) without a quality program	<input type="checkbox"/>				
7. Management view quality improvement as the way to increase profits	<input type="checkbox"/>				
8. Management ensure that employees are aware of what quality means to the organisation	<input type="checkbox"/>				
9. Top management are committed to the quality program	<input type="checkbox"/>				
10. Quality is embedded into the organisations culture	<input type="checkbox"/>				
11. Continuous improvement is an important goal for the organisation	<input type="checkbox"/>				
12. The organisation has applied or intends to apply for an Australian Business Excellence Award.	<input type="checkbox"/>				
13. Continuous improvement is an important when developing the strategic plan	<input type="checkbox"/>				
14. Quality is centrally coordinated	<input type="checkbox"/>				
15. Management identify that due to uncertain operating conditions mistakes may occur	<input type="checkbox"/>				
16. The organisation has a non-standard operating environment whereby employees need to explore/innovate to find ways to complete their assigned tasks	<input type="checkbox"/>				
17. Results are more important than processes	<input type="checkbox"/>				
18. The organisation is oriented towards short-term quick fixes, as opposed to systematic problem solving	<input type="checkbox"/>				
19. Freedom exists to break the rules as a form of inquiry and curiosity	<input type="checkbox"/>				
20. Senior personnel are members of quality-related committees	<input type="checkbox"/>				
21. Continuous improvement activities are monitored by quality steering committees	<input type="checkbox"/>				
22. Continuous improvement activities are part of normal operational control	<input type="checkbox"/>				
23. Continuous improvement activities are undertaken by project specific teams	<input type="checkbox"/>				
24. Cross-functional personnel form the membership of committees addressing quality issues	<input type="checkbox"/>				
25. The organisation works closely with suppliers to improve each other's processes	<input type="checkbox"/>				
26. Quality is our number one criterion in selecting suppliers	<input type="checkbox"/>				
27. Customers give feedback on quality and delivery performance	<input type="checkbox"/>				

15. What is your level of agreement with the following statements in relation to the employees in your organisation?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Employees are encouraged to question current practices and find new ways of doing things	<input type="checkbox"/>				
2. Employees are focused on improving existing capabilities	<input type="checkbox"/>				
3. All employees believe that quality is their responsibility	<input type="checkbox"/>				
4. Employees are rewarded for learning new skills	<input type="checkbox"/>				
5. Employees (at all levels) have information about performance available to them	<input type="checkbox"/>				
6. Employees share information	<input type="checkbox"/>				
7. Employees retrieve archived information when making decisions	<input type="checkbox"/>				
8. When employees need specific information, they know who will have it	<input type="checkbox"/>				
9. Employees engage in ongoing open debate about work practices	<input type="checkbox"/>				
10. Employees are encouraged to work smarter not harder	<input type="checkbox"/>				
11. Employee training is important to continuous improvement efforts	<input type="checkbox"/>				
12. Employee suggestions schemes are important for new ideas	<input type="checkbox"/>				
13. Employee turnover is low	<input type="checkbox"/>				
14. Mentoring schemes are used to assist employees	<input type="checkbox"/>				
15. External organisations are engaged for employee training	<input type="checkbox"/>				
16. Management assign employees to other parts of the organisation for cross training	<input type="checkbox"/>				
17. Employees are trained in teamwork	<input type="checkbox"/>				
18. Employees are trained in problem solving	<input type="checkbox"/>				
19. Employee teams tackle problems	<input type="checkbox"/>				
20. Managers and employees discuss issues of cost reduction openly and constructively	<input type="checkbox"/>				
21. Employee flexibility, multi-skilling and training are actively used to support improved performance	<input type="checkbox"/>				
22. Employees are empowered to make decisions to enable them to immediately respond to problems	<input type="checkbox"/>				
23. Inter-departmental communication between employees in relation to work issues is common	<input type="checkbox"/>				
24. Employees receive regular appraisal and feedback about their work performance	<input type="checkbox"/>				
25. Employees are encouraged to initiate change and take risks rather than just focus on the status quo	<input type="checkbox"/>				

16. Please indicate whether the following components are included in the remuneration for each employee group.

	Senior Management	Middle Management	Operative Personnel
1. Base wage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Financial incentive based on financial performance measures only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Financial incentive based on non-financial performance measures only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Financial incentive based on combination of both financial and non-financial measures of performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Financial incentive based on achievement of quality targets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Profit sharing component	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Please indicate whether the following features are incorporated into the performance assessment to determine the remuneration for each employee group.

	Senior Management	Middle Management	Operative Personnel
1. Incentive component based on individual performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Incentive component based on team performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Incentive component based on both individual and team effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Incentive component focusing on results only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Incentive component recognising the effort taken by employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. What is your level of agreement with the following statements in relation to your organisation?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Operational planning only involves managers	<input type="checkbox"/>				
2. All employees are involved in developing the strategic plan	<input type="checkbox"/>				
3. The organisation is committed to building expertise in-house	<input type="checkbox"/>				
4. Continuous learning is valued in the organisation	<input type="checkbox"/>				
5. New ideas are encouraged	<input type="checkbox"/>				
6. Regular team meetings are held to discuss operational activities	<input type="checkbox"/>				
7. The organisation environment is such that what gets said gets done	<input type="checkbox"/>				
8. Managers support staff not by punishing mistakes but by encouraging staff to learn	<input type="checkbox"/>				
9. Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, successes and failures	<input type="checkbox"/>				
10. Formal reports (either paper or online) are available that aim to continuously assess how the organisation and managers are doing in relation to plans	<input type="checkbox"/>				
11. Standard operating procedures are reviewed regularly	<input type="checkbox"/>				
12. There is a view in the organisation that there is only one best way	<input type="checkbox"/>				
13. Benchmarking (both internal and external) is used to assess performance	<input type="checkbox"/>				
14. The organisational structure is flat	<input type="checkbox"/>				
15. The organisational structure encourages ease of communication	<input type="checkbox"/>				
16. Recruitment focuses on hiring new employees with the skills and knowledge to close performance gaps	<input type="checkbox"/>				
17. Employee attendance at external seminars is encouraged	<input type="checkbox"/>				
18. External consultants are used for strategic problem solving	<input type="checkbox"/>				
19. External consultants are used for operational problem solving	<input type="checkbox"/>				
20. Sharing of information and knowledge is encouraged	<input type="checkbox"/>				
21. The organisation stores detailed information for guiding operations	<input type="checkbox"/>				
22. Disclosure of information is encouraged	<input type="checkbox"/>				
23. Learning from experience is shared	<input type="checkbox"/>				
24. Good ideas get recorded for a later date	<input type="checkbox"/>				
25. Top management integrate information from different organisational units	<input type="checkbox"/>				

19. What is your level of agreement with the following statements in relation to performance measures for your organisation?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Key Performance Indicators (KPIs) are identified as part of the strategic planning process	<input type="checkbox"/>				
2. Quality goals are an output of the strategic planning process	<input type="checkbox"/>				
3. Operational performance measures link operational activities to the strategic plan	<input type="checkbox"/>				
4. All appropriate management and employees are made aware of the performance measures to encourage on-going improvement	<input type="checkbox"/>				
5. Sub-unit performance measures are cost focused	<input type="checkbox"/>				
6. Performance measures are frequently revised to adapt to changes in operating conditions	<input type="checkbox"/>				
7. Performance measures encourage employees to work towards quality goals	<input type="checkbox"/>				
8. The feedback gained from assessing performance against target enables the instigation of rapid corrective action	<input type="checkbox"/>				
9. Reports can be adapted to changes in performance measures	<input type="checkbox"/>				
10. Multi-disciplined teams develop both financial and non-financial targets	<input type="checkbox"/>				
11. Financial budgets are important for operational control	<input type="checkbox"/>				
12. Employee involvement is important in goal setting	<input type="checkbox"/>				
13. Performance goals are developed that are both clear and consistent	<input type="checkbox"/>				
14. Performance goals are developed that reflect the importance of the quality improvement activities	<input type="checkbox"/>				
15. Performance goals are developed to promote dialogue and debate among employees about operational activities	<input type="checkbox"/>				
16. Performance goals are developed to encourage employees to explore new ways of doing their jobs	<input type="checkbox"/>				
17. Performance goals focus only on output	<input type="checkbox"/>				
18. Stretch goals are used to encourage employees to explore new ways of performing their job	<input type="checkbox"/>				
19. Performance goals focus mainly on non-financial measures of performance	<input type="checkbox"/>				
20. Employees performance is measured against standards	<input type="checkbox"/>				
21. Performance measures are used to modify employee behaviour	<input type="checkbox"/>				
22. Performance goals recognise uncertain operating conditions and recognise that employees need to implement trial and error practices	<input type="checkbox"/>				
23. Performance goals encourage cooperation and interaction between employees	<input type="checkbox"/>				
24. A balanced scorecard approach is used for performance evaluation	<input type="checkbox"/>				
25. Problems are experienced converting quality goals into performance targets	<input type="checkbox"/>				
26. Performance feedback is important for investigating problem areas	<input type="checkbox"/>				
27. Benchmarking (both internal and external) is used to assist with the development of performance targets	<input type="checkbox"/>				
28. Quality goals are able to be translated into operational goals	<input type="checkbox"/>				

20. Please indicate whether performance reports on business activities have the following characteristics:

	Yes	No
1. Performance reports on business activities are available throughout the day	<input type="checkbox"/>	<input type="checkbox"/>
1. Performance reports on business activities are available daily	<input type="checkbox"/>	<input type="checkbox"/>
2. Performance reports on business activities are available weekly	<input type="checkbox"/>	<input type="checkbox"/>
3. Performance reports on business activities are available monthly	<input type="checkbox"/>	<input type="checkbox"/>
4. Performance reports on business activities are available on demand	<input type="checkbox"/>	<input type="checkbox"/>
5. Performance reports are available to managers only	<input type="checkbox"/>	<input type="checkbox"/>
6. Performance reports are available to assess strategic quality initiatives	<input type="checkbox"/>	<input type="checkbox"/>
7. Performance reports are available to assess operational quality initiatives	<input type="checkbox"/>	<input type="checkbox"/>
8. Performance reports include both financial and non-financial information	<input type="checkbox"/>	<input type="checkbox"/>

21. Please indicate your main area of responsibility in the organisation.

<input type="checkbox"/>	Quality management
<input type="checkbox"/>	Financial management

22. Please indicate your years of experience in business. _____ years

23. Please state your gender: 1. Female 2. Male

24. What age bracket are you in?

<input type="checkbox"/>	Under 30 years
<input type="checkbox"/>	30 – 40 years
<input type="checkbox"/>	40 – 50 years
<input type="checkbox"/>	50 years +

25. What is your highest level of education?

<input type="checkbox"/>	Secondary School
<input type="checkbox"/>	Undergraduate
<input type="checkbox"/>	Postgraduate
<input type="checkbox"/>	Professional

26. Do you have any comments in relation to your organisation's management control systems to monitor and assess the continuous improvement activities?

.....

.....

.....

Thank you for your participation in this study
Please return your completed survey in the reply-paid envelope provided.

**Appendix 2.0 –
Summary of tests to identify significant relationships ($p \leq .10$) between
survey variables and the success of the quality program - Chapter 7**

Question	Organisational Characteristics	P =
1	Organisation Size	.051
10	Quality of product/service compared with competitors	.015
14.10	Quality is embedded into the organisations culture	.000
14.12	The organisation has applied or intends to apply for an Australian Business Excellence Award.	.001
14.26	Quality is our number one criterion in selecting suppliers	.033
19.1	.Key Performance Indicators (KPIs) are identified as part of the strategic planning process	.000
19.2	Quality Goals are an output of the strategic planning process	.000
	Factors motivating quality approach to operations	
12.2	To increase customer satisfaction	.063
12.1	To reduce customer complaints	.092
12.8	To be adaptable to changes in the business environment	.034
12.9	ISO9000 certification	.004
	Outcome of Quality Program	
14.4	Overall improvement in performance	.064
14.1	Increased revenue	.042
	Factors influencing the development of KPIs	
11.1	Customer Satisfaction	.072
11.4	Revenue Growth	.034
	Link between KPIs and Operational Measures	
19.3	Operational performance measures link operational activities to the strategic plan	.000
19.28	Quality goals are able to be translated into operational goals	.000
	Organisational Values	
14.11	Continuous improvement is an important goal	.001
14.13	Continuous improvement is important when developing the strategic plan	.010
18.4	Continuous learning is valued in the organisation	.003
	Learning Orientations	
18.7	The organisation environment is such that what gets said gets done	.000
18.15	The organisation structure encourages ease of communication	.056
	Factors encouraging Learning Style	
15.10	Employees are encouraged to work smarter not harder	.000
15.1	Employees are encouraged to question current practices and find new ways of doing things	.091
18.11	Standard Operating procedures are reviewed regularly	.001
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn	.000
15.2	Employees are focused on improving existing capabilities	.026
15.25	Employees are encourage to initiate change and take risks rather than just focus on the status quo	.081
	Management support of quality	
14.9	Top management is committed to the quality program	.000
14.8	Management ensure that employees are aware of what quality means to the organisation	.000

14.20	Senior personnel are members of quality related committees	.062
15.3	Employees believe that quality is their responsibility	.026
	Employee Education	
15.11	Employee training is important to continuous improvement efforts	.063
15.17	Employees are trained in teamwork	.005
15.4	Employees are rewarded for learning new skills	.001
15.18	Employees are trained in problem solving	.023
15.16	Management assign employees to other parts of the organisation for cross-training	.089
15.19	Employee teams tackle problems	.016
	Setting of Performance Goals	
19.4	All appropriate management and employees are made aware of the performance measures to encourage ongoing improvement	.000
19.12	Employee involvement in goal setting is important	.057
	Characteristics of performance goals	
19.13	Clear and consistent	.000
19.14	Reflect the importance of the quality improvement activities	.000
19.7	Encourage employees to work towards quality goals	.008
19.15	Promote dialogue and debate among employees about operational activities	.009
	Characteristics of performance feedback	
19.26	Feedback important for investigating problem areas	.104
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action	.000
15.24	Employees receive regular appraisal and feedback about their work performance	.013
	Characteristics of performance feedback	
18.5	New ideas are encouraged	.000
15.13	Employee turnover is low	.026
	Information Storage	
13.9	Retention of knowledge about business activities is important to management	.085
13.10	Archival systems are in place to capture knowledge regarding business activities	.097
	Information sharing	
18.23	Learning from experience is shared	.002
15.8	When employees need specific information they know who will have it	.014
15.6	Employees share information	.025
15.20	Managers and employees discuss issues of cost reduction openly and constructively	.027
	Information dissemination	
13.7	Regular meetings held to disseminate information	.001
18.6	Regular team meetings are held to discuss operational activities	.004
18.9	Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures	.001
14.23	Continuous improvement activities are undertaken by project specific teams	.057
13.4	Standard Reports	.021
13.3	Specialised Reports	.086
13.2	Exception Reports	.054
18.10	Formal reports are available that aim to continuously assess how the organisation and managers are doing in relation to plans	.001
13.1	Cost of Quality Reports	.040
	Performance reports	
20.7	To assess operational quality initiatives	.099
19.9	Adaptable to changes in performance measures	.001

Appendix 3.0
Summary of significant differences between means between Respondent Group E and Respondent Group F – Chapter 8

	<i>Organisational Characteristics</i>	<i>P=</i>
1	Size as measured by number of Employees	.016
10	Quality of product/service compared with competitors	.012
	<i>Attributes of quality management</i>	
14.10	Quality embedded in organisation culture	.000
14.26	Quality is the number one criterion in selecting suppliers	.062
	<i>Factors motivating quality</i>	
12.1	To reduce customer complaints	.027
12.2	To increase customer satisfaction	.055
12.11	To be innovative in product design/service delivery	.034
12.8	To be adaptable to changes in the business environment	.018
12.9	ISO9000 certification	.004
	<i>Outcome of Quality Program</i>	
14.1	Increased revenue	.012
14.2	Improvement in competitive position	.055
14.3	Excellent financial results	.011
	<i>Organisational Values</i>	
14.11	Continuous improvement is an important goal	.007
14.22	Continuous improvement activities are part of normal operational control	.009
14.13	Continuous improvement is important when developing the strategic plan	.002
	<i>Management and employee support of quality</i>	
14.9	Top management is committed to the quality program	.000
14.8	Management ensure that employees are aware of what quality means to the organisation	.000
14.17	Management view results more important than processes	.030
14.20	Senior Personnel are members of quality-related committees	.007
18.7	The organisation environment is such that what gets said gets done	.004
15.3	Employees believe that quality is their responsibility	.039
	<i>Learning Style</i>	
15.1	Employees are encouraged to question current practices and find new ways of doing things	.055
14.25	The organisation works closely with suppliers to improve each others processes	.060
15.22	Employees are empowered to make decisions to enable them to immediately respond to problems	.034
15.10	Employees are encouraged to work smarter not harder	.005
18.11	Standard Operating procedures are reviewed regularly	.000
15.2	Employees are focused in improving existing capabilities	.000
14.18	The organisation is oriented towards short-term quick fixes, as opposed to systematic problem solving	.029
18.8	Managers support staff not by punishing mistakes but by encouraging staff to learn	.010

<i>Employee Development</i>		
18.17	Employee attendance at external seminars is encouraged	.014
15.21	Employee flexibility, multi-skilling and training are actively used to support improvement activities	.014
15.17	Employees are trained in teamwork	.093
15.4	Employees are rewarded for learning new skills	.007
15.18	Employees are trained in problem solving	.002
15.14	Mentoring schemes are used to assist employees	.041
15.16	Management assign employees to other parts of the organisation for cross-training	.011
15.19	Employee teams tackle problems	.000
<i>Setting of Performance Goals</i>		
19.10	Multi-disciplined teams develop both financial and non-financial targets	.008
19.12	Employee involvement in goal setting is important	.000
19.4	All appropriate management and employees are made aware of the performance measures to encourage ongoing improvement	.003
<i>Key Performance Indicators</i>		
11.1	Customer satisfaction	.000
<i>Link between KPIs and operational activities</i>		
19.3	Operational performance measures link operational activities to the strategic plan	.007
19.28	Quality goals are able to be translated into operational goals	.002
<i>Characteristics of performance goals</i>		
19.13	Clear and consistent	.000
19.14	Reflect the importance of the quality improvement activities	.001
19.7	Encourage employees to work towards quality goals	.003
19.6	Performance measures are frequently revised to adapt to changes in operating conditions	.054
19.16	(Performance measures) encourage employees to explore new ways of doing their jobs	.002
19.15	Promote dialogue and debate among employees about operational activities	.081
<i>Characteristics of performance feedback</i>		
19.8	Feedback gained from assessing performance against target enables the instigation of rapid corrective action	.000
19.20	Employee performance is measured against standards	.052
15.24	Employees receive regular appraisal and feedback about their work performance	.001
<i>Information Acquisition</i>		
18.5	New ideas are encouraged	.000
15.13	Employee turnover is low	.026
<i>Information sharing</i>		
18.15	The organisation structure encourages ease of communication	.001
18.20	Sharing of information and knowledge is encouraged	.014
18.23	Learning from experience is shared	.000
15.8	When employees need specific information they know who will have it	.000
15.6	Employees share information	.002
15.23	Inter-departmental communication between employees in relation to work issues is common	.001

15.9	Employees engage in ongoing open debate about work practices	.010
18.22	Disclosure of information is encouraged	.057
15.7	Employees retrieve archived information when making decisions	.002
15.20	Managers and employees discuss issues of cost reduction openly and constructively	.000
	<i>Information dissemination</i>	
13.7	Regular meetings held to disseminate information	.001
18.6	Regular team meetings are held to discuss operational activities	.002
18.9	Regular briefings are held to enable management and employees to share experiences and progress on projects, best practices, success and failures	.000
19.11	Financial reports are important for operational control	.094
14.23	Continuous improvement activities are undertaken by project specific teams	.015
	<i>Information storage</i>	
13.10	Archival systems are in place to capture knowledge regarding business activities	.008
18.21	The organisation stores detailed information for guiding operations	.010
18.24	Good ideas are recorded for a later date	.007
13.6	Knowledge held by employees is unable to be captured in formal reports	.042
	<i>Characteristics of Performance reports</i>	
19.9	Adaptable to changes in performance measures	.019