Total Quality Management

in the

New Zealand Pipfruit Industry;

An exploratory study

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Over the years, quality processes developed by guilds were followed by quality end-inspections, quality control methods, quality assurance methods and Total Quality Management (TQM) systems. Quality Management has developed into a distinct direction in management thinking. There is substantial evidence that excellent companies use many elements of the Total Quality Management domain.

This document aims to explore several concepts and developments in TQM as they may apply to- and be applied in the NZ pipfruit industry. It further aims to identify areas within the industry where identified TQM principles should be considered as valuable and consolidates these into a number of recommendations. Recommendations are general in nature due to the limitations attached to this study. The difference between quality management for manufacturing and service industries is discussed. Fundamental principles are highlighted for exploration of application in the pipfruit industry.

There is practically no quality management literature about the pipfruit industry. The industry is different in that it deals with 'live' product and seasonal activity. The New Zealand pipfruit industry has been exposed to a number of volatile socio-economic changes in the last 15 years. The shape in which the industry emerged from these changes has not facilitated development of quality management processes.

A number of stakeholders are interviewed to understand what TQM aspects they use in the running of their organisations. Some of these represent more than one activity type as they are 'vertically integrated'. An additional survey of a wider group of stakeholders adds to understanding of TQM elements used in the pipfruit industry.

Results indicate that there is some understanding of TQM principles but that organisations typically have short-term results focus rather than strategic quality positions. The seasonality of the industry hinders investment into employees, particularly seasonal employees. Cross-functional thinking, continuous improvement and participative company culture are not dominant features in the industry.

The industry can find ways to improve its position by adopting a different fundamental thinking. Recommendations are made concerning strategy, people and culture. An

integrated model is introduced in an attempt to present structure to the quality workings within the industry.

This study shows that more work must be done to understand how TQM principles can be further developed to assist the NZ pipfruit industry and seasonal primary horticultural industries. Much benefit can be gained from advanced studies into the quality management within the pipfruit industry and horticultural seasonal industries.

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1. INTRODUCTION

This study investigates Total Quality Management in the New Zealand pipfruit industry. The study contributes to the field of quality management in the horticultural sector, an area poorly represented in quality science literature.

Total Quality Management (TQM) has been the subject of a substantial body of enquiry over the past thirty or more years. It is a management philosophy that has proven challenging to implement (Rao *et al*, 1996). Many authors (e.g. Harari, 1993 in Bounds *et al*, 1994, Inkson & Kolb, 2003, Murti, 2009) describe how TQM is not a panacea for ill-performing companies as often thought. TQM needs to be embraced by senior management as a fundamental philosophy and as a long-term strategy in order for it to result in sustainable benefits for the organisation.

Quality management itself has developed into a distinct paradigm in the school of management. TQM comes towards the end of a number of developments in quality thinking. Although often critically analysed, there is no question that excellent companies apply many elements of the Total Quality Management domain. TQM however cannot be universally implemented across organisations or industries.

The pipfruit industry presents challenges not commonly discussed in TQM literature. The industry is seasonal, labour intensive, and presents mixtures of production and service elements. The way in which the pipfruit industry operates is mostly the result of a twenty-five year period of historical developments (McKenna & Campbell, 1999). Particularly in the past fifteen years, the industry has had to adapt to change. If the industry, like other industries, was subjected to societal changes after the election of a Labour government in 1984 (Kelsey, 1997), this was only the beginning. The deregulation ten years ago created more uncertainty and instability. The current modus operandi may be difficult to understand as it is certainly not a conventional way of operating with conflicting supplier-customer relationships. This history has led to the way in which individual organisations within the industry and the industry as a whole operate.

Today, ten years after deregulation, the New Zealand pipfruit industry is under pressure to survive. The number of growers and packers has decreased dramatically in the last ten years. Importantly, the number of exporters increased dramatically over the same period

of time. Total planted area reduced to just above half of what it was ten years ago (Freshfacts, 2009). Although yield per hectare almost doubled in the same period of time, this was insufficient to stop a downward cycle. Internationally, the industry has dropped a number of places on the world competitiveness list and was recently pushed back to fifth on a list where it was number one for seven years (Belrose 2010). Other countries are catching up. The value of the NZ dollar in relation to other countries has not helped this industry that exists nearly solely of export trade. The distance to most markets is substantially larger than the same distance for all competing countries. The question is whether Total Quality Management has a role to play in the continued viability of the industry and what role that could be.

This project focuses on TQM and the pipfruit industry. In order for TQM to be useful for the industry, it aims to understand how much of TQM is known, and how much is used by stakeholders. It further aims to understand what the attitude of senior leaders and managers is and how much effort is put into development of quality strategies and cultures with true continuous improvement. Is the industry conscious of the service/production mix and how it relates to the customer? What tools do stakeholders know and use?

It is important for an industry with such a large manual labour component to understand its people, what satisfies and motivates them and what approaches should be used to get the best out of them. The sudden ten-fold increase of employees for a three-to-five month period may lead managers to adopt in-efficient 'fast-track' methods to get seasonal staff started. How should training and jobs be organised to get results? What recommendations can be made from which the industry might benefit? Is there an opportunity to develop a useful model?

The literature review highlights those elements of TQM that may be particularly relevant to the pipfruit industry, followed by a description of historical development and national and international positioning. The industry encompasses growers, packers, cool-stores and exporters. Potential gaps and issues are proposed, followed by a description of the research method, which includes interviews with a mixture of stakeholders that are complemented by a survey with the same stakeholders and a similar number of non-interview stakeholders. Results are analysed and discussed, and recommendations follow.

The pipfruit industry does not have a quality management model. Developing a model for this industry is challenging. Models however, help stakeholders and others to see the

bigger picture with clarity and may be useful when laying out a strategy that will place this industry back 'on top' again in years to come. In case of the pipfruit industry and how it manages the quality of- and within the industry, this study aims to propose a TQM model for the NZ pipfruit industry as a result of the investigation. The model intends to provide positive direction for improved and sustainable success for the New Zealand pipfruit industry.

2. TOTAL QUALITY MANAGEMENT THEORY

2.1 INTRODUCTION

Total Quality Management (TQM) has been recognised as having company-wide, strategic implications for those who use it right. TQM needs to be embraced by senior management as a fundamental philosophy and as a long-term strategy for all aspects of the organisation, not just production or any other single activity of the organisation (Inkson & Kolb, 2003, p250).

This chapter explores several developments and mainstream concepts, models and applications in 'quality thinking', noting the relevance of various concepts as potential philosophies for the pipfruit industry.

2.2 HISTORY

2.2.1 EARLY DEVELOPMENT

As human societies developed, people started to develop knowledge and experience in certain fields. Craftsmen started to develop skill sets and united themselves often in guilds. Guilds used a hierarchy of masters, journeymen and apprentices to distinguish skill levels. They developed apprenticeship training and the mobility of journeymen helped spreading knowledge and build up skills (Epstein & Prak, 2008). Guilds were inherently concerned with skills, quality and promotion of new tools and techniques.

From the start of industrialisation, the concept of quality developed through stages. Quality processes developed by guilds were followed by industrial production with end-inspections; later quality control methods added in-process inspections to improve quality.

2.2.2 DEVELOPMENT SINCE WORLD WAR II

When Japan's efforts to become a world power through military action had failed in 1945, it had no option but to turn to trade. Japan did not have a reputation for quality product and had to start open-mindedly about improvements. Teams and experts from the US (Deming, Juran and teams) were hired by the Japanese Union of Scientists and Engineers (JUSE) to lecture on quality (Bounds *et al*, 1994). The net result of the Japanese culture mixed with these efforts meant a continuous improvement of quality in all aspects (Imai, 1991, Juran, 1992, Rao *et al*, 1996).

Many countries, including Germany and Italy (also defeated in World War II) produced products that were imported into the US. An NBC documentary, shown on television in the US in 1980, detailed Japanese and US quality and aroused attention because it showed production of inferior domestic products and import of superior Japanese products (Martinez-Lorente *et al*, 1998). The national ego was shaken. Something had to be done and quality management has been getting more attention in the US ever since.

Quality assurance methods and Total Quality Management (TQM) systems developed during this period of time. Business excellence is argued to be a progression into a next stage where the focus combines the management of quality with the quality of management (Adebanjo, 2001, Dale *et al*, 2000).

2.3 TOTAL QUALITY MANAGEMENT DEFINED

2.3.1 DEFINING QUALITY

There is no precise agreement on what quality actually means. Should the definition cover all possible products and services or should there be different definitions for quality, depending on what the product or service is? Quality has been defined by many practitioners with definitions ranging from 'the essential attribute of everything' (Collins Dictionary, 1968), 'fitness for purpose' (Juran in Beckford, 1998), 'conformance to requirements' (Crosby, 1979) to Deming's 'Function of Continuous Improvement based on reduction in variation around the desired output' (Beckford, 1998). Other definitions introducing organisational, holistic and even societal elements are proposed by Logothetis

(1992), Ishikawa and Taguchi (Beckford, 1998). In brief, quality is seen as value, excellence or superiority of the producer/provider and in the eye of the customer.

2.3.2   DEFINING TOTAL QUALITY MANAGEMENT (TQM)

Just like it is difficult to define 'quality' it is difficult to accurately define 'total quality management' (Bounds 1994). The term Total Quality Management (TQM) emerged in management literature in the early 1980's although researchers are divided about the exact origins (Martinez-Lorente *et al*, 1998). There appears to be no consensus on what actually is 'total quality management'. Generally the term is used to point to different aspects within an organisation:

1. 'Total' implies that the whole organisation with all its employees is involved;
2. 'Quality' then implies that all aspects of the business above are striving for excellence, superiority, value;
3. 'Management' relates to achieving quality in the planning, organising, leading and controlling of resources.

The Japanese appear to be using the term 'total quality control' or 'company-wide quality control' to indicate the same approach to excellence within an organisation (Perigord, 1990). Although there is no ownership of or birthright to the concept, it appears that most contributions have been made by Japanese and US quality practitioners, often known as 'gurus' (Beckford, 1998). Practitioners agree on the concepts that together represent the core of what is commonly understood to be total quality management.

2.3.3   UNDERSTANDING THE TQM MODEL: GRASPING THE BASICS

Many of the quality authors (e.g. Deming, Juran, Ishikawa, Crosby and Feigenbaum) agree on the fundamental principles of Total Quality Management (Beckford, 1998, Martinez-Lorente *et al*, 1998). These principles form a fundamental understanding of what is really important and will work for most organisations, depending on their state of advancement:

- The importance of management commitment is undisputed; **leadership by senior management** is vital. Using quality models to inspire organisational change and

adaptation has to start from the top. Without management role responsibilities being fully accepted, there cannot be a uniform sense of purpose and direction.

- The organisation must **focus on the customer**; first the external (paying) customer but also on the internal customer. The concept of providing a product or service to a customer is central in TQM.

- People must be acknowledged; **people must participate** through all processes with their skills and knowledge. This participation needs to be balanced with statistical control tools so that real control and improvement of critical business processes can be achieved.

- The **organisation needs to know where it is going**, what the scope and purpose is. Planned, systematic improvements can only be achieved by an organisation that knows its target.

- **Organisational culture must be aimed towards collaboration, teamwork and above all towards continuous improvement**. The clinical application of a collection of techniques for process control will not achieve TQM. The workforce must identify closely with the goals set by the leaders.

Quality authors describe the basic mistakes that managers can make when pursuing quality through TQM. Although numerous textbooks and articles have been written about quality, it appears that the basics are still first and foremost important (Bounds, 1994, Dale *et al*, 2000). Once the basics have been achieved, it is time for the balance of the formula. Gibson *et al* (2000) refer to the 1995 'Black Magic' success as a combination of supreme organisation, sophisticated technological development and attention to the very last detail as part of a superb team effort where everybody participated. This description epitomises a TQM approach.

The principles described by the gurus, in particular that TQM must be led from the top (Beckford, 1998) is regularly quoted as one of the main reasons for success. However Rao *et al* (1996) and Dale (2000) refer to senior management trying 'quick fix' TQM solutions, not grasping the basics of TQM, and leading to disappointing results. A lesson then is that organisations must be ready to embark on a TQM path; that TQM cannot be effectively implemented unless all the basic conditions described by the gurus are present. The battle to achieve quality will lose against a short-term orientation and objective of cutting costs and making short-term profits.

2.3.4   TQM AND THE SOCIO-ECONOMIC ENVIRONMENT: A PLACE AND TIME FOR TQM

The environment within which organisations find themselves can differ markedly. It is unrealistic to compare the level of wellbeing, education, skill and professionalism of workers from underdeveloped companies or countries with that of developed companies or countries. However, it is the people who make organisations successful. Quality practitioners argue that successful organisations are energised by people and that managing the input from people is fundamental (Imai, 1986, in Bounds *et al*, 1994, Inkson & Kolb, 2003).

The early 20th century industrial manager and theorist Frederick Taylor considered money to be the motivating factor in workers' behaviour (Inkson & Kolb, 2003). Others like Maslow have described a 5 level 'needs' hierarchy (Bootzin *et al*, 1986) or a two-factor theory with 'motivators' and 'hygiene factors', developed by Herzberg, and various others as backdrops against which we explain and understand worker behaviour and effort (Inkson & Kolb, 2003).

So, depending on the developmental stage of an organisation, industry or country and the competition faced (the environment), the organisation may find itself years ahead or years behind others in TQM terms. Viljoen (1991) describes 'environmental turbulence' as a factor that influences behaviour. We have to consider the fact that some organisations, industries or countries (environments) are still operating completely or partly under 'scientific management' conditions (Beckford, 1998) and have not advanced into a socio-economic and technologically advanced age. This applies particularly to organisations, industries or countries that have experienced sustained pressure to survive economically and may apply to New Zealand (NZ) industries such as the pipfruit industry. A reverse argument considered by Imai in a recent interview (Jayne, 2010) is that organisations that have quality systems in place will recover from misfortune.

2.3.5   MANUFACTURING AND SERVICE QUALITY, DIFFERENT APPROACHES

If there is no precise agreement on what quality actually means should the definition then cover all possible products and services? Or should there be different definitions for quality, depending on what the product or service is? Where the manufacturer produces a

tangible product which will be purchased by a customer for a specific purpose, the service industry produces something intangible, but also required by the customer.

The quality gurus address manufacturing differently from service. Deming (Beckford, 1998) sees the service industry as enabling manufacturing to do its job. Deming recognizes the difficulty of measuring service quality. Crosby does not recognize this difficulty, while Feigenbaum is industry orientated and offers little for service industries; Juran talks about service delivery to internal customers but his work is more applicable to manufacturing; Oakland's work is applicable to service industries (Beckford, 1998).

It appears that the quality gurus have not been able to collectively address the distinction between these industries. Nor may they have tried. Societal developments have led to two distinct occurrences: the increased number of specialized services and the increase in leisure activities. Consequently, service industries have grown both in number and in size since several of the gurus proposed their models. One could argue that the gurus would have paid more attention to the service industries if these had been more prevalent.

Garvin (1984, in Foster, 2004) summarises eight dimensions of quality and explains what each element constitutes. His work relates primarily to manufacturing situations and many of the examples that he gives are taken from the manufacturing world.

A useful service quality model is described by Zeithaml *et al* (1990), measuring various gaps, particularly the gap between customer perception and expectation. Their view of service products confirms the different nature of manufacturers' and service products.

It must be concluded from the above that service industries cannot blindly use the same approach towards quality as the manufacturing industries use. The nature of the industries is too different. The NZ pipfruit industry provides both products and services and may well be confused about the quality dimensions it should focus on.

2.3.6   BARRIERS TO QUALITY AND THE COST OF QUALITY

A number of factors have been argued to be barriers to quality. Moorhead and Griffin (1995) point out that effecting change in any organisation can be difficult because of a number of existing sources of resistance. These include over-determination, a narrow change of focus, group inertia, threatened expertise, threatened power, and resource

allocation. Lewin suggested already as early as 1952 a process to 'unfreeze' behaviours and attitudes, effect the change and then 'refreeze' the new behaviours and attitudes (Tannenbaum, 1966, Moorhead and Griffin, 1995).

Beckford identifies several main groups that form barriers to quality (Beckford, 1998). These include:

- 'Frozen' bureaucratic systems; Beckford quotes the example of a cake factory where the focus is on volume throughput and labour utilization, not on quality.
- Culture within the organisation; the unwritten values and beliefs within an organisation that often unconsciously drive the existing behaviour.
- Organisational design; Organisations are often not designed but have developed. A typical example is the constant 'battle' between quality and production or the ineffectiveness of information systems.
- Management perspectives; short-term goal setting and a reward system that rewards output at all costs lead to the 'slipping clutch syndrome'; a situation where increased throughput leads to disproportionately increased quality problems.

Beckford (1998) points out that there are direct and indirect (intangible) costs to quality, which are drivers to improve quality. Direct costs are categorized as rejection of consignments, the cost of inspections and the cost of corrections. Indirect costs are categorized as dissatisfied customers, in-process rework costs, high staff turn-over leading to increased cost of training, capital costs for warehousing defective product and the unavailability of resources as a result of corrective actions (Beckford, 1998).

2.3.7 TQM: THE DEBATE

There is considerable debate about the success of TQM as a business concept. There are many success stories about TQM, but it appears that there are just about as many stories about failures.

Dawson and Palmer (1995, in Inkson & Kolb, 2003) note that TQM does not always live up to expectations, and is not a panacea for all organisational ills. Rao *et al* (1996) quote a number of examples of both successful and failed attempts of making TQM work for companies. Adebanjo (2001) quotes Dale *et al* (2000) who states that TQM has faded as an

approach because managers have found it wanting in terms of living up to its initial promise and managers' expectations. The question then is if the TQM approach is flawed, or whether the implementation is faulty.

Dale *et al* (2000) note that it is surprising how many fundamental mistakes are made by senior managers, and that the lack of success is not due to the TQM concept but due to the way in which it was introduced in organisations. Harari (1993 in Bounds *et al*, 1994), quotes a list of ten reasons why TQM has not worked for a number of companies. Similarly, Booz, Allen and Hamilton (Kleiner, 1995) studied 30 service companies and observed seven common problems with the implementation of TQM. These included lack of leadership, lack of overall direction, using generic models instead of tailoring the TQM approach, quality metrics that did not focus on the customer, training with a narrow focus, lack of support and assigning quality away from all staff to a separate department. Sirota and Alpers (undated, in Rao, 1996) studied all employees at 30 companies and concluded that twelve elements of company culture had to be addressed. In their study they found that companies who focus on a 'tools and techniques' approach but not on culture change did not achieve sustainable improvement.

TQM as a philosophy has been questioned over the years. Lorente et al (1998) identify the historical development of the term TQM and point out that this term is not used as such by a number of quality 'gurus' like Crosby, Deming and Juran. However the principles generally associated with TQM are all addressed by the same quality gurus. Dale et al (2000) discuss in some depth the various opinions of the term TQM and compare the philosophy to the European Foundation for Quality management (EFQM) standard. They argue that the new term 'Excellence' is already eroded and wonder what the next 'fad' will be in a paper which they call 'deliberately provoking'. Adebanjo (2001) attempts to reconcile TQM and EFQM in stating that both business excellence (EFQM) and quality (TQM) are critical elements of organisational success. The debate should also include discussion of the ISO quality standards, the Baldrige Award system and the Deming Award as well as various other quality systems like 'Lean', SERVQUAL and 'Six Sigma'. Discussion of the merit of each of these quality systems would however distract from the purpose of this study and it is accepted that each of these systems and awards has merit for organisations when implemented correctly.

Observing all of this, it appears that when TQM principles are applied as intended and within the right contemporary socio-economic environment, and when senior management

understands that TQM involves a cultural change within the organisation, TQM is likely to succeed in a manufacturing or service industry, just like to correct implementation of any of the other systems would do. The question remains if TQM can be successfully applied in a seasonal primary industry environment such as the NZ pipfruit industry.

2.4   QUALITY STRATEGY

Von Clausewitz is the classic writer on strategy whose ideas have been translated into modern board rooms. To von Clausewitz, tactics were short-term objectives that serve a larger purpose, while strategy was the long-term and overarching purpose. Strategy was continuously challenged by a changing environment and achieved through continuous adaptation and planning for eventualities (Ghyczy *et al*, 2001). Short-term objectives may be easier to achieve with a degree of certainty and therefore be more attractive, as they are less affected by environmental turbulence (Viljoen, 1991).

Organisations develop strategy to position their products or services for future markets. When a strategy is developed, the product or service development becomes important. There are no certain outcomes to strategy because strategy concerns longer term planning. Many variables may affect the strategy. It is because of the uncertainties, that quality must become an intrinsic component of development to ensure that a maximum chance of success is created.

Quality organisations develop a quality strategy, a cohesive plan with integrity, pointing towards achievement of overall quality. Leading companies are known to have a continuous quality improvement approach towards products and processes. These organisations fight complacency (Beckford, 1998). A study by the Strategic Planning Institute in the US studied 3000 businesses and found that in the long run, the single most important factor affecting a business' performance was the quality of its product or service in relation to its competitors (Rao *et al*, 1996).

Often, strategies are reflected in mission statements. But too often these are developed as compliance criteria, and the question has to be asked how many employees of an organisation, including senior and middle management, know and understand the mission statement. An organisation may have the best of strategies, but if the employees are unaware or do not understand the strategy, an essential part that drives the company

culture will be missing. Peters and Waterman (1984) make the point that simplistic strategies aiming inward ('why can we not be the best?'), have led to remarkably successful companies.

Although Pipfruit NZ has a formalised strategic plan, it is questioned how many organisations within the industry have developed a strategy for the future.

2.4.1 CONTINUOUS IMPROVEMENT AND KAIZEN

Masaaki Imai is commonly mentioned as the founder of the 'Kaizen' principle (Beckford, 1998). In his book on Kaizen, Imai describes continuous improvement as a concept for personal life, home life, social life and working life (Imai, 1991). Imai describes the difference between the western focus on innovation and the eastern focus on continuous improvement and in fact presents the two different philosophies several times in one combined concept, each time pointing out its place.

Science	Technology	Design	Production	Market
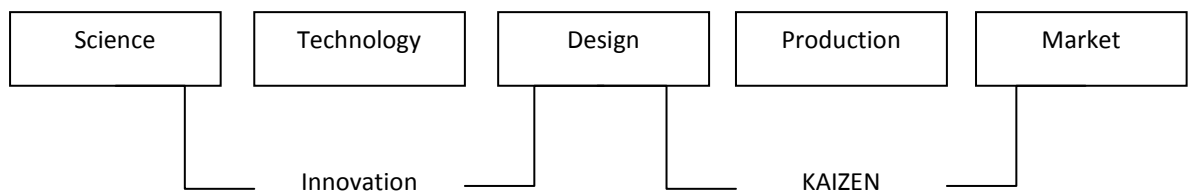
Innovation — — KAIZEN

Figure 2.1: Imai's view on Innovation and KAIZEN

2.4.2 CROSS-FUNCTIONAL MANAGEMENT

Historical organisational structures are typically hierarchical and split up in departments with specific and specialised functions. A disadvantage of this type of structure is that departments are dependent on each other's expertise to do their own job right. Cross-functional management breaks down the barriers between departments. Foster quotes the example of the design of the Boeing 777, which was achieved by more than 200 virtual designer groups. The groups were operating cross-functionally at specialist level and

achieving a finished product in less than half the normal design time (Foster, 2004). It is apparent that cross-functional management is essential to reduce waste of time and effort between departments. This applies particularly between different sections and organisations within the NZ pipfruit industry, e.g. growing, packing, storing and trading. However a study by Studman (1998) in an apple packhouse shows that cross-functional design may not naturally happen in pipfruit organisations.

2.5   EMPLOYEE MANAGEMENT:

2.5.1   EMPLOYEE PRACTICES IN TQM ORGANISATIONS

Human Resource Management (HRM) is described as 'all those activities associated with the management of employment relationships within the firm' (Boxall, 1995). A company can have quality product designs, excellent location, modern equipment and a great set-up, but all of these are likely to be available to competitors equally. The people make the difference and make companies more or less successful. How people are selected, trained, organised and motivated ultimately determines the success of a company (Martinich, 1997). This is true for the NZ pipfruit industry as it is for other industries.

The employment relationship in general is complex in nature. Ramussen and Boxall (Boxall, 1995) observe that the workplace is a kind of human society with employees as members, having their own interests and aspirations. It is helpful to understand the nature of work, and the people at work as an important group influencing workers' lives. This becomes particularly relevant when looking at human resources in the pipfruit industry.

Job descriptions can include the tasks and responsibilities of a job, work conditions, general skills, methods and performance expectations. The contribution that a worker makes depends on a number of variables such as tasks, tools, training, teams, work-area design and reward method. Job content (what is the worker supposed to do?) is a central aspect of job design (Martinich, 1997). In a seasonal industry where most workers only work for a few months, this presents a challenge.

Specialisation and task variety are trade-offs where more specialism leads to more boredom but higher efficiency. The behavioural school shows that there is more to raising worker productivity than just work methods. Both quality and quantity are affected by how

interesting the job is, how much control the worker has over the job and by the interaction with other workers. The seasonal jobs are often monotonous rather than specialised.

Indirect factors play a more important role in human resource management than often expected. Schroeder (1989) takes into account possible cost of staff turnover, absenteeism, boredom, and argues that specializations (and thus 'boring jobs') started long before Taylor's scientific management. Herzberg differentiates between intrinsic job factors (e.g. achievement, responsibility and work itself), which are potential 'satisfiers', and extrinsic job factors (supervision, pay, work conditions), which are 'dis-satisfiers'. Herzberg's model later changed to rename the satisfiers into 'motivators', an important distinction (Inkson and Kolb, 2003). Motivation may be more important than anticipated in industries like pipfruit where seasonal employees know that the job is going to finish (i.e. there is no future), the pay is low and the pressure is high.

2.5.2   JOB DESIGN

Job design concerns itself with the physical and psychological aspects of a job. Taylor (Inkson and Kolb, 2003) focused on simplification of jobs to increase productivity but simplicity in jobs created problems for workers, both physically and psychologically. Repetitive Strain Injury (RSI) and boredom are typically caused by simplification of jobs (Martinich, 1997). Jobs in seasonal industries are however unavoidably simple and repetitive.

Job rotation and job enlargement were introduced to counter the negative aspects of job simplicity. Job enrichment (re)introduced planning and evaluation elements and gave workers more control over work. Inkson and Kolb (2003) describe job enrichment (offering a person more complex tasks and responsibilities) and job enlargement (increasing the number of tasks) as job design interventions that reduce boredom and make work more rewarding as a worker becomes more involved in the work process. These options may present some solutions for seasonal industries if they can be applied.

Martinich (1997) describes job enlargement or horizontal loading as assignment of more tasks at the same skill level. Job enrichment or vertical loading is described as an expansion of job responsibilities and skills. For it to be of value, it should involve use of the workers capabilities including creativity, pattern recognition, interpersonal communication and

problem solving. Vertical expansion requires greater training and empowerment; an integral component of total quality management or the Japanese 'lean' system (Martinich, 1997). Job rotation is described as rotating between jobs. Simply rotating between undesirable jobs is not enough to improve job design.

Proper job enlargement, job enrichment and job rotation generally improve product quality, worker satisfaction and productivity, but there may be some workers who prefer specialized monotonous jobs. Seasonal industries like the NZ pipfruit industry could use these methods to motivate staff if organisations are set up for identifying staff needs and addressing these.

An increasingly important component of job design is the amount of responsibility a worker has for achieving product quality and improving the product process. Companies cannot move towards successful introduction of 'just-in-time' or 'lean' production methods, or implement TQM without devoting considerable attention to redesigning jobs and transferring greater responsibility for product quality to operations workers. The driving principle for job design is 'keep it simple'. Responsibility may be more applicable to permanent workers than seasonal workers, but it should be considered as a way to improve results indirectly.

2.5.3 JOB REDESIGN

There are several simple principles of job redesign such as *Co-processing* (work involves active and passive phases; the passive phases are used for parallel or co-processing); *Back-hauling* (Use of the trip 'back' to do something productive, not just the trip 'up'); *Compatible Body Activities* (Design activities to be compatible with the way in which the body works best); and *Continuous improvement and worker consultation* (Martinich, 1997).

Work Standards can play an important role in scheduling product costing and pricing, and process design, as well as performance evaluation and compensation. Work environment influences both the productivity and quality of work and directly affects safety and worker health: Cleanliness, Illumination, temperature and humidity, and noise and sound.

The socio-technical approach recognizes that creating compatibility between equipment, technology and people and the social structure, more productive systems and greater job satisfaction is created. The socio-technical approach is organised around autonomous work groups with as keyword 'empowerment' (self-directed teams). The benefits of empowerment have been described as job-satisfaction, process involvement, product quality, productivity improvement and cost reduction, and flexibility and responsiveness.

Of course there are other factors such as flexibility in time and location and compensation and incentives (Martinich 1997). Labar (1996) focuses on human error and points out what machines are good at (routine repetitive operations, precision, force, multiple task aspects and hostile environments) versus what humans are good at (wide range of stimuli, reacting to low probability events, exercising judgement, perception of patterns).
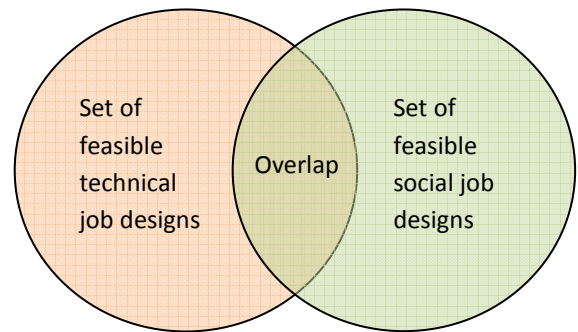
Figure 2.2: Technical and social overlap in job design

It appears therefore desirable that technology and job should be designed together (Schroeder, 1989). The best place to be is where the feasible technical and social job designs overlap (Figure 2.2).

2.5.2   ERGONOMICS

Ergonomics plays an important role in job design. Ergonomics focus on the human-machine interface by designing tools and equipment and processes and procedures that make human work most productive while minimizing stress, injury, fatigue and thus mistakes and errors (Labar, 1996). Behavioural science techniques like ergonomic job design can assist management significantly with organisational efforts to improve overall quality and thus benefit both employer and employee. Work done by Studman (1998) in the pipfruit industry stands alone but indicates that his type of industry can benefit from ergonomic design.

An ideal opportunity to introduce new concepts of work and people is when a new plant is designed. Schroeder (1989) argues that it is not just design and layout of plant and

equipment, but also design of organisational structure (flat; reduced management levels) and management style (decentralising decision making and work in group levels).

2.5.3 'SOFTER' MANAGEMENT ASPECTS; THE HUMAN ELEMENT AND MOTIVATION

The human element, which had been dissected and quantified by classical management methods, was reintroduced as a result of the studies by Mayo at the Hawthorn plant of the Western Electric Company in the US (Moorhead & Griffin, 1995). Mayo and his team from Harvard University isolated a group of workers and varied their conditions of work, making them feel 'special'. Each variation of work conditions led to increased productivity, including unfavourable changes (now referred to as the 'Hawthorne effect').

Further research by Mayo and his team showed that there was a strong informal organisational element in all organisations and that this element determined how people would act within their work environment. He advocated participative and considerate management practices, creating workers and teams that felt good about themselves and had positive esteem. Productivity would then look after itself (Tannenbaum, 1966, Inkson and Kolb, 2003). This is very much in contrast to Taylor's philosophy that people are motivated primarily by money and will work harder for additional pay (Inkson & Kolb, 2003).

2.5.3.1   MCGREGOR'S 'X' AND 'Y' THEORY

 McGregor described theory 'X' and theory 'Y' (Table 2.1). The 'X' and 'Y' categorisations draw a sharp contrast between two opposite approaches towards management of the human element. Theory 'X' is the theory that human beings dislike work, cannot be trusted, are lazy and must be directed. Theory 'Y' describes the opposite. It was McGregor's contention that managers would adopt one of these theories as their foundation for dealing with the human element (Moorhead & Griffin, 1995).

In the pipfruit industry, most owner/managers are 'self-made', having inherited a passion for a lifestyle and made a choice for the work; people who have built their business by

working hard and expecting nothing less from the employees they hire (Mannering, 1999). Theory 'X' and 'Y' is important because it simplistically depicts basic approaches to life and therefore to employees. Theory 'Y' is typically aligned with TQM, whereas theory 'X' is more aligned with scientific management. Interesting is the mindset of the seasonal worker versus the mindset of the permanent staff member; and consequently, should the mindset of the owner/manager be 'X' type or 'Y' type?

Table 2.1: McGregor's Theory 'X' and 'Y'

- The picture that managers have of their workers, influences how they manage them:

- Theory X:
  – Employees dislike work and try to avoid it
  – Workers must be coerced or forced to work because they dislike it
  – Workers do not like responsibility and need direct commands to accomplish tasks
  – Workers just want security and will not show any ambition to do more than what is required

- The picture that managers have of their workers, influences how they manage them :

- Theory Y:
  – Employees can see work as natural and enjoyable
  – Workers are self-directed if committed to the goals and directions put forward by management
  – Most average people like and seek responsibility
  – Most workers can make good decisions; not just managers

2.5.3.2 HERZBERG'S 'TWO-FACTOR' THEORY

Herzberg's 'Two-factor' theory, describes 'Hygiene factors' and 'motivators', and is another useful theory of motivation (Figure 2.3). Hygiene factors include things like pay, policies, work conditions, supervisors etc. and led to satisfaction but not necessarily to motivation. Motivators include responsibility, challenge, achievement, recognition and personal growth, and led to improved results, both qualitatively and quantitatively (Beckford, 1998, Inkson & Kolb, 2003).

Other motivation theories developed by the behavioural sciences include the 'Expectancy Theory', the 'Equity Theory', 'Goal-setting Theory', Reinforcement theory, Social learning Theory' and there are several other theories offered by behavioural scientists and managerial specialists (Tannenbaum, 1966, Moorhead & Griffin, 1995, Inkson & Kolb, 2003). All of these help to understand and explain the 'softer' human element.

The motivational models above demonstrate that there is more to management and management of quality than classical management theory suggests. People play a vital role and the way in which people function -what drives people- is subject to a lot of variation.

The general principle however is that people must find renewed reasons for existing. And as Mayo and others demonstrated, 'soft' thinking is a management option that motivates.

Figure 2.3: Herzberg's 'Two-Factor Theory'

2.5.4   THE PSYCHOLOGICAL CONTRACT

As Boxall (1995) and Hughes note; there is more to work than the exchange of labour for money, based on an employment contract (Boxall, 1995). Work also involves an indirect psychological contract between employer and employee, based on values and beliefs and with trust as a key element. Ramussen and Boxall (Boxall, 1995) refer to the 'trust gap' as an element that makes workers less effective. Makin *et al* (1997) note that social contracts exist widely and naturally and the statement includes seasonal industries. It is argued however that the psychological contract may be different for permanent and seasonal workers.

Important is Robinson's study (1996) that demonstrates how a breach of psychological contract relates negatively to three forms of employee contribution: Performance, civic virtue behaviour and intentions to remain with the organisation. Robinson also notes that these effects are enduring and comments on the moderating effect of earlier existing trust on contract breaches. Firms that actively establish and maintain trusting relationships with their employees may inoculate them from the negative effects of breach of contract (Robinson 1996). This is possibly less applicable to seasonal employees.

Trust takes time and effort to build but can be destroyed by a single action (Rogers, 1994). Building and re-building trust is an important management tool, both for continuous and

seasonal industries. Methods include: Shared responsibility, accountability, purpose and information which builds trust. A management style with people at the top being the only ones that have vital information and understand the overall strategy is destructive (Covey, 1996).

An understanding that trust between employer and employee transcends the effectiveness of legal employment contracts will help the employer-employee relationship to develop into a relationship that is more powerful than the legal contract on its own and this may apply even to seasonal industries. This is particularly pertinent and useful to the NZ pipfruit industry, an industry where there is a sudden influx of employees who know that they are only employed for a short period of time.

2.5.5   TEAM WORK, PARTICIPATION, EMPOWERMENT AND CULTURE

Groups are commonly more than the sum of their parts (Inkson and Kolb, 2003). Groups can be formal (groups with established goals and tasks) and informal (social groups with common interests or social friendship). This fits in with Jung's theory (Jacobi, 1973) that most human beings are simultaneously a member of many different social groups like family, work, sport, hobby, religion and more, with each group having a specific 'own' set of norms and values that identifies the group. Members identify with the group and adopt behaviours typical for that group. This includes common purpose and achievement. Informal groups are common in organisations.

Katzenbach and Smith (1993, in Rao *et al*, 1996) observe that many organisations talk about team work but that few have real teams in place. Teamwork requires listening and participating constructively, providing support, and recognizing and acknowledging the achievements and interests of others. One person's strengths compensate for another's weakness through participation (Deming in Foster, 2004). Teamwork implies collective responsibility and should not be compared with 'working in groups'. Bounds *et al* (1994) describes work teams as groups of employees who are collectively responsible for some carefully delineated, complete piece of the work process.

Teams are a powerful means within the employer-employee relationship and an essential ingredient in TQM. Understanding the nature and workings of groups and specifically of teams can assist management achieving goals through the use of team working relations.

Empowerment takes the participation a step further. The quality gurus are unanimous in their view that participation and empowerment are essential items in TQM. Empowerment moves the decision making to the lowest possible level. Bounds *et al*. (1994) makes the point that empowerment through delegation is really not empowerment and managers should not be surprised that such approaches do not work. Similarly, if employees make decisions to which they are empowered, and these decisions are turned around by management, empowerment will not work.

Moorhead and Griffin (1995) refer to organisational culture as the set of values that help people in an organisation understand which actions are considered acceptable and which are considered unacceptable. Peters and Waterman e.g. note that there is a strong relationship between organisational culture and performance of successful companies (Peters and Waterman, 1984). Likewise, Gilson *et al* (2000) describe in detailed interviews the winning cultures of sports organisations. In a New Zealand model, Inkson *et al* (1986) make 'Kulture' an integral part of their 'theory K', pointing out that there are winning cultures and energy-sapping, negative cultures. The informal organisation within the formal organisation can thus have dramatic effects on an organisation's performance. An instilment of a positive culture in NZ pipfruit organisations will help immerse seasonal workers into expected positive behaviours.

2.5.6   REWARD SYSTEMS AND MOTIVATION

Inkson (2003) comprehensively describes various motivational theories. While Taylor considered money to be the motivating factor in workers' behaviour, others have described various additional motivational theories as backdrops against which we explain and understand worker behaviour and effort (Inkson, 2003). In seasonal organisations, there is a mix of permanent and seasonal employees with an equal mix of motivations for doing the work.

Kerr, when describing a 'reward system', simply states that the formal reward system should positively reinforce desired behaviours, and not constitute an obstacle to be overcome. Kerr also refers to numerous examples of reward systems that are fouled up and reward undesirable behaviour (Kerr, 1975). If organisations do not understand the

effect of reinforcement by reward (Catania, 1984), there is a serious risk of implementing systems that encourage negative behaviours.

Remuneration costs are a significant component of a private sector company's operating budget (O'Neill, 1995). Focus is often on controlling costs instead of viewing it as an effective tool for managing human resources to achieve the organisation's objectives. O'Neill (1995) describes as opportunities for change: 1. Flatter organisational structures; 2. Gaining employee commitment; 3. Paying for individual contribution/skills; 4. Job sizing based on company needs; 5. Variable rewards; and 6. Integration and control of remuneration costs.

Reward systems and motivation are particularly important for NZ pipfruit organisations that have different types of employees in permanent and seasonal employees.

2.6   ORGANISATIONS, CULTURE AND CHANGE

2.6.1   ORGANISATIONAL CULTURE AND PARADIGM SHIFT

Advocates of Total Quality Management (TQM) consider that the system is inherently good. It leads to empowerment of employees. Sceptics of TQM however will argue that TQM only stands for more responsibility and job complexity and increases managerial control instead of decreasing it (Wilkinson, 1997). Is either of these views the correct view? Edwards *et al* (1998) argue that both workers and management have shared interests. An organised work environment is preferred over chaos by both workers and management. The internal conflict is that companies seek worker participation and co-operation but simultaneously need to introduce better levels of control to 'control' TQM.

Both Wilkinson (1997) and Edwards *et al* (1998) research a number of companies in order to learn from the different environments and applications of TQM within various work environments. Both agree that the effectiveness of TQM depends on the work environment and the way I which the concept is applied. Both state clearly that TQM can offer job satisfaction. Edwards *et al* (1998) point out that TQM can be a useful tool if management intends to have the release of workers' creativity as a positive influence within the organisation.

Although it would be nice to consider that TQM has the care for employees at heart as a primary driver, one consideration is that any new management concept is driven by the commercial environment. If it will lead to better outcomes, it will be tried and used. TQM uses employee participation because scientific evidence suggests that participation will lead to increased motivation and performance which, in turn, will lead to better outcomes (which lead to better profits).

Purists may argue that the employer should be concerned with employee growth first and that positive outcomes for the company would follow as it appears to be when TQM is applied correctly. Commercial environments however, dictate the deliberate use of known successful formulas and techniques to maximize company profits. So although TQM is caring for people because it knows that motivated, involved and satisfied people create better results, the result can be that the employee is more satisfied while the company has better results. Basically, it is a winning formula. The problem at hand is how to make TQM work in a seasonal primary industry like the pipfruit industry.

2.6.2   CHANGE

One of the most problematic issues facing many organisations is adaptation. Continued adaptation allows for survival and promotes success. Continued adaptation means 'change'. Organisations need to decide what to change, how to change it and when. Total Quality Management is substantially focussing on change, mostly calling it 'improvement'. Those companies that have a culture of improvement have very few issues with change. Companies that start to mature as Crosby (1979) calls it, require development of a culture of change.

An argument has been made that most of the changing, the re-engineering and the re-strategising has been done. The counter argument is that powerful macro-economic effects will continue to force change (Kotter, 1996). Perigord shows a map of the distribution of four major employment groups in the US from the early 1900s to late 1980s (Perigord, 1990). This map shows the enormous increase in employment in services and data processing, combined with the substantial decline in employment in the agricultural and industrial sectors. The effect of technology is obvious. Organisations then must equip

themselves with tools to adapt and change, because perversely, change will be one of the constants in organisations.

Organisations face several dilemmas when contemplating change (Stace and Dunphy, 1994). These include adaptive or rational strategy development, cultural or structural change, continuous improvement or radical transformation and empowerment or leadership and command. They argue that organisations should not reject one in favour of the other, but should carefully consider that solutions sometimes are not simple and may require approaches using both sides of the dilemmas. This may be good advice for organisations in the pipfruit industry that contemplate introduction of TQM.

Change practitioners offer different ways to facilitate change. Kotter proposes an eight step program which includes developing and communicating a vision, establishing guidance and empowerment, generating short-terms wins and consolidating and anchoring the achievements (Kotter, 1996). Lewin has already been discussed, proposing to 'unfreeze', then effect the change and next 'refreeze' the organisation (Tannenbaum, 1966). Patterson *et al* (1996) have a focus on the change agents, arguing that the leaders and their peers must get early 'adopters of change', which will speed up the process of acceptance.

Leaders and managers should be prepared for change, almost welcoming an opportunity to change as an opportunity to improve. If organisations can develop a culture where participation, teamwork and empowerment are normal, change will come from within and be positively received and comfortably effected. This rule applies as much to the NZ pipfruit industry as it does to other industries.

2.7   SUMMARY

Total Quality Management as a business philosophy has many sides to it, ranging from 'soft' humanistic approaches to 'hard' statistical facts. There is no question that the model can be successful, if applied correctly. The many examples of companies who are using their own version of TQM are evidence of that. Simultaneously, the evidence suggests that those companies who set out to achieve a 'box-ticking' style of TQM are likely to fail. They have not understood that TQM is like a 'company lifestyle'.

TQM covers both products and services, but in different ways. Little literature however was found on the application of TQM in seasonal primary industries like the pipfruit industry. It is clear then that it is time to study where TQM and seasonal industries like the NZ pipfruit industry touch and where there are gaps that need filling.

3. THE PIPFRUIT INDUSTRY

3.1 HISTORY OF THE PIPFRUIT INDUSTRY

The way in which the pipfruit industry operates is the result of a period of historical developments. The current modus operandi may be difficult to understand as it is certainly not a conventional way of operating in which there is a logical chain of ownership and quality demands. It makes sense to describe some of the history that has led to the way in which individual organisations within the industry and the industry as a whole do operate.

Several contemporary models and processes are described by the writer from experience, as there is a lack of literature. A ten-year period of experience in the industry provides a fair basis to describe models and process pathways with a reasonable form of accuracy. Although historical developments are documented in some publications, contemporary developments have hardly been at the focus of attention. In order to provide for some validity and reliability, the writer has presented these sections to several industry experts for validation before completing this section.

3.1.1 1850'S TO 1980'S

Pipfruit growing was established during the colonisation of New Zealand. Early settlers pioneered farms in the 1850's and grew fruit, usually for the family. In some areas production flourished and local over-supply made it necessary for growers to find other markets. The domestic market developed when fruit was sent from Nelson to Wellington in the 1880's (McKay, 1986). Between 1910 and 1916, a planting boom occurred and large areas were cleared and developed especially in Nelson (Monigatti, 1966, Benzies, 1968). During these years, it would take 8 years for an orchard to mature and produce a full crop (Benzies, 1968).

The New Zealand Fruitgrowers Federation (NZFF) was formed and many local fruit growers associations joined the federation. In 1916 the Orchard Tax Act was passed by government, imposing an annual tax on orchardists depending on orchard size in order to fund the NZFF (Monigatti, 1966, McKenna, 1999). As the local market saturated, exporting of fruit was

explored. This led to the government passing the Fruit Control Bill in 1924. A New Zealand Fruit Export Control Board was set up in 1925 with the power to control all export fruit (Monigatti, 1966, Benzies, 1968).

During the next few decades, new varieties were developed and growing techniques improved. The government subsidised the industry for several years in the late 1930's but took control of the industry in 1940, absorbing the 1925 founded New Zealand Fruit Export Control Board into the government's Marketing Division (Benzies, 1968).

In 1948, the Apple and Pear Marketing Act was passed, leading to the set up of the Apple and Pear Marketing Board (APMB). This board had the sole right to acquire and market all apples and pears grown in New Zealand (The Orchardist, 1948) and dominated the industry for the next five decades. Between 1948 and 1953 however, the final decisions about export markets were made by the government's Marketing Department. In 1953, the board (APMB) took over completely from the government department and gained exclusive control of the purchase, assembly, distribution and marketing of the apple and pear crop. In the same year, the Orchard Levy Act transferred the power to levy orchards from the Department of Agriculture to the Fruitgrowers Federation. McKenna and Campbell (1999) report strong political support for the APMB with occasional complaints from growers that the board was inefficient and that its exclusive crop control was hindering overall industry development. These complaints had existed since the 1920s. McKenna and Campbell (1999) also report that the crop was extremely varied with 141 varieties in 1963. Of these 141 varieties, a total of 109 made up 2% of the total crop.

In 1984, a newly elected Labour Government set out to profoundly change the political, social and economic thinking in New Zealand (Kelsey, 1997). From that time onwards, New Zealand growers have not received any subsidies from successive governments. The growers were already used to living without guarantees. The long list of annual government guarantees quoted by Benzies (1968) was history after 1940. In addition, they were threatened to be exposed to a two tier levy system since the early 1970s and finally exposed in 1983 with one tier providing for capital investments of the Apple and Pear Board. The new levy system created much controversy. Mannering refers to 'the bitter years' when discussing the levy system during this period (Mannering, 1999). So when the Labour Party set out to restructure the New Zealand economy to one of pure neo-liberal economy, growers were used to living without the benefit of guarantees (Kelsey, 1997).

The economic re-structure happened at times when the product was in demand and New Zealand was recognised as a leader in the global industry. Growers were thriving; dairy farmers were reeling.

3.1.2   1990'S TO 2001 AND DEREGULATION

Growing concern with the single desk position was voiced by Applefields Ltd, a company owning 30 farms and 660 acres of orchards (Kelsey, 1997, Applefields Ltd. 1991). The single desk marketing monopoly was under pressure from the new economic principles (Kelsey, 1997) and continued until 1993 when the 1993 Apple and Pear Marketing Amendment Act deregulated the domestic market and provided for some deregulated niche export marketing. At this time, New Zealand growers replanted about 10% of their orchards annually to keep up with the changing market preferences (Enterprise New Zealand, 1993). The government however acted against its own principles by exempting the producer board structures (Apple and Pear, Dairy and Kiwi Fruit) from the pro-competition ideology that was characteristic for the period from 1984 onwards (Mc Kenna & Campbell, 1999).

The Apple and Pear Marketing Board launched the ENZA brand in 1994. In May 1998, the government announced that it required producer boards to provide a blueprint for progression through de-regulation. Producer boards would be deregulated. Despite several reports indicating that deregulation might have a negative effect on the overall returns to the New Zealand growers (YAP 1998), there was also a perception that growers could improve their returns. Arguments against the deregulation were the fact that New Zealand produced only 1 % of the world volume of apples, was far away from its markets and could claim a unified and exclusive 'New Zealand' brand. And although there was some 80% support for the economic logic of a single desk selling system, the efficiency of ENZA was seriously questioned with a number of growers explicitly voicing their opinions.

In 1999, the government introduced the Apple and Pear Restructuring Act and retained the NZAPMB while ENZA Ltd had to operate under the Companies Act 1993. This effectively separated the regulatory and marketing arms of the industry. A new regulatory body was set up in April 2000 (McKenna & Campbell 1999) consisting of two appointees of Pipfruit

Growers NZ, two appointees voted in by growers and one appointee voted in by the other four. The government insisted that this new structure would improve transparency and accountability, and would provide better price signals. The Act gave ENZA Limited a privileged exporting position, protecting ENZA shareholders and allowing for independent exporting through an export permits system. Shares were issued to growers based on a formula bearing in mind long-term servitude and production in recent years.

The restrictions on shareholding, combined with poor ENZA performance and growers under pressure led to ENZA shares dropping significantly in value and a controlling part being bought up by GPG Orchards Limited and FRP Orchards Limited (MAF Discussion paper 2000). The growers, who had controlled their industry for so long, no longer controlled their industry. The short period following was confused, fuelled by grower dissatisfaction over reclaiming of historical foreign exchange losses and court actions over export consents. In May 2001, the government announced that the industry would be deregulated per the 1st October 2001.

3.1.3 DEVELOPMENTS IN RECENT YEARS

McKenna and Campbell (1999) state that in the period between 1994 and 1999, there was increasing pressure from both consumers and trade regulators to formalise production practices that are 'safe' and guarantee minimum risk to consumers through unacceptable chemical residues. Around this time, production started to consolidate in two main areas, Nelson and Hawke's Bay. The opening up of markets, especially in the OECD following the completion of the 1995 Uruguay GATT round, saw a concurrent evolution of 'green protectionism'. Barriers to food imports started to be controlled through non tariff means. More chemicals were banned and the number of Maximum Residue Level requirements (MRL's) increased. ENZA introduced Integrated Fruit Production (IFP) in the 1996-97 season as a response to increased market demands (McKenna, 1999). A second tier of market regulation had emerged by a number of supermarkets who tried to leverage market share by appealing to the increasing level of consumer concern about food safety. The result was that suppliers were exposed to increasing levels of auditing and traceability requirements.

During the years of deregulation, the New Zealand Pipfruit enjoyed several initial good years, soon followed by a poor 2004 result and a disastrous 2005 result. The 2004 and 2005 results were followed by years of moderate results, caused by frosts, several phytosanitary market restrictions, some poor markets and unfavourable exchange rates. The annual MAF monitoring report (2008) shows that the MAF Model orchards in the two main growing areas in New Zealand averaged accumulated losses over the previous 5 years totalling $182,000 (Appendix 4.1). During these early deregulation years, exporters sought for points of differentiation in order to establish markets and this led to several quality standards being introduced.

Since the 1990's and particularly after deregulation, there is a growing trend towards larger orchards owned by fewer growers. A similar trend developed for larger packhouses and cool-stores. Operations saw the need to become both larger and integrated in order to adjust professionally to quality and compliance demands by importing countries and supermarkets. This presented an ideal opportunity to improve quality systems; however it is questionable if the industry succeeded. The gradual shift from bulk reefer export ships to containerised product also provided opportunities to improve quality of product. The need to bulk store reduced, allowing for improved cool-chain.

Developing labour problems were reasonably successfully resolved by government's Seasonal Work Permit (SWP) and Approval in Principle (AIP) schemes, followed by the introduction of the government's 'Recognised Seasonal Employer' (RSE) scheme in 2007. The pipfruit industry employs approximately 3500 RSE workers each year since 2007 (DOL report 2009). Appendix 3.1 provides more information about the RSE scheme.

McKenna and Campbell (1999) summarise the state of the industry as having been characterised by three major influences:

1. The export dependent nature of the industry that has rendered NZ highly dependent on world markets.
2. The pin-ball effect of being centrally regulated and de-regulated.
3. The reputation of NZ fruit as being of high quality and coming from a clean green image which is placed under sustained scrutiny of supermarkets and consumers.

Although these are valid points, the numerous changes over the recent 10 year period had a significant bearing on the focus of the industry.

In 1998, New Zealand was still a single desk seller with only a few export permits issued to other companies (Mannering, 1999). Since 1998, the yield (tonnes/hectare) increased from 35 tonnes to 51 tonnes in 2008, an increase of 45% (FreshFacts, 2009). Simultaneously, the total planted area reduced from 14,976 hectares in 1998 to 8,832 hectares in 2008, a decrease of 41%. The number of growers reduced from 1500 in 1998 to 509 in 2008 (a 67% reduction), while the number of packhouses reduced from 183 in 1998 to 70 in 2008 (a 46% reduction). After deregulation in October 2001, numerous exporters took to exporting New Zealand apples and in 2008, 93 exporters traded an export volume of 14.7 million Tray Carton Equivalents (TCEs) (Pipfruit Industry Statistical Annual 2008). It is interesting to note that in 2009, about 82.5 0% of all exports was completed by fifteen exporters, while the bottom 84 exporters exported 17.5 % of the total production.

The pipfruit industry in New Zealand has developed to become a considerable export industry, contributing 25.68% to the total New Zealand fresh fruit export and 11.73% of total horticultural export income in 2008. Kiwifruit was the major contributor (64.8% of total NZ fresh fruit exports) on a total export income of $1,343,200,000 (FreshFacts, 2009). Data released by Statistics New Zealand show that fruit exports make up 3.71% of the total New Zealand exports (Statistics NZ, 2010). New Zealand produces about 1 % of the world's apples and captures 3 % of the global export trade.

As such, the Pipfruit industry is an important part of the New Zealand economy, but moderate results threaten the industry. To make an economic return, the New Zealand pipfruit industry must target the high paying premium markets (McKenna, 1999) and is not alone in its attempts to do so.

Out of 29 apple producing countries, New Zealand 'scored' as third most competitive in 2008, behind Chile and Italy, judged on 22 criteria including average yield, storage adequacy, packing facilities, marketing systems, product quality and others (Belrose, 2009). The most recent review shows New Zealand in fifth place behind Chile, the USA, Italy and France (Belrose, 2010). The World Apple review, started in 1996, shows New Zealand

leading a group of 28 countries between 1996 and 2002. The 2002 review however (Belrose 2002) comments that New Zealand is both succeeding and failing in an attempt to become more effective as the food distribution system changes.

If New Zealand was the confirmed no. 1 competitive apple exporting country in the world between 1996 and 2002, the 2003 World Apple Review (2003) shows the first signs of decline in international standing. The review mentions the 'old' marketing system being managed by one company (ENZA Limited), allowing the introduction of new premium apple and pear cultivars on the world market and allowing above average market returns which compensated for the long distance from major markets (World Apple Review 2003). The 2003 review reports a reduction in planted hectares and expresses the expectation that the industry may find itself in an awkward position because the government withdrew its funding for the involvement of HortResearch into innovation of the industry. An initiative to put together an international consortium for development of new varieties with Horticulture Australia and the Associated International Group of Nurseries (AIGN) is closely watched around the world. In 2003 then, New Zealand dropped from being the most competitive Apple Supplier in the world to being the second most competitive apple supplier in the world. Chile had passed New Zealand on the standings.

The 2004 World Apple Review (2004) summarises that New Zealand had two good years after deregulation because of smaller world apple crops. This is consistent with Mannering (2002), who reports general success stories by New Zealand industry before 1999. The World Apple Review notes that ENZA was the leader, guide and interpreter of what foreign markets needed and that this was no longer the case for exporters in 2003. Where in the past New Zealand was successfully introducing new varieties at premium prices (off-setting the distance–to-market disadvantage), the review questioned that much of the future of the New Zealand pipfruit industry was riding on the ability of the new research company to produce new varieties.

The 2006 World Apple Review (2006) refers to two successive 'poor' seasons in 2004 and 2005. The review goes on to point out that New Zealand is no longer the 'early mover' with varieties and only one new variety was introduced in the previous year. The review also signals that New Zealand companies are moving towards larger vertically integrated companies that control production, packing storage and exporting of pipfruit in order to meet the market demands. Chile emerged as the 'clear leader', well ahead of New Zealand.

Most concerning are the 2009 and 2010 reviews, where in successive years, Italy is reported to have leapfrogged New Zealand and relegated the industry into third place (2009) and the USA and France did the same for 2010. Where once New Zealand was undisputed leader, New Zealand is now in fifth place (Belrose Review 2010).

3.4 LEADERSHIP AND MANAGEMENT WITHIN THE INDUSTRY

The Honourable James B. Bolger, in his foreword to '100 Harvests, a history of fruit growing in Hawke's Bay' refers to the book being full of "...big people with big ideas. People of passion and conviction" (Mannering, 1999). He goes on to say that "Today, the 'hatchet' is being taken to many of the structures that have been built up over the last 100 years as today's leaders guide the Hawke's Bay fruit industry into its second 100 Harvests". The statement is obviously valid for the wider industry. But are big ideas, passion and conviction enough? How many stakeholders within the core of the industry have actual education or training in management that will advance the industry? When the industry was led in the past by a single company that applied substantial resources to management, most stakeholders simply had to do their job and 'not worry about the rest'. This situation has changed and the management knowledge portion of the industry may well have suffered.

3.4.1 LEADERSHIP PROBLEMS WITHIN NZ INDUSTRIES

A recent study into leadership in New Zealand concludes that NZ owner/managers show an excessive focus on short-term goals and lack long-term strategy (Kennedy, 2008). The management style tends to be from the top down with owners making most decisions. The author argues that NZ owner/managers are generally innovative but have limited leadership skills. Historically, many organisations are family organisations or borne from family organisations. These organisations brought with them hard workers who left school early and had little formal training (Mannering, 1999). As such, the industry can be seen as an interesting example of how closely management can develop 'intuitively' and be in/out of line with academic theories and models of management.

NZ owner/managers generally have limited formal education and struggle to see limitations to their company processes (Murti, 2009). Wilson, Heyl *et al* (2008, in Murti, 2009) refer to the Auckland 3 B's, the Bach, the Boat and the BMW, as a measure of success. The owner's perspective is often that they are successful. Being successful makes owners hesitant to listen to managers with formal education because the evidence that the owner's approach is correct lies within their success. Masaaki Imai, in a recent interview (Jayne, 2010) argued that most of the change process is initiated by middle managers with limited jurisdiction. If then owner/managers cannot accept initiatives by others like these middle managers, companies will continue along the path of short-term production systems and continue to present a debilitating inward-focus.

Business NZ (2009) finds that there has been an over-reliance on boosting production through longer hours and the use of cheap labour. Sustainable companies display reliance on ongoing learning processes, building positive cultures of improvement by participation. The studies by Kennedy (2008), Wilson Heyl *et al* (2008) and a report by Emiliani (1998) all point toward leadership solidifying cultures with short-term focus. These comments come from studies into lean management in general. The question is how management has developed in the Pipfruit industry in NZ.

3.4.2   PIPFRUIT LEADERSHIP/MANAGEMENT LITERATURE GAP

A study of literature concerning pipfruit shows that most publications are targeting specific grower technical subjects. Not much is written about the managerial challenges for organisations within the industry. The on-line Pipfruit NZ library contains over 600 publications addressing mostly technical fruit-growing issues. In July 2009, there were nearly 90 market reports, 15 minutes of meetings, and 16 research objective and outcome papers with the balance being technical papers. Not a single paper was found addressing quality of management or business management issues. A similar result was achieved searching the Massey University library for business management in the Pipfruit industry. It appears that business management is not a hot topic within the industry. And yet, the industry faces unique business relationships in a challenging seasonal environment. Standard product or service quality models as published by Garvin (1988) and Zeithaml *et al* (1999) cannot be 'simply' applied.

3.4.3   IS LEADERSHIP IN QUESTION?

A recent Pipfruit NZ initiative has introduced some organisations to learn a form of 'Lean management'. Although 'Lean manufacturing' is a proven management method, the uptake of the Pipfruit initiative amongst organisations was poor. Only three companies participated in an expansion of the initial training sessions, despite substantial co-funding of participation. The effectiveness of complete tech-transfer within the industry is questionable.

Industries in general know that sustained efficiency and prosperity go hand-in-hand with providing for the future. This is basic strategic management with a focus on improved infrastructure, technology, technical ability, training programs for skilling and 'up-skilling' industry people, in fact all those aspects that individual organisations would have difficulty to achieve on their own. The Research and Development effort of technical issues within the pipfruit industry has already been mentioned. Management of the overall universal aspects within the pipfruit industry is under question. It appears outside the mandate of Pipfruit NZ but is a necessity for the industry in order to prosper.

3.5   PIPFRUIT INDUSTRY STRUCTURE AND PROCESS

Little has been written about the management structures of the industry and of organisations within the industry. The historical development of the industry has created what it is today with de-regulation effects still being felt. The structure of the industry and of organisations within the industry is described under separate headings. A number of stakeholders are universally accepted as playing a role within the industry.

3.5.1   STAKEHOLDERS

Freeman defines stakeholders as any group that can affect -or is affected by- the achievement of an organisation's purpose (Freeman, 1984). This definition is adapted for the pipfruit industry to include any group that can affect or is affected by the achievement of the pipfruit industry's purpose. Using the adapted definition, there are several groups of stakeholders including growers, packers, cool-stores, exporters/traders/marketers,

vertically integrated organisations, Pipfruit NZ and suppliers to these organisations (Refer to Appendix 3.2 for a list of stakeholders with descriptions).

3.5.2 THE INDUSTRY PROCESS

In the shortest form, growers grow pipfruit and supply to the packer to pack/store and to the exporter to export. Growers receive the revenue less exporter commission and pay the packhouse and cool-store bills. Integrated organisations combine several or all of these activities within the one organisation. For the sake of clarity, the processes are described separately (Figure 3.2).
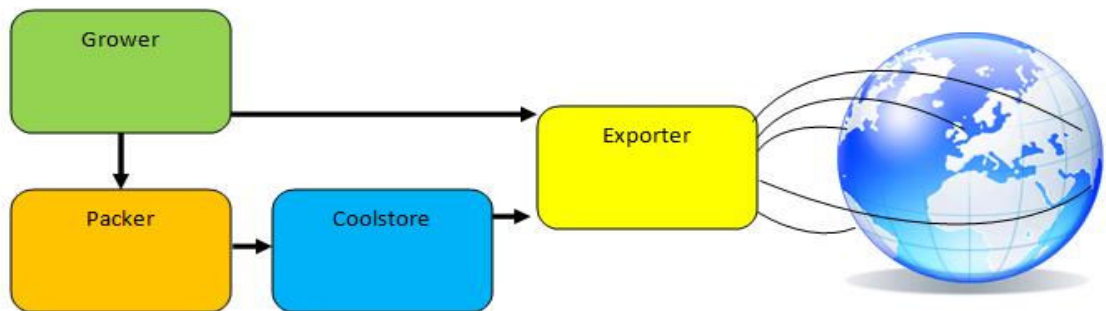
Figure 3-0-1: Primary stakeholder summary process

Growers and growing organisations grow 'raw' product, apples and pears (and recently nashi) and are not involved in any of the next stages as part of their activity. They provide a specific physical product that complies with a number of export rules. Their activity ends in principle when the fruit has been submitted for packing. Growers do follow-up with packhouses on pack-out percentages (*The volume of fruit packed for the market in relation to the total volume of fruit supplied by the grower to the packhouse for packing*) and returns; the grower may elect to communicate with packhouse and exporter, but is typically not actively involved in the decision making process for these next stages note exceptions.

The grower will select a packhouse of his choice and some growers will select different packhouses for different purposes (e.g. one packhouse for export product and one for domestic product). Today, some varieties are owned by companies who can dictate to the grower who is allowed to pack their product. The variety 'Jazz' is owned by ENZA and ENZA will dictate where these apples can be packed. Growers also select an exporter/trader or sometimes several exporters to market their apples. There are not many growers that dictate where there fruit is going to be sold; in principle growers will want to get the best price for their fruit and leave the marketing to the exporters. Depending on the varieties that a grower grows, he may not fully control which exporter trades his fruit or how his fruit is traded. Several varieties are traded under strict rules as they have been developed as Intellectual Property (IP) or a specific brand.

Packers or packing organisations are organisations that receive fruit submissions from growers and pack this fruit in accordance with specifically the instructions of the exporters or traders. Fruit is washed or sanitised, dried, graded for size or weight, for colour and defects and packed and palletised in accordance with instructions from the grower's exporter. Packers add value to the physical product and provide a service to both the grower and the exporter.

There are numerous restrictions on where the fruit is 'legally' allowed to go. Some of these are coming from MAF BioSecurity, others from the NZFSA, a number of them come from countries and others come from receiving organisations. These restrictions impact on the flexibility of the marketer. It is the packhouse however that collects all the information and identifies in its database where each pallet of packed fruit can and can't go, giving it a certification status.

Cool-stores are organisations that receive 'raw' product to store before packing and also receive and store packed product. Cool-stores take part in a number of preservation practices which is their domain. These include normal cool-storing, Conditioned Atmosphere cool-storing (CA), leading to better fruit quality preservation, SmartFreshing™, drenching to prevent disorders and others. Cool-stores provide a service to the grower, the packer and the exporter.

Cool-stores maintain fruit quality and operate an inventory system that allows stakeholders to check stocks and provide shipping instructions. They will load-out shipments as

instructed by exporters and organise transport to ports as required. At the point of load-out or more correctly the confirmation of arrival in port, the cool-store's activity stops.
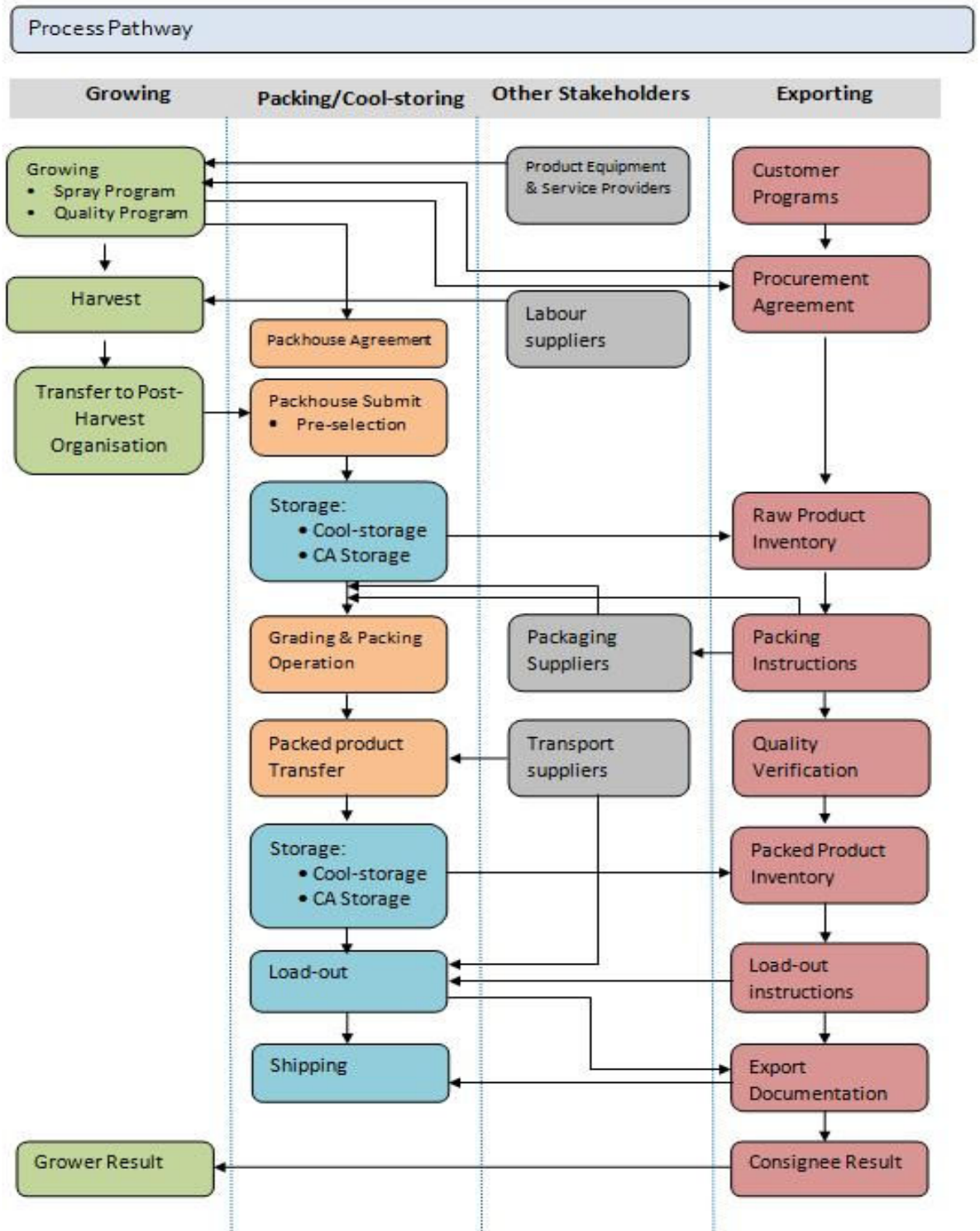
Figure 3.2: Industry process map

Exporters/Traders/Marketers are mentioned as one group because they are involved in the same work, either overseas or domestically. They create and maintain contacts with markets in countries, negotiate packing programs and prices, and provide instructions for fruit to be shipped to destinations. Exporters take care of export documentation while domestic traders organise domestic documentation. Exporters and traders don't actually receive fruit. They are usually providing a service to the grower. Figure 3.3 shows the product and service components in the supply chain.

New Zealand Pipfruit Supply Model
Product and Service flow in the Supply Chain

Product Flow	Product Responsibility	Service Flow

- Grower
- 'Raw' Product
- Service (Value adding)
- Packer and Coolstore
- Service (Value adding)
- Exporter
- Packed Product
- Service (Sales)
- Wholesale Distributor
- Category Manager
- Packed Product
- Service
- Retail Store
- Super Market
- Product & Service
- Retail Customer
- Product & Service
- End User

→ Supply Chain Down-stream Flow
←----- Supply Chain Up-stream Flow

Figure 3-3: Industry processes by primary activity

The issues referred to in this section are commonly known to industry stakeholders and stem from experience in the industry. This section describes various aspects that may need addressing in order for the industry to mature to an acceptable quality management level.

3.6.1 INDUSTRY PROCESS INCONGRUENCE

This industry process is not straightforward and offers a number of complications to stakeholders. Ownership of packed product is at times unclear. In the writer's experience in the industry, most of the

Figure 3-4 Quality Demand - Quality Delivery

packing and packaging materials are paid for by the grower to the packhouse. This would be part of a normal value-adding service, delivered by the packhouse to the grower. However some of the packing costs and packaging materials are paid to the packhouse by the exporter (who doesn't own the product). Most services are delivered downstream, with the product flow adding value along the way. Several of the services however are delivered up-stream, confusing the supplier-customer relationships.

The relationship is also incongruent when looking at quality demand (expectation) and quality delivery (Figure 3.4). When comparing the supply model with the quality model, there are several links within the quality chain that appear illogical. The exporter views the grower as a customer of his services but demands that his customer (the grower) delivers

good quality fruit to the packhouse. The packhouse is in a similar position, viewing the grower as a customer but simultaneously having to make the grower's product comply with the exporter's quality requirements. While the grower wishes a high 'pack-out' percentage, the exporter may decide to exclude low colour fruit and certain sizes because the markets are uneconomical, thereby making a decision to reduce the pack-out percentage. The grower is traditionally looking at the packhouse for a high pack-out. The packhouse however must comply with the requirements from the exporter who is elected by the grower. This provides for conflicting quality criteria demands fuelled by conflicting views on how to maximise returns. A legacy from the old ENZA days and common knowledge within the industry is that growers tried to 'cheat' by making the best cartons the most likely to be inspected. To date, there is no 'key' for this situation of conflicting interests.

3.6.2 FURTHER COMPLICATIONS

There are circumstances where exporters will purchase raw product from the grower and present it for packing so that it can be exported by the exporter himself. In these cases, ownership transfers to the exporter. The grower may not be willing to take a risk and prefers to have a 'clean' net sale without any further complications. The value chain becomes less cluttered under those circumstances.

Interestingly, the responsibility for the fruit's availability for specific markets may still be the grower's responsibility. The grower sells product to the exporter and the exporter contracts the packer/cool-store to pack and store the product (add value) to the exporter's specification. The customer-supplier relationship is clear. Within the
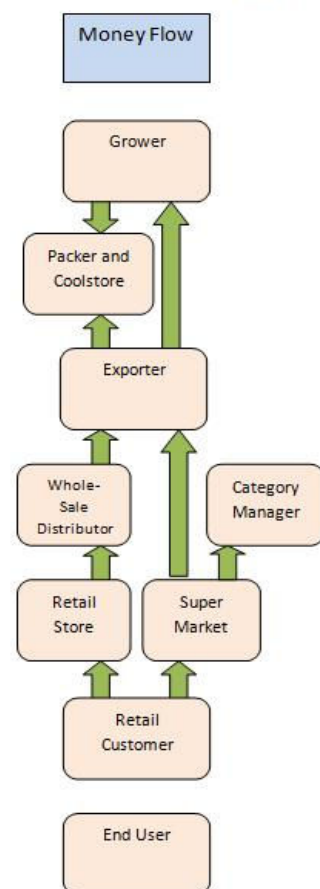
Figure 3-5   Money Flow in the Supply Chain

industry however, this is an unusual practice. Traditionally, the exporter is seen as the organisation that maximises the return value to the grower and receives a commission. The commission then becomes the incentive for the exporter to sell at the highest price. Figure 3.5 shows a model of the money-flow.

Other scenarios include exporters who charge a fixed sum per sold carton or TCE to the grower. Here, the exporter is not per se driven to maximize returns to the grower as the exporters revenue depends on the number of cartons sold, not on the price for which they are sold. Some of these fixed sums are subject to exchange rates. Again, this scenario is not common in the New Zealand pipfruit industry.

Vertically integrated operations include two, three or four elements of primary activities. Some organisations run these as separate companies with separate sets of accounts. Others run one company that grows, packs, stores and exports product.

The international customer field is a field subject to continuous changes. When most of the New Zealand pipfruit ends up in supermarkets across the world, this supermarket scene is changing year-by-year as supermarket chains embark on new programs to create points-of-difference for the customer. This means that adaptation to the various supply chain requirements is vital for the industry's sustained survival and economic growth.

3.6.3   SEASONALITY OF THE INDUSTRY

A problem facing the pipfruit industry is its seasonal nature. Particularly growers, packers and cool-stores are affected by the large seasonal component. Depending on the activity of the stakeholder, periods of intensive activity are interchanged with periods of relative calm.

This is reflected in:

1. The dependency of the orchardist on favourable **weather conditions** to produce maximum crop at correct quality levels. The weather has a significant influence on crop outturn: Heavy frosts can damage the crop; so can heavy sustained rain, drought and hail. Cool nights and crisp sunny days improve fruit colour. The orchardist is equipped to combat a number of these environmental weather

factors, but all growers are aware that they cannot avoid the negative effects of severe or persistent weather patterns (MAF 2009);

2. The **intensive activity during the season**, followed by moderate activity during the 'off-season'. From the moment that harvest is completed, a number of activities on orchard must happen. These include pruning, frost-fighting, fighting fungal and other diseases, crop thinning and general orchard maintenance. During the harvesting season, there is only one priority: If the fruit is at the right maturity level, it must be harvested immediately. Any delay in harvesting is reducing fruit quality;

3. The **large manual labour component** of the industry, requiring high staff levels during the season. An orchard may employ 10 permanent staff throughout the year, which roughly equates to 150 pickers during the harvesting season. A packhouse may employ 15 permanent staff throughout the year and may employ up to 300 staff during the packing season. Cool-stores may employ 3 staff during the off-season and employ 20 staff during the cool-store season. Permanent employees are providing a platform of skill, knowledge and stability to the workers. Nonetheless, the ratio of permanent employees versus seasonal employees is very low (MAF 2009);

4. The **difficulty maintaining skilled staff** levels that will facilitate supervision of the many unskilled staff during the season. Although many employees pick up skills during the season, the organisation loses the skill set and experience during the off-season because there is relatively little work during the off-season.

In addition, the seasonal nature and location of the industry means that it is subject to several other factors outside the industry's control. These include:

1. The exchange rate which has an often underestimated bearing on the final returns to stakeholders;
2. The Northern Hemisphere left-over stocks affecting markets.
3. Duration of transport to market.

3.6.4 COMPLIANCE REQUIREMENTS

Compliance requirements in the food industry are high and the pipfruit industry is no exception. Pipfruit is not processed by industry organisations and is generally considered to be a low risk food. Nonetheless, there are numerous compliance requirements. These include general regulatory requirements, pipfruit related regulatory requirements, standardisation requirements and customer requirements. A list of more detailed requirements is attached as Appendix 3.3.

General Business requirements are compliance requirements that a business has to observe in order to run any form of business. Pipfruit Regulatory requirements need to be observed in order to grow, pack, store and export pipfruit. Standardisation requirements are observed as a matter of cause, ensuring that stakeholders in the supply chain can communicate. Customer requirements in the supply chain are met in order to supply products that comply with the customer's strategic plans.

One of the problems that the New Zealand Pipfruit industry has is that it has not pre-sold all packed product; in fact only a small portion of the New Zealand harvest is pre-sold on a firm basis. Export companies work on supply programs with customers, but in many cases even a supply program does not guarantee that the customer will end up buying the product. This means that the industry must be flexible and try and comply with as many requirements as possible so that fruit is suitable for – and complies with- as many market- and customer requirements as is possible.

As a result of these developments, there is a real risk that compliance in general becomes a 'box-ticking exercise' where the ticked boxes are audited while actual activities disappear into the background.

3.7 SUMMARISING THE PIPFRUIT INDUSTRY

The pipfruit industry's current state is significantly the result of its history, particularly in the last fifteen volatile years. Radical government-lead changes to the political, social and economic environment, infamously dubbed 'the New Zealand experiment', led to a changed society with reduced health care, higher public debt, a de-regulated labour

market, 'user-pays' principles and an increase in people living below the poverty line (Kelsey, 1997).

The industry faced increasing international competition and an increase in technical trade barriers despite the 1996 GATT talks (McKenna and Campbell, 1999). This, combined with the loss of the single desk selling model placed the industry in a position where short-term survival decisions for stakeholders became rule and strategic development was of secondary priority. Deregulation created a model of internal 'within-industry' competition for the international customer when the actual competition was the growing production and increasing technological advancement of developing and competing pipfruit countries.

This legacy of the current industry model is making for a challenging future. There is little indication that the industry is likely to unite in any form under any banner in the short-term. Pipfruit NZ has no mandate to regulate the industry but continues to move forward with significant Research and Development programs that keep the New Zealand industry in touch with their international competitors. Although there is no question about the dedication and motivation of individual stakeholders, focus is on technical and trade issues which are argued to ensure industry survival. There is no focus on a complete or total quality approach within the industry.

4. TQM PRINCIPLES IN THE PIPFRUIT INDUSTRY: GAPS AND REASONS

Some clarification is required if we want to understand the current relationship between the pipfruit industry and TQM. It is apparent from its historical development and the large seasonal component of the industry, that the pipfruit industry is not generally covered by classical quality management theory. The lack of literature about TQM and seasonal industries presents a gap in itself. This chapter intends to understand what gaps exist between TQM and the pipfruit industry in its current state. In addition, it tries to offer some explanation for later reference.

4.1 EARLIER RESEARCH INTO TQM AND AGRICULTURE IN GENERAL

A literature search shows that there is little literature available on TQM in relation to seasonal industries. Beckford (1998) discusses perishable goods and the minimal impact that continuous improvement has on customer behaviour. It is proposed that Beckford's comments relate to product development and not to the structures, systems and processes of the organisations that are growing and adding value to the product. Juran wrote specifically about six industry groups, one of which was the process group (Juran and Gryna, 1988) but none dealt with seasonal industries. Dhanakumar (1999) researches TQM for the plantation industry and quotes an excessive focus on 'Best Agricultural Production Technology'. In his observation, substantial emphasis must be placed on recognition of the workforce to improve quality. He goes on to develop the concept of 'Human Dimension of Total Quality Management' (HD-TQM).

Birch observes that during the last century, agricultural employment has fallen from more than half of all employment to about 2% (Birch, 1987, in Zeithaml *et al*, 1990). He further states that millions of jobs have been created, but that it is not surprising that these jobs are in service industries. Perigord (1990) shows a similar trend (Figure 4.1). Despite the fact that there has been a significant shift from primary production to service delivery, pipfruit still uses a large manual labour component caused by a lack of automation (table 4.1).
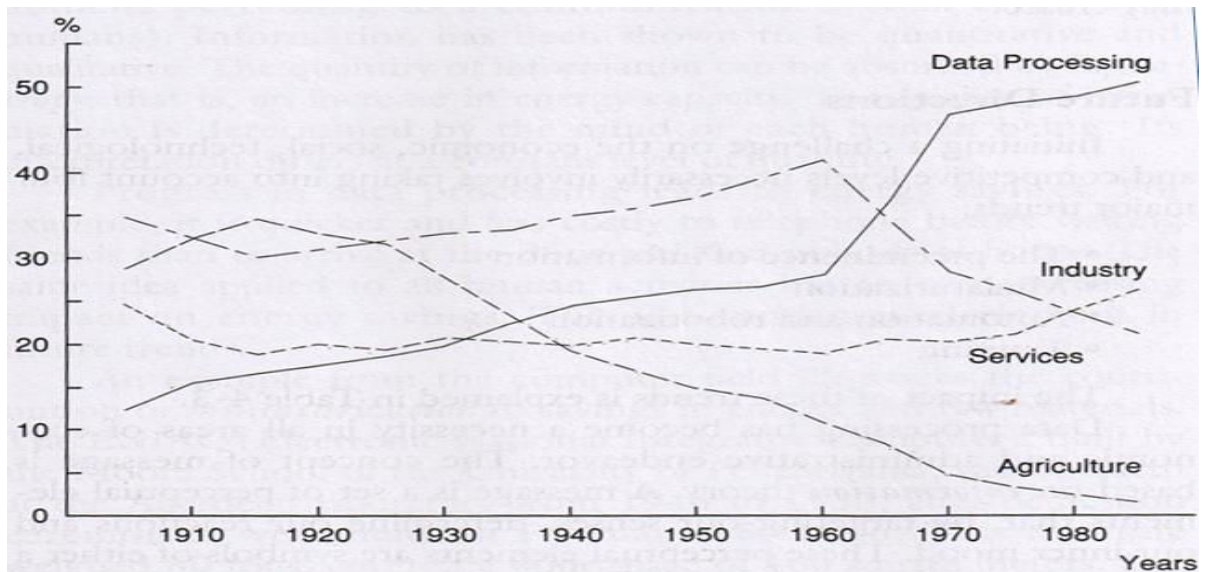
Figure 4.1: Development of labour activity trends during the last century (Adapted from Perigord, 1990)

4.2   EARLIER RESEARCH INTO TQM AND THE PIPFRUIT INDUSTRY SPECIFICALLY

Perry *et al* (1997) state that TQM in the primary sector is relatively novel and is challenging for a variety of reasons. The report indicates a low commitment investment in the seasonal workforce by the grower. It also states that TQM practices have been successfully disseminated throughout the New Zealand pipfruit industry. This last statement is challenged by the writer. In his experience, only a few TQM principles are applied in the pipfruit industry, be it intentionally or accidently.

The single largest bill faced by organisations in the industry is the wage bill, with orchards spending more than 50% of their expenses on wages and salaries, and packhouses more than 40% (MAF Horticulture and Arable Monitoring Report 2008 & 2009). Several dedicated exporters estimate their wage/salary bill to run between 58% and 65%. The large manual labour component is caused by pruning, thinning, weed and pest control, harvesting and management wages and then by wages for packing and other services. A low commitment investment in the seasonal workforce as indicated by Perry *et al* (1997) - which represents over 80% of the total pipfruit workforce- is incongruous with successful

dissemination of industry practices including TQM principles in the industry. Deming states it more succinctly in saying that 'our troubles lie entirely in the work force' (Deming, 1982).

The following table shows the estimated proportion of permanent staff versus seasonal staff of stakeholders.

Table 4.1: Percentage distribution of permanent and seasonal labour in the pipfruit industry today

	Orchard	Packhouse/Cool-store	Exporter	Vertically Integrated Operation
Permanent %	13.7%	10.6%	85.7%	10.5%
Seasonal %	86.3%	89.4%	14.3%	89.5%
	Percentages are based on staff numbers reported by organisations participating in the survey. They were calculated after qualifying organisations as 'grower', 'packer' etc.			

Perry *et al* (1997) state that there was an overall willingness by growers to 'accept the challenge'. However in the same paragraphs the report talks about the growers being forced by the Apple and Pear Marketing Board (APBM). The same report also claims that there was an overall highly cooperative culture in the industry and a prevailing confidence in the board. Earlier paragraphs which described the history of the pipfruit industry show growing discontent amongst growers and packers, eventually leading to de-regulation. It is argued that this was hardly a climate to accept and foster TQM principles.

4.3 GAPS AND REASONS

The question needs to be asked whether TQM is used in the pipfruit industry and to what degree? What are the gaps and what is causing these gaps? How does the pipfruit industry differ from standard quality models as presented by Garvin (1988) and Zeithaml *et al* (1990)? What are the main differences between 'normal' manufacturing or service industries and the pipfruit industry?

The nature of the product plays an important role. Pipfruit is a live product with limited lifespan. It is not a manufactured product that may 'age' but will maintain all the quality aspects included at the time of production as manufactured products do (Garvin 1988). When the fruit is ready on the tree, it must be harvested, cool-stored, packed and shipped. Delays in harvesting or cool-storing lead to an unacceptable drop in fruit quality, and cannot be allowed. The relatively short pipfruit season therefore has an explosive start and requires a large temporary (seasonal) workforce for both harvesting and packing. Because the workforce is largely seasonal, few resources are allocated to developing quality cultures. Each of the stakeholders is dealing directly or indirectly with the consequences of the seasonality of the industry.

As a consequence, there appears to be a 'scientific management' approach (Inkson & Kolb, 2003) with strong emphasis on production, but without development of the seasonal worker because the worker will leave again at the end of the season. Selection and training is minimal and often considered a waste of time. Investment in the seasonal worker is considered to have a low return on investment (ROI).

As there is little in terms of research of TQM and seasonal industries, the proposed gaps are not based on a wide body of empirical evidence but rather on logic. The previous section looked at leadership processes, strategic thinking, industry structure and processes, seasonality of the industry, and the large manual labour component of the industry. Following the description of TQM principles and the industry, the next areas are proposed to present potential gaps:

1. Manufacturing or Service: Pipfruit is a sometimes confusing mixture of production (manufacturing) and service provision (table 4.2).
2. Customer: In this manufacturing/service conundrum, the supplier/customer relationship is not always clear.   As many organisations have elements of vertical integration, it is important for these integrated elements to be managed appropriately.
3. Leadership and senior management: Leadership/senior management are mostly focussed on survival, production efficiency and reaction to markets and the national landscape; TQM (if understood) does not easily 'fit' the pipfruit environment.
4. Seasonal staff skill levels and cultures: TQM assumes continuous production (activity); in terms of labour, pipfruit has approximately 10.5% to 13.7% continuous

(but varying) activity and some 86.3% to 89.5% of highly seasonal activity. Staff skills and cultures display substantial variability. This seasonality is considered an impediment to development of TQM principles.

Table 4.2: Estimated percentage of production/service provision by stakeholders

	Orchard	Packhouse/Cool-store	Exporter	Vertically Integrated Operation	Pipfruit Industry Body
Production	95 %	10 %**	0 %	13 %***	0 %
Service	5 %*	90 %**	100 %	87 %***	100 %
	* Providing data and communicating with packer and exporter ** The tangible attributes of the product do not change as the apple is sold to the end-consumer without packaging. Most packaging is discarded on arrival (Ramaswamy, 1996). *** Depending on integrated components: average estimated over 15.000.000 TCEs with 75 packers/500 growers				

5. Output/input/output product consistency: TQM assumes control over input; Pipfruit production is subject to seasonal influences that differ from season to season, creating variable grower outputs and value chain (packer/cool-store, exporter) inputs.

6. Short-term focus versus strategic development: Most of the managers are assumed to be owners. A large proportion of these are assumed to focus on short-term production and profitability goals. Built-in Quality and Continuous improvement are not common strategies.

7. Culture: It is considered difficult to develop a TQM culture in an environment where most of the staff are seasonal and where improvements are often reactions to developments.

8. Tools: Common TQM tools are hardly known and used.

It would be helpful for the industry to understand more about TQM elements that present 'gaps' in industry management of quality and quality of management. When gaps have been positively identified, the industry and individual organisations can set to assess and close those gaps as seen fit. The following chapters discuss research design, results and discuss potential improvements to segments of the industry.

5.   RESEARCH DESIGN

There is practically no literature about TQM and the Pipfruit industry; in fact there is sparse literature about seasonal primary industries and TQM. A literature review and industry assessment of TQM and the pipfruit industry has shown a number of potential gaps. The gap analysis is followed by research and analysis of interviews with industry organisations and questionnaires answered by the same and other industry organisations. Organisations include dedicated orchards, packhouse/cool-stores and exporters as well as integrated operations.

Ethics are a consideration and the help of Pipfruit NZ was sought in selecting and approaching participants. A copy of the introduction by Pipfruit NZ to the research project can be found as Appendix 5.1. Participants in interviews and questionnaires are not identifiable. As Creswell (2002) suggested, organisations that participated received suggestions or recommendations in order to help improve quality management aspects of their operation where desirable and possible. Several companies commented that the interviews made them think about how they are 'doing things'.

The research report intends to answer several questions with a focus on the gaps proposed earlier, but generally answering the following questions:

1. Do organisations within the pipfruit industry know TQM as a management philosophy?
2. Do organisations within the pipfruit industry apply TQM elements in the running of daily business? Which elements?
3. Are any TQM philosophies applied or implemented accidently or deliberately?
4. What makes the implementation of a TQM philosophy and TQM methods hard? Are there pipfruit inherent unique obstacles? What are they?
5. Could the industry benefit from introducing TQM techniques, tools and principles; what improvements can be made?
6. Can there be a seasonal industry model for TQM?

5.1   QUALITATIVE OR QUANTITATIVE RESEARCH METHODS

Since not much research has been done in the area of total quality management in seasonal industries, it is considered that this research project is of exploratory nature. It appears useful to gather more in-depth information in an industry that lacks constancy and predictability due to seasonal patterns.

Conrad and Maul (1981) describe a number of research methodologies on a control continuum, ranging from archival data at one extreme to clinical experimental methods at the other extreme of the continuum (Figure 5.1). Each method has different construct-, internal- and external validity and reliability. Each method however is described as an isolated approach towards answering a specific research question or hypothesis. Most methods are quantitative.
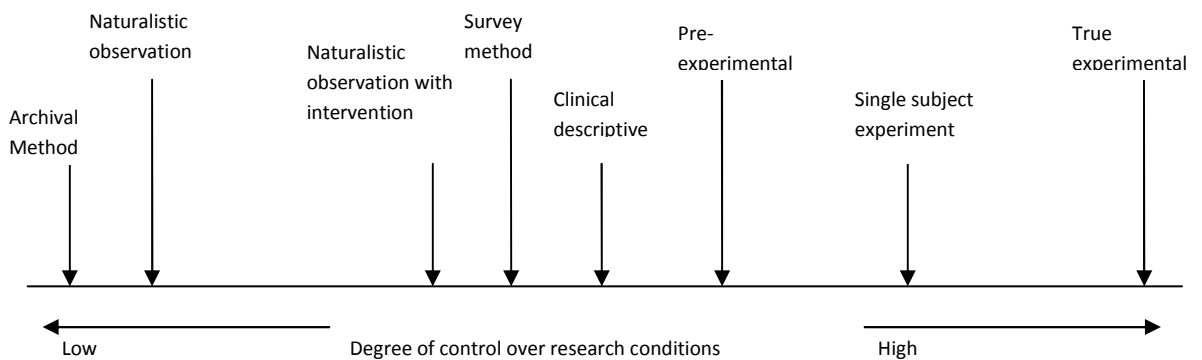
Figure 5.1: Degrees of Control over Research Design, adapted from Conrad and Maul (1981)

Qualitative research is argued to provide rich and meaningful data. Often the researcher can obtain information which could not have been obtained using other research methods (Patton, 1990, Creswell, 2002). Simon *et al* (1996) conclude that this applies particularly when conducting quality management research. They recommend a generative strategy for structuring and ordering the combination of qualitative and quantitative methods, proposing a three phase model leading from informal descriptive information to formal structured information.

Voss *et al* (2002) conclude that case research has consistently been one of the most powerful research methods. Their view is that case studies can be used for different types of research such as exploration, theory-building, theory-testing and theory

extension/refinement. Fewer cases give greater opportunity for depth of observation. In the case of TQM and the pipfruit industry, where there is limited information due to a lack of study and literature, case research is considered as a valuable research method.

Already 20 years ago, Patton (1990) offered a perspective that several different research methods can be mixed. Patton's focus at the time was on qualitative methods. This approach is taken further by Creswell (2002) who describes qualitative and quantitative or 'mixed' methods in detail with a number of advantages involved. Where qualitative research focuses on gathering in-depth information, quantitative research has a focus on systematic empirical data gathering. A mixed method offers opportunity for exploring and advancing theoretical concepts as well as triangulation, adding validity to research outcomes.

In view of the intention of this research project, a mixed method approach is adopted. The design of the research methodology is both qualitative and quantitative.
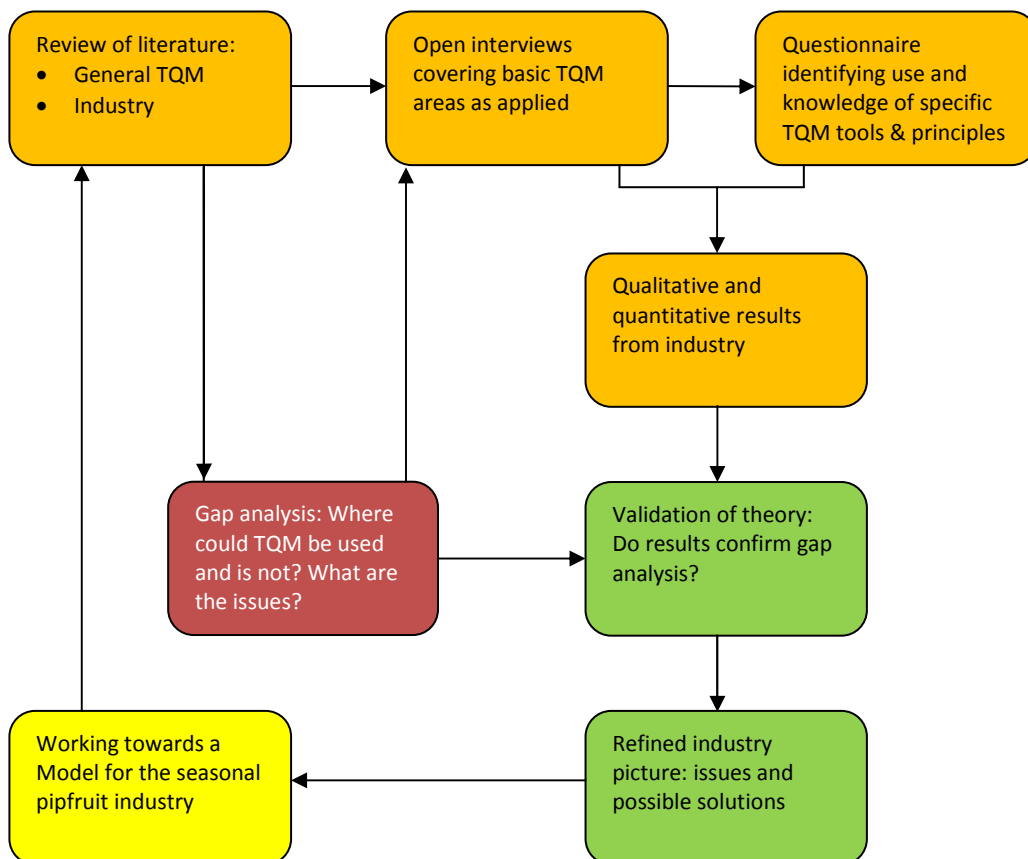
Figure 5.2: Research design

5.2   POPULATION AND SAMPLE

Traditional research requires random sampling for validity; selecting a population and taking random samples that have statistical significance from that population. In case study research however, it is suggested to select cases using criteria (Eisenhardt, 1989; Yin 1994 in Voss *et al*, 2002). Because large numbers of data cannot be obtained with in-depth studies, there is an argument to ensure deliberately that the samples represent relevant sections of the subject area. Voss *et al* (2002) believe that the researcher can apply replication logic, but also can select disconfirming case and exceptional case or identify polar types. Miles and Huberman (1994, in Voss *et al*, 2002) suggest tests to apply to a sampling plan; testing relevancy, phenomena appearance, generalisation, feasibility and ethics.

The pipfruit industry knows three main groups of activities: Growers, Packhouses/Cool-stores and Exporters. In addition there are those organisations that are partly or completely integrated, covering two or all aspects of the industry. Some of these organisations may grow, pack or export as little as 50 tonnes of fruit while others grow, pack or export up to 700 times as much.

In order to get meaningful information, three different sizes of each of the three types of organisation (grower, packer, exporter) were interviewed, nine in total. Organisations were selected in collaboration with Pipfruit NZ, with regard to size and activity. The underlying reasoning is that small organisations may have fewer resources available to apply total quality management methods than large organisations. The staffing element also plays a role with large organisations having to employ a large volume of seasonal employees. In addition, total quality management elements may differ between types or purpose of organisations. Also, and for the purpose of this research project, Pipfruit NZ was treated as a 'stand-alone' pipfruit organisation and interviewed. Pipfruit NZ is not a profit making organisation and is funded by member levies. As such, the position of Pipfruit NZ is expected to be different from that of commercial organisations.

Table 5.1: Interview Sample Organisation Selection Criteria

	Size (TCE) Specification	Grower	Packhouse/Cool-store	Exporter
Small	0 - 300,000	0 - 300,000	0 - 300,000	0 - 300,000
Medium	300,000 - 900,000	300,000 - 900,000	300,000 - 900,000	300,000 - 900,000
Large	900,000	900,000	900,000	900,000

5.3 VALIDITY AND RELIABILITY

Although a case has been made for exploratory qualitative research, a low number of cases affect external validity in a negative way (Voss, 2002).The generality of concepts cannot be argued to be applicable to the population, based on few cases (Conrad and Maul, 1981). More cases reduce the depth of study but increase external validity. In order to both explore and achieve results with some external validity, the interviews were combined with questionnaires, allowing some triangulation of information. Triangulation, mixing research methods and using various data sources, also helps establish internal validity (Voss *et al*, 2002). Cross-case analysis to look for themes is added to within-case analysis and adds internal validity to generalised conclusions. The elected mixed methods research method is therefore considered to provide the best mix of exploration and confirmation, as well as internal and external validity for an explorative study of the research subject.

5.4 THE INTERVIEW

Structured interviews, backed up by unstructured interviews provide the typical source of information in case studies (Voss *et al*, 2002). Voss *et al* argue that the interview concept should be that of a funnel concept; starting with broad open-ended questions and narrowing down to specific detailed questions. Voss *et al* (2002) use principle informants, and interview further members of organisations to complete data.

In this research project one or several people of each of the selected organisations were interviewed simultaneously. Open semi-structured interviews were used to develop in-depth unrestricted insights into quality management in the selected organisations. Interviews covered basic TQM elements (Appendix 5.2) and some elements exploring what

organisations perceived to be their biggest stumbling block. Interviews took approximately 1 ½ to 2 hours each. Questions were open-ended and non-causal (Voss, 2002). In addition and where possible, a tour of the organisation was used to add personal observations to the information provided in the interviews. Interviews were recorded for later reference where participants agreed.

5.5   THE QUESTIONNAIRE

Questionnaires were completed by all organisations that were interviewed except Pipfruit NZ (a total of nine organisations) and by a similar number of non-interviewed organisations. Questionnaires were developed to understand TQM principles, philosophies, tools and techniques that are familiar to or used by different types of operation in the pipfruit industry. Questionnaires were divided into four parts (refer Appendix 5.3):

- Part 1 summarised the purpose of the questionnaire and asked for some basic but relevant organisational information to identify type and size.
- Part 2 consisted of thirty-five statements in relation to quality management and the organisation, with a 5 point Likert scale to indicate levels of agreement or disagreement. Statements were:
    - Expressions where agreement indicated positive trends towards TQM,
    - Statements where agreement indicated negative trends towards TQM,
    - Neutral statements collecting information.

Statements were mixed to avoid participants identifying the purpose of the questionnaire. Statements were indirect in order to prevent respondents to give a 'consciously correct answer' (Erickson and Rossi, 1883).

- The Likert scale then received a 1 to 5 point score for complete disagreement to strong agreement.

Note: Statements were designed to elicit responses about trends in 'quality-thinking' without clearly indicating what the 'right' answer is supposed to be. They were arbitrarily categorised accordingly and the categorisation may be confusing to the reader. A fair amount of experience in the industry was applied when creating these questions, e.g. Statement 1 (a quality philosophy statement): "Quality

inspections are necessary to ensure quality product" relates to end-inspections and will be understood accordingly within the industry. As another example, statement 4 (a benchmarking statement): "Sharing information between organisations allows other companies to catch up", may indicate that companies are more concerned with others catching up than with learning themselves.

Table 5.2: Categorisation of statements

	Positive	Negative
Quality philosophy	3	5
Job design	5	1
Innovation	1	3
Benchmarking	1	2
Teamwork	1	1
Change/participation	1	4
Cross-functional management		1
Culture		3

- Part 3 consisted of twenty-two statements in relation to quality management and employees with a 5 point Likert scale to indicate levels of agreement or disagreement. Statements were indirect in order to prevent respondents to give a 'consciously correct answer' (Erickson and Rossi, 1883). Questions sought to identify two elements:
  - Attitude towards permanent and seasonal staff using McGregor's 'X' and 'Y' typology (Six statements each) (Moorhead & Griffin, 1995).
  - Attitude towards staff motivation, using Herzberg's Two-facto theory, describing hygiene and motivator factors (Ten statements) (Inkson & Kolb, 2003).

    The Likert scale received a 1 to 5 point score for complete disagreement to strong agreement.

Table 5.3: Likert scale model used in part 2 and 3 of the questionnaire

Statement	Strongly disagree	Disagree	Agree nor disagree	Agree	Strongly agree

.   Part 4 presented a table with sixteen TQM planning and improvement tools. Tools presented Ishikawa's seven basic tools and the new seven tools developed by the Japanese Society for QC Technique Development (Foster 2003). Added to these were the basic brainstorming and Critical Path planning tools. Tools were scored on a 5 point Likert scale to indicate levels of usage of these by the organisation. Participants were asked to rate only if they knew the tool, allowing also to rate how many tools were know, versus how many tools were used and to what degree.

Table 5.4: Likert scale used in part 4 of the questionnaire

Planning & Improvement Tools	Never Used	Use sometimes	Use	Use often	Use all the time

5.6   DATA COLLECTION PERIOD

Organisations were first approached by Pipfruit NZ in an email outlining the research project and asking for participation in mid November 2009. The email from Pipfruit NZ was followed up by phone calls to make appointments for the interviews on location. All data collection started in December 2009 with interviews. Interviews were completed in March 2010. Questionnaires were sent out starting in November 2009 to selected organisations. Further questionnaires were sent in February to achieve a minimum number of responses of 18 (double the number of interviewed 'within industry' organisations). The last questionnaire was returned in March 2010.

6. INTERVIEWS AND SURVEY RESULTS

This section summarises interviews and responses to the survey. Chapter 7, 'Discussion' analyses and discusses the outcomes from interviews and survey, addressing 'key themes' coming from the responses. Results and discussion are kept separate for ease of reading.

Nine companies were interviewed on their company premises. Interviews were open-ended but some structure was maintained by selecting a number of subjects related to TQM.

Eighteen (18) companies returned surveys of a total of twenty-seven (27) sent out. This response rate is considered reasonable considering the timing of the study just prior to the start and during the start of the season.

The interviews and survey results are summarised below.

6.1 INTERVIEW SUMMARIES

The following table (Table 6.1) summarises the companies that participated in the interviews. Companies were selected with the assistance of Pipfruit NZ. Of the nine companies that were interviewed, three were considered small, three were medium size and three were large. Some companies were involved in one specific activity (e.g. growing), others were completely vertically integrated. Several companies were partly vertically integrated.

Ownership of most companies was private or private shareholding, with some companies having a semi-cooperative structure or corporate structure. All companies have been operating for more than ten years with half of the companies operating for twenty years or more in their present form.

All companies had a mixture of permanent and seasonal employees and the ratio averaged out at one permanent employee for every eight seasonal employees (ratio of 1:8). Pipfruit NZ was interviewed as an executive management of the pipfruit industry but not included in survey data.

Interviews are summarised with the main TQM subject areas in **Bold.** All topics are then summarised in table 6.2 so that some quick cross-case comparison could be achieved.

Table 6.1: Summary data of companies participating in interviews

	C1	C2	C3	C4	C5	C6	C7	C8	C9
Size	Medium	Medium	Large	Small	Large	Small	Large	Small	Medium
Growing	√		√	√	√	√	√	√	
Packing	√	√	√	√	√	√	√		√
Storing	√	√	√	√	√	√	√		√
Exporting	√		√	√	√		√		√
Ownership	Private Shareholding	Private Shareholding	Corporate Shareholding	Private Shareholding	Corporate Shareholding	Private	Private Shareholding	Private	Private Shareholding
Permanent Employees	13	36	25	10	90	5	30	5	10
Seasonal Employees	180	90	520	120	640	50	250	30	130
Age	>25 years	> 20 years	> 15 years	> 10 years	> 10 years	> 10 years	> 20 years	>20 years	> 20 years

6.2.1 COMPANY 1

Company 1 (C1) is a small-to-medium sized family owned company. The company's
activities are as grower/packer/cool-store/trader for its own fruit and for some customers.
All activities are organised from one location. Management is typically done by the owner
with the help of some supervisors in the different areas of involvement. The
owner/manager (O/M) has a long history and experience in the industry. There is a
relatively close relationship between a small number (<15) of permanent employees and
the company employs between 150 and 200 seasonal employees of which about one third
is RSE employees.

Economic circumstances are driving quality decisions; compliance with quality systems is
seen to be creating more bureaucracy and quality is seen as the quality of the product.
There is a tendency towards a 'Y' approach for permanent employees and an 'X' approach
towards seasonal employees. The company is uncertain about the long-term future and
how it will proceed.

Company 1 looks at **quality** as the customer's requirements. Quality is important because
poor quality makes you lose customers. Quality to company 1 means mostly the quality of
fruit. Customer's claims on poor quality are often market driven (e.g. oversupply) and not
caused by poor quality. **Senior management commitment** is non-specific and generally
means that the business is run well, e.g. there is an acceptance that increased turnover
may well mean reduction in service.

The **customer** is considered the most important person in the business. The customer is
identified as the importer, the distributor or the end-user. There is no concept of internal
customers. C1 places value on strategic relationships with customers and suppliers. C1
identifies that it cannot sacrifice service for short-term 'better pricing'.

The company's **product** is identified as a container of apples, going to a customer.

The owner/manager (O/M) selects **employees** carefully to assess if they 'fit in'. Happy
employees work better. There is no deliberate attempt to cultivate teamwork. Permanent
employees get some training, mostly in-house and seasonal employees get short
introductions and on-the-job corrections. There is a standard monetary reward system and

some incentives have been tried. Some permanent employees are on a bonus system. The owner/manager regularly instructs permanent employees to give compliments. Permanent employees are mostly trusted and participate; the O/M pushes them to make limited decisions and tends towards a 'Y' approach. Seasonal employees are instructed with little opportunities to participate; the owner/manager clearly tends towards an 'X' approach.

C1 does not have a developed **strategy** but strategy has been on the O/M's mind. Strategy is influenced by the state of the industry. C1's O/M wants to make the company a friendly place to work. Happy people communicate better. There is respect. There is no focus on other aspects of **culture** such as **continuous improvement** and **teamwork**. At this point, the O/M states that he makes the improvement decisions.

C1 has some understanding of the importance of **design** of lay-out and processes but built-in quality is a foreign concept. **Communication** is usually informal over a cup of coffee or during an orchard walk. The O/M elicits employees input because 'they do the job', and they can think of ways to improve the job. The O/M considers himself possibly as the **greatest hurdle** for the company to become the best it can be.

A brief tour of the facilities showed a typical expanded orchard/packing facility of reasonable age, reasonably tidy.

6.2.2 COMPANY 2

Company 2 (C2) is a medium-to-large private company with a 'co-operative' structure. The company packs, stores and exports fruit but is also contract-packing for growers and exporters. It is owned privately and is run by a relatively small team of management employees under board supervision. The company employs between 30 and 40 permanent employees with an added 80 to 100 seasonal employees supplying labour during the season. There are programs running for 10 to 11 months of the year which means that the contingent of permanent employees is continually employed.

Company 2 sees **quality** as 'fitness for purpose'; product packed and shipped to specification. Management is aware of the 'lean' concept and have embarked on a 'lean' path after learning in previous years that a focus on volume can be to economic detriment.

Senior management commitment is to put 'lean' in place over the next few years. Nonetheless, the company does 'not have the luxury of ignoring cheap prices'. Although the first benefits of lean have been recognised, it will be interesting to see if the company succeeds in sustaining 'lean' in years to come.

The company recognises the grower as **customer** (packing the grower's product – service) as well as the exporter. There is an understanding that supermarkets drive demands. There is a strategic partnership with a large exporter and some understanding of the importance of strategic partnerships. **The product** is identified as the apple delivered to specification although the company recognises that the local market aspect of the product is the quick reaction to demand.

Management considers itself lucky with the large local market component. This enables the company to hold on to a good volume of permanent **employees**. The company has a tendency to place more trust in permanent employees and used to have a more autocratic approach towards seasonal employees. Over the past five years, there has been reasonable investment in training. The opportunity for employees to increase their knowledge is seen as a win-win situation.

There is a standard reward system, but there is also recognition of the importance of **culture** as a work environment. Culture is seen as the friendly cooperative approach with good work ethic. There are some examples of improvement through employee's participation and **teamwork**. **Continuous improvement** is not a principle that is maintained but management states that they are happy with where they are and that they will continue to improve.

There is a formalised 5 year **strategy** and some employees are involved in setting the strategy. The company has some understanding of the importance of proper **design**, both physically and in process. Internally, there is an irregular **communication process**. Management however has recently started regular management team meetings to improve internal communication. External communication with growers is on a weekly basis through meetings and newsletters.

The company considers the erratic nature of the industry as its **greatest hurdle** to become the best they can be.

A brief walk-around shows a company with slightly aged facilities but generally of tidiness and an apparent active atmosphere.

6.2.3 COMPANY 3

Company 3 (C3) is a large grower/packer/cool-store/export organisation in a more corporate-like structure. The interview relates to the packhouse/cool-store section only. Management runs the company under a board of directors. The management team appears professional and focussed. The company employs between 25 and 35 permanent employees and over 400 seasonal employees.

Quality is quoted to be a way of life. It is part of the company's mission statement. 'Give the customer what they want' is another way of 'fitness for purpose'. **Senior management** has a **commitment** to lead by example with a strong customer focus. Management meets and discusses results regularly. Quality leads to financial results. Management must also be production focussed.

The company identifies two **customers** on opposite sides of its activities: The Grower and the buyer. The shareholder is also mentioned as a customer, which would be typical for a larger organisation's approach. There is no concept on internal customers. Strategic partnerships are moderately recognised. The company has a strong focus on customer specifications. The company views its **products** as cartons of food-safe apples that provide a consistently good eating experience and meet market requirements.

The company's approach of **employees** is one of recognition of empowerment but also of authority. Closer to the top, employees are more empowered whereas at the lower end there is a more authoritative approach. Empowerment is easier at higher levels, but there are limits. There is investment in training which is mostly in-house. Reward systems are monetary with some non-financial incentives for permanent employees.

The company has some clear goals in terms of markets and fruit variety mix. There is an overall **strategic goal** with several five year directions. It recognises the necessity to adapt to changing market requirements.

The company identifies a culture of enjoyment to work for the company. People are laughing but also challenging existing positions. Social interaction is reasonably strong.

There is a **culture** of continuous improvement with the CEO empowering it. This is at the higher levels as it is difficult to achieve with seasonal employees. Effecting change is recognised to be difficult.

The company spends a lot of time in planning and **designing** systems. Only a few people really understand those, so design and planning is done by a few people only. The company has formalised internal **communications** but recognises an inconsistent awareness of communications requirements.

Change resistance to change and change management is recognised as the greatest hurdle to become the best the company can be.

6.2.4   COMPANY 4

Company 4 (C4) is a small privately owned company, involved in growing, packing, storing and trading. The company is its own single supplier. The owners are also the managers. The company has grown over the last 10 years and a number of goals are identified as practical and achievable milestones. The owners are working hard at achieving each milestone in order to achieve a critical mass.

The company employs some 10 permanent employees and between 100 and 150 seasonal workers. Seasonal employees are partly RSE employees.

Quality comprises product, service and documentation. It must be right at each stage of the operation. Standards are set by the owners. Often, quality comes down to technical issues, e.g. how to prune trees for the season.

There is strong leadership in terms of what needs to be achieved, particularly in terms of progressing growth. **Senior management commitment** is to continue to improve the organisation in leaps. The **customer** is identified as the importer as well as the supermarket chain. There is no concept of internal customers. The **product** is not defined other than pallets of cartons of apples, packed to a consistent quality. **Strategic partnerships** with buyers are considered important. Other suppliers are challenged to perform better by introducing some competition.

Employees are very important. There is little employee turnover. Seasonal employees are a mixture of local employees and RSE employees in order to promote consistency. Employees receive standard wages for the industry but also receive multiple little bonuses like fuel or dinner. There is emphasis on training. The approach towards permanent employees leans to McGregor's 'Y', while the seasonal employees have moved away from the 'X' extreme but are still in the 'X' corner.

Strategy is not formalised and is worded as achieving economy of scales and solving the biggest problem next. The long-term plan is to eventually sell. The company **culture** could be described as typical for the small type of organisation they are. The culture is 'personal' and one of team work or all working for the same goal. Although there are constant discussions to improve the business there is no culture of participation or continuous improvement. All improvement is decided at the top with some major investments in improvements of plant and production.

Design is addressed when C4 is problem solving and this happens regularly. Internal **communication** is daily during a cup of tea and is in a collaborative way. The company considers finance the **biggest hurdle** to become the best they can be.

A quick tour of the facilities gives the impression that there are a number of projects on the go simultaneously.

6.2.5 COMPANY 5

Company 5 (C5) is a large vertically integrated company, involved in growing, packing, storing and exporting product. The company is relatively young and is privately owned. Premises are relatively new. The company is run by a board of directors and managed by professional managers. The company employs approximately 90 permanent employees and over 600 seasonal employees.

Throughout the years, the company has seen a number of changes in the industry and has adapted to the new environment. The company has introduced a philosophy that **quality** should be driven up the chain as much as possible to avoid surprises. The manager in charge has some understanding of quality management as a management philosophy. Quality thus is not seen as the quality of the product but the quality of a number of steps in

the whole process. **Senior management** drives this philosophy with a fairly fluent management team.

The company is subject to confusion in identifying the **customer** with his different demands and is doing something about that confusion. Management is trying to create a conceptual understanding of internal customers between the different activities of the company. **Strategic relationships** are recognised as being important. Cost cutting is identified as something necessary but potentially damaging.

The company's **product** depends on the customer and varies from an eating sensation to a timely delivered carton of apples. **Employees** are seen in different groups: Permanent employees, seasonal RSE employees and transient NZ employees. **Training** is provided to the RSE employees because they return annually; many are supervisors. Permanent employees are trained but the Return on Investment is debatable.

The company approaches employees from McGregor's 'Y' perspective and expects that all employees want a fair pay for a fair day's work. Herzberg's hygiene factors are used by management to **reward** employees. Decision making and participation is encouraged at certain levels but not all.

The company has some problems with establishing a **long-term strategy** but several changes in the company are looking positive for strategy development.

The company recognises the importance of a strong company **culture** as an element that can weather storms. 'Culture is driven from the top'. There have been problems with teamwork but these have been identified and there are positive developments. Although there is no culture of **continuous improvement**, the company intends to focus on development of that culture.

Although **design** of plant and processes is important, it is less so than in the past with plant and procedures established. The company rather recognises that people are the important factor. Internal communication was organised on a daily basis for a while to encourage cross-functional understanding, but has now been reduced to weekly. External communication is assessed as poor and a process is underway to improve external communication.

The company is good at short-term planning but identifies long-term strategic partnerships and long-term strategy particularly in selling as the **greatest hurdle** to become the best they can be.

A brief walk around shows modern facilities of general tidiness.

6.2.6 COMPANY 6

Company 6 (C6) is a small organisation, growing and packing apples and using outside exporters to export product. The company has been trading for a number of years, using the same format. It is privately owned and the owners also manage the company. There is a hand full of permanent employees and the company employs some 50 seasonal employees. Orchard, packhouse and cool-store are on the same property.

Quality is considered one of the most important things for the operation. Everything you do is quality including growing and pruning. **Senior management** does not specifically talk about quality but talks about getting the jobs done 'right'.

The **customer** is the supermarket and some niche outlets. The exporter is not considered a customer for a **product** which is described as an individual carton of apples with good size, colour, grade, flavour, pressure and appearance. The concept of **internal customers** is foreign. **Strategic partnerships** are not really recognised as important.

There is a definite difference in the way seasonal and permanent **employees** are approached. Permanent employees are expected to know more, understand better and have common and specific skills. There is a fear that unsupervised employees change methods 'behind your back'. **Training** is restricted to what is required legislatively and to achieve accreditations. Company 6 believes that they **reward** packhouse employees better than most packhouses. There is low employee turnover. There is a bonus system based on reliability and performance. Compliments are given and employees respond well to that.

The company has no **long-term strategy**; focus is on the year ahead. **Culture** is not seen as a management issue and **teamwork** or a positive culture is not seen as a requirement for the company to run its operation. **Improvement** is in response to issues and not part of a culture but employees are encouraged to come up with ideas. The owners are always thinking about doing things differently but once a **design** works it is not changed.

Communication is a mix of verbal and written (e.g. spray instructions) and not very formalised.

The company considers bureaucracy and supermarket ethics as the **greatest hurdle** to become the best they can be.

A brief walk around the premises shows some older facilities and ongoing maintenance activities.

6.2.7   COMPANY 7

Company 7 (C7) is a privately owned company that has been operating in the industry for over 25 years. The company has grown over those years to become a large grower/packer and exporter. The owners are also managing the company. There are some 25-35 permanent employees with some 250 seasonal employees.

Quality is described as what the customer wants. It doesn't mean perfect, it means consistency, no surprises. **Senior management** is driven to keep things tidy and relatively simple. There is no room for complacency; there is always room for improvement.

The **customer** is the importer and the company will listen to the importer's requirements. There is recognition of the **internal customer** concept although it is not called by that name. The company believes strongly in **strategic partnerships**, both as supplier and customer. In one example the company tried to work for three years to get a supplier to supply the correct product. The **product** is described as apples with correct appearance, brand etc.

The company 'recruits for attitude and trains for skills'. Everybody's opinion counts. **Employees** are all treated the same and are valued for the way they do the job. The **reward system** is standard pay with several incentives like trips to other organisations, family barbecues and adventure events where all permanent employees can participate. A number of seasonal employees are returning RSE workers with a number of them now in key positions. Employees are reasonably trusted to make limited decisions and help management to achieve its goals. The company has a gradual expansion **strategy** and they continue to implement the strategy.

The **culture** within the company is considered very important. It is all about getting people to do it right. Pride has always been part of that culture. Where once there was a 'them and us' culture, this has changed over the years to a culture of collaboration. The **improvement** ideas come from everybody, especially the people who are doing specific jobs; there is also recognition for the fact that different people can see the same thing differently. Improvement decisions however are made by the owners. In recent times, the company has worked hard to improve **internal communications** by arranging regular meetings to exchange information.

There is strong emphasis on proper **design**, both physical design and procedural design. Although **built-in quality** is not a recognised concept, the company instinctively moves in that direction. There is also recognition of the conflict between short-term gains and strategic partnerships.

The company considers several things that are outside their control as the **greatest hurdle** to become the best they can be. These include the exchange rate, unnecessary regulation and government departments not working for the industry.

A quick tour of the facilities immediately creates the impression of thorough organisation and tidiness.

6.2.8 COMPANY 8

Company eight (C8) is a small privately owned family company which has been operating for some 30 years. The owners manage the company. The company is focusing on growing with an interest in developing new varieties. The company has 5 permanent employees and employs some 30 seasonal employees.

Quality is described as delivering the best quality product that can be produced. The company also has a focus on improving processes, even if it will not result in financial advantage. There is commitment from **senior management** to improve quality; however the focus is on grower-technical improvement.

The company sees two different **customers** for the two products they grow. One is the supermarket; the other customer is the receiver. Similarly, they feel more like a customer of the packhouse for one product than the other because they have more input in the

packing and selling process of the second product. The concept of **internal customers** does not really apply and is unknown. The company has a **strategic partnership** with one packing company which works well. They see the value of strategic partnerships even if it does not always give the best returns. The **product** is 'clean fruit with no spray residues'.

The company employs a hand full of permanent **employees**. They try to have employees that will listen to instructions and are not set in their ways. **Training** is hands-on, on-the-job, and is grower technical e.g. pruning. For their seasonal employees, the company works with 'virgin' pickers, new pickers who don't come with bad habits and can be trained. **Reward systems** are standard with some incentive for permanent employees at the end of a good season.

The company has several **strategic goals**. They want to develop one product in volume and strengthen their base. To this end, they expanded the orchard. In the past, the company followed similar lines with one product, but the product failed. The new product appears successful.

The **culture** within the company is one typical for smaller companies. There is a pleasant atmosphere. The owners sit down regularly to assess what worked and what didn't and make decisions concerning **improvement**. Most of these decisions concern grower technical aspects and some come with employees input. The owners believe in proper **design** and think about lay-outs and procedures. **Internal communication** is not formalised and the day is discussed in the morning and during smokos. Similarly, external communication is not structured. The company does however stay in touch with developments overseas to stay 'up there'.

The company considers its greatest hurdle to become the best they can be the lack of critical mass.

A walk around shows a reasonably tidy operation.

Company 9 (C9) is a medium sized company, packing, storing and exporting fruit. The company is in private shareholder ownership. The company has been involved in the fruit industry for a large number of years but has undergone significant changes over the past five years. The company upgraded equipment and expanded storage capacity and has changed the company and management structure in those years. The company has 10 permanent employees and some 130 seasonal employees.

Quality is described as the quality of product but also how the place is run and performs; how everything is done correctly. The **commitment of senior management** is towards continuous improvement with a focus on skilled employees.

Customers are described as growers, shareholders, distributors and consumers. If the customer is happy, it will improve profitability for growers and shareholders. Although the concept of **internal customers** is not recognised or used, there is a strong co-ordination element between different segments of the business. The company sees **strategic partnerships** as important and quotes relationships with equipment suppliers and packaging material suppliers. Specifically these partnerships are seen as useful to improve and this creates win-win situations. The **product** is seen as the right apple; crisp, right size, right time, right grade, right price. Although the company does not formally recognise it, there is an intuitive distinction between the physical product and the service delivery.

The company places a lot of emphasis on **employees**. 'If that goes right, all else will fall in place'. There is continuous attention to **training** and developing skills although it is difficult to measure Return on Investment (ROI). The approach towards employees is predominantly along the lines of McGregor's 'Y' manager. Employees are empowered but also, management will discuss alternative jobs with employees to see where they can work out best. Reward systems are standard and management is aware of several non-financial rewards that work.

The company has several **clear strategic goals**. These relate to the development of a strong export brand and improving the supply chain.

Senior management is always looking at and discussing the **culture**. There is a real mix of nationalities and people but the culture is about doing things right first time. Teamwork is an aspect of that culture and the word 'synergy' is used in reference to employees and

culture. Part of the culture is the constant discussions about how the place could be made better. There is also a continued effort to see how others do it. This drive to **improve** is also picked up by supervisory employees who are often encouraged to fix problems themselves. In that regard, a lot of thought goes into design of plant and processes. The internal and external **communications** processes help make the company a better company. The company considers the greatest hurdle to becoming the best they can be the lack of growers and fruit.

A walk around the plant shows a very tidy operation.

6.2.10 PIPFRUIT NZ

Pipfruit New Zealand Incorporated (Pipfruit NZ) represents the New Zealand pipfruit industry –growers, packer/cool-stores and exporters of apples, pears and nashi. The organisation provides growers throughout the country with technical, policy and marketing information and also represents members' interests locally and in export markets. This includes providing industry information and advising the relevant authorities or other interest groups.

The organisation is 100% owned by New Zealand pipfruit growers and consists of seven full or part time employees. This includes a CEO, a technical manager, a membership manager, and accountant and dedicated support employees. Membership of Pipfruit NZ is open to anyone involved in growing, distributing or selling pipfruit, as well as suppliers to the industry.

The organisation does not provide for a strong unilateral trading position. With its 400+ growers, its 80+ packhouses and its approximately 90 exporters, it appears a challenge to keep the industry more or less united. All companies working in the industry are member of Pipfruit NZ. Pipfruit NZ is funded by levies and fees, paid by its members.

Although Pipfruit NZ does not have a mandate to make commercial decisions for its members, it is interesting to find out how the organisation fits in the TQM environment. For this reason, the industry organisation was also interviewed, using exactly the same fundamental subject areas as were used during the organisations' interviews. For the sake of the interview, Pipfruit NZ is considered the management team of the industry.

Quality is seen as economic and environmental sustainability of the industry by earning premiums through differentiation. The **product** is the New Zealand apple in relation to the apple of other countries. The focus of **senior management** is very much on adapting the industry to its environment by **improving** the industry and achieving quality processes and products. These are partly focussed on grower technical developments as is evidenced by the substantial R & D budget. Because of its history, there is a skew towards the growing research.

There is also a realisation that there is a need for market intelligence and cooperation under the exporters. For the most part, tools are information. Pipfruit NZ sees its role as to deliver tools that allow members to achieve their goals. It enables its **internal customers** which are growers, packers, cool-stores and exporters. The receivers, importers and supermarkets are **external customers**. A challenge is to transfer the tools (through **internal communication** and **training**) to the members.

There is a real weakness in the lack of investment into marketing. The industry had a NZ brand 10 years ago (ENZA), however today there are multiple NZ brands and there is no single brand representing the NZ pipfruit industry. Because the industry is based on voluntary participation, a stronger cohesion between its commercial members would benefit the industry substantially.

The industry has a formal **strategic plan**, reflected in annual budgets to deliver. The board holds annual strategy sessions, and Prevar (developing new varieties, 20-30 years ahead) and Apple Futures (low residue program, 5-10 years) programs are seen as critical for the future. Pipfruit understands that the future requires critical mass in production, new varieties, storage, market access, shipping, on-shore facilities (packhouses and cool-stores), training programs etc.

Right variety, best market, exchange rate risk, other dynamics are external factors other than supply change quality that must be considered. Some of this is noticeable in shifts in varieties, markets, growing methods.

The **Culture** within the industry is one of interesting dynamics. The growing part of the industry shows good information sharing and willingness to improve. Packers share information as well. Some informal benchmarking takes place. The market end is less likely to share correct information. De-regulation has bred distrust but those days have partly passed. Family generational knowledge is lost. Leaders of surviving organisations can be

quite tough. Pipfruit NZ is driving improvement significantly. This is also caused by the expectation that Pipfruit takes the lead. Improvement is recognised to be incremental rather than breakthrough.

Design of market access processes is considered critically important. The relation with MAF and NZFSA is challenged by continuous changes to the environment within which the industry has to work.

Pipfruit NZ is aware of the difficulties of **communication** via email and has started a process to differentiate communication. Among the options are the organising of meetings like shed meetings, and emails in categories (critical, important, and general). Communication to the internal customers is important; it is an improvement process that is ongoing.

The greatest hurdle for the pipfruit industry appears to be the lack of a new 'breakthrough' product like a new successful variety. This and the market access restrictions to Japan, Australia and China form the greatest hurdle for the pipfruit industry to become the best it can be.

Several key themes emerged from the interviews. There is important variation in the responses from participants. Some subject areas were answered quite unanimously, but not necessarily in favour of a TQM approach. The interviews show that there is confusion about how quality is defined, who the customer is, and what the product is. There is also disparity about senior management commitment and strategy. Similarly, participants appeared to have a 'Y' approach to staff but participation was not formalised as philosophy. Culture was seen as 'work environment', not as an informal system of accepted rules, norms and values relating to quality improvement. Participants did include reactive improvement in their responses, but not continuous improvement. Built-in quality and communication are poorly understood. A summarised overview of interview outcomes is shown below as table 6.2. A table showing combined emerging themes from interviews and survey is attached as Appendix 6.1.

Table 6.2: Summary of participating companies' TQM aspects

	C1	C2	C3	C4	C5
Definition of 'Quality'	Meeting customer fruit requirements	Product packed and shipped to specification	Give the customer what he wants	Product, service and documentation must be right at each stage	Quality of a number of steps in the process
Senior Management commitment	Non-specific; economically driven	Introduce 'Lean'	Lead by example; customer focus	Improve operationally every year	Operational and process improvements
Focus on Customer	Most important person	Grower and Exporter	Grower and buyer, shareholder	Importer and supermarket	Identified confusion about customer
Identification of Product	Apples	Apple, delivered to specification	Carton of food-safe apples	Consistent quality apples in cartons on pallets	Varies by customer but focus on apple specs
Employee skill, training, rewards, participation	Happy employees work better; 'Y' approach, little training	Permanents: 'Y' tendency. Investment in training	'Y' near top, 'X' at lower levels. Training internal	'Y' for permanents; 'X' for rest, informal rewards; training	'Y' approach. Training with debatable ROI
Strategy	No specific strategy yet	Formalised 5 year	Formalised, 5 year	Achieve scale	Developing positively
Company culture	Pleasant, non-specific	Friendliness, work ethic	Positive challenging existing and improving	Personal, friendly	Recognised; driven from the top
Continuous Improvement ('CI')	No specific drive or focus	Not formalised or driven	Empowered at top, not on the floor	Only at the top; solve the biggest next problem	Not present yet but identified as need
Design, built-in quality	Some understanding of design; not of built-in Q	Some understanding of design; not of built-in Q	Design understood, Built-in not quite	Some understanding of design; not of built-in Q	Design is important; built-in quality unknown
Communication	Informal	Irregular, improving	Formalised, moderate	Informal	Regular; cross-functional
Greatest hurdle	Owner/Manager	Erratic industry nature	Resistance to change	Finance	No long-term strategy

Table 6.2 (continued): Summary of participating companies' TQM aspects

	C6	C7	C8	C9	Pipfruit NZ
Definition of 'Quality'	'Everything you do is quality'	Quality is what the customer wants	Delivering the best quality product that can be produced	Quality of product, how the organisation works and performs	Economic and environmental sustainability
Senior Management commitment	Non-specific; get the job done right	Keep things tidy and simple	Grower-technical improvement driven	CI with focus on employees	Adapting industry to the environment
Focus on Customer	Supermarket and niche	Importer	Product dependent	Growers, shareholders, distributors, consumers	Internal customers and external customers
Identification of Product	Apples to specification	Apples to specification	'Clean' fruit	Apple and service	The New Zealand apple
Employee skill, training, rewards, participation	'X' for seasonal, 'Y' for permanent; little training	Recruit attitude, train for skills; informal rewards; training increasing	Recruit willingness, Hands-on training	Positive 'Y' approach; training & job rotation	Skilled operators; more emphasis on training
Strategy	No specific strategy	Gradual growth	Strengthen base	Formalised and clear	Formal plan (reviewed)
Company culture	Not identified	'Do it right and be proud'	Pleasant relationships	Doing it right first time	Historical dynamics
Continuous Improvement	Reactive improvements	All participate but management decides	Owner driven, mostly reactive	Management supported, synergies, benchmarking	Predominantly grower technical, continuous
Design, built-in quality	Try until it works, reactive	Instinctive built-in quality	Design oriented	Design with built-in quality	Commercially driven
Communication	Not formalised, irregular	Improving communication	Regular but informal	Formal and informal	Very conscious, regular
Greatest hurdle	Bureaucracy, supermarket ethics	Bureaucracy, exchange rate, uncontrollable facts	Lack of critical mass	Lack of supply	Lack of breakthrough products; market restrictions

6.4   SURVEY RESULTS

This section adds information to the sections of the survey and details and summarises responses in tables for ease of understanding. Responses are discussed under Chapter 7, 'Discussion'.

6.4.1   SURVEY RESPONDENTS

Eighteen out of twenty-seven organisations returned the questionnaire, a response rate of 66.7%. The response rate is considered adequate given the timing of the survey just prior to and during the season start.

Seven of the organisations were in the 'Small' group, five organisations were in the 'Medium' group and six organisations were in the 'Large' group. Four organisations were completely vertically integrated (growing, packing, storing and exporting). Six organisations were partly vertically integrated (either missing the growing element or the exporting element). Eight organisations were single purpose (Growing or packing/storing or exporting).

Fifteen questionnaires were completed by the owner/manager of the organisation, one questionnaire was completed by a compliance manager and two responses were made by people in the organisation with unknown positions. Summarising, a minimum of 83.3% of the responses were completed by senior management.

On average, responding companies employed 21 permanent employees (13%) and 147 seasonal employees (87%). The average annual turnover was 887,175 Tray Carton Equivalents or TCEs (cartons of approximately 18 KG net weight).

6.4.2   GENERAL APPROACH OF THE ORGANISATION

This section presented respondents with 35 statements and asked respondents to tick a box on a five point Likert scale (Table 6.3) to indicate the level of agreement or disagreement. Scores then received a numerical equivalent.

Table 6.3: Numerical scoring of statements

Statement	Strongly disagree	Disagree	Agree nor disagree	Agree	Strongly agree
Score	1	2	3	4	5

Statements relating to general TQM aspects in the organisation were grouped into two groups:

1. Statements collecting general information (3). These statements were intended to break up the pattern of statements in the questionnaire while collecting information.
2. Statements where a high score indicated towards a TQM approach (12).
3. Statements where a high score indicated away from a TQM approach (20).

6.4.3   STATEMENTS COLLECTING INFORMATION

Several statements were introduced in the questionnaire to break up any recognisable pattern in the statements. These statements sought to collect some information about how organisations saw their product and how they perceived two common industry quality standards.

Table 6.4: Responses to statements collecting general information

No.	Statement	Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence level
2	Our organisation is a service providing organisation	3.89	1.41	1-5	18	3.24	4.54
10	Our organisation is a production organisation	4.00	1.24	1-5	18	3.43	4.57
29	Quality models like Global Gap and BRC are often asking for irrelevant requirements	3.94	1.06	2-5	18	3.45	4.43

Respondents generally indicated that they were both producing and delivering a service, however the range of answers was wide (1-5) and little statistical significance can be attributed to the outcomes. The apparent contradiction is caused by the fact that companies were either growing (producing) or packing/storing/exporting (service) or integrated and doing both. Views of quality standards indicate with a slightly higher reliability that quality standards are often perceived to ask irrelevant questions.

6.4.4 STATEMENTS INDICATING AN APPROACH LEANING TOWARDS TQM

For statements that were indicating recognition/acknowledgement of TQM principles, a high score on the Likert scale indicates an organisational philosophy leaning towards those TQM principles. Several statements (3, 11, 27 and 35) showed a small range of scores (4-5), indicating substantial agreement. Statements 13, 14, 16, and 20 showed a relatively small range of scores (3-5), all on the neutral or affirmative side. The balance of statements showed a range of 2-5 indicating that none of the respondents strongly disagreed with the 'better' TQM statements (there were no 'strongly disagree' scores).

Table 6.5: Responses to statements describing principles indicating positive TQM philosophies

No.	Statement	Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence level
3	It is better to have several quality checks in the process than to have one inspection at the end	4.72	0.46	4-5	18	4.51	4.93
11	Quality should be achieved by integrating orchard, packhouse, cool-store and exporter information	4.83	0.38	4-5	18	4.65	5.01
13	Organisational culture is an important contributing factor to achieving quality	4.56	0.70	3-5	18	4.23	4.89
12	Employees should be rotated regularly when performing simple repetitive tasks	3.56	0.86	2-5	18	3.16	3.96
14	Job enlargement should be used to keep things interesting for employees	4.28	0.57	3-5	18	4.01	4.55
16	Our organisation uses job	4.00	0.59	3-5	18	3.73	4.27

No.	Statement	Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence level
	enrichment where necessary (adding responsibility)						
18	Ergonomics are applied wherever possible in our organisation	3.88	0.81	2-5	18	3.51	4.25
20	Empowerment of employees is a good way to get the best results	4.44	0.62	3-5	18	4.16	4.72
27	Any improvement is important no matter how small	4.61	0.50	4-5	18	4.38	4.84
30	Sharing information between organisations helps improve an organisation's quality	4.00	0.84	2-5	18	3.61	4.39
33	It is best to make employees aware of what is wrong and allow them to introduce change	3.67	0.77	2-5	18	3.32	4.02
35	Team work implies collective responsibility	4.33	0.49	4-5	18	4.11	4.55
Overall approach towards TQM		Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence Level
All	All statements	4.24	0.75	2-5	214	4.14	4.34

The mean score of these statements was 4.24, showing substantial agreement with TQM philosophies. At a 95% Confidence Level, the Confidence Interval is small and in line with the range of answers.

It appears from the table above, that the respondent organisations tend to have philosophies that are aligning themselves with TQM philosophies.

6.4.5   STATEMENTS INDICATING AN APPROACH LEANING AWAY FROM TQM

For statements that were indicating philosophies tending away from TQM principles, a high score on the Likert scale indicates an organisational philosophy leaning away from those TQM principles.

Several statements (31, 15, 19, 23 and 22) showed a small range of scores (1-2 and 1-3), indicating neutral views ranging to substantial disagreement. The balance of statements

showed a range of 1-4 and 1-5, indicating that respondents' views were spread along the scale.

Table 6.6: Responses to statements indicating an approach away from TQM

No.	Statement	Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence level
1	Quality inspections are necessary to ensure quality product	4.61	0.98	1-5	18	4.16	5.06
7	Experience and the use of rules-of-thumb are generally getting better results than data collection and analysis	2.78	1.22	1-5	18	2.22	3.34
17	Scientific models should not be adapted to our own organisation; the organisation should adapt to the model or it will lose its value	2.44	0.98	1-5	18	1.99	2.89
32	Equipment, tools and techniques are the most important contributors to quality	2.00	0.84	1-4	18	1.61	2.39
4	Sharing information between organisations allows other companies to catch up	3.44	1.04	1-5	18	2.96	3.92
31	It is more efficient to fix a problem and continue production than to try and understand what caused the problem	1.83	0.71	1-3	18	1.5	2.16
5	Real improvement is achieved through 'breakthroughs'	3.00	1.03	1-5	18	2.52	3.48
8	Business improvement has to be decided by knowledgeable management	3.17	1.47	1-5	18	2.49	3.85
15	When employees come up with improvement ideas, it usually costs money	2.17	0.79	1-3	18	1.81	2.53
19	The best way to get employees improvement is to tell them off	1.39	0.61	1-3	18	1.11	1.67
21	A poor company culture will not affect quality significantly as long as there is leadership	1.67	1.28	1-5	18	1.08	2.26

No.	Statement	Mean	Standard Deviation	Range	Sample	95% Lower Confidence Level	95% Upper Confidence Level
23	Our organisation's productivity is not affected if employees do not trust their supervisors	1.22	0.43	1-2	18	1.02	1.42
24	An organisation like ours does not perform much different with a team approach	1.56	0.86	1-4	18	1.16	1.96
25	Employees often don't know what is best for the organisation	2.28	1.13	1-4	18	1.76	2.80
34	There is no point in involving the employees in how well or poor the company is doing	1.67	0.97	1-4	18	1.22	2.12
6	The best way to get results is to let each department work on the problem without interfering information from other departments	2.06	1.30	1-5	18	1.46	2.66
9	Splitting jobs up into simple repetitive tasks is more effective than creating complex tasks	3.44	1.20	1-5	18	2.89	3.99
26	Controlling costs is what makes a business successful	2.78	1.11	1-4	18	2.27	3.29
28	Change is best achieved when it comes from the top down	2.83	1.04	1-4	18	2.35	3.31
22	'Hard' systems (focus on tools and techniques) are more useful in our organisation than 'soft' systems (training, participation)	1.67	0.59	1-3	18	1.40	1.94
Overall approach away from TQM		Mean	Standard Deviation	Range	Sample	95% Lower Confidence Level	95% Upper Confidence Level
All	All statements	2.40	1.29	1-5	360	2.27	2.53

6.4.6 STATEMENTS INDICATING MANAGEMENTS' VIEWS OF EMPLOYEES (MCGREGOR 'X' OR 'Y' APPROACH)

Respondents were presented with two sets of statements on a 5 point Likert scale.

Responses indicate a difference between the view of permanent employees and seasonal

employees, however the difference is not consistent and of low statistical significance.

Questions 1 & 7, 5 & 11 and 6 & 12 indicated moderate differences in management views of their permanent and seasonal employees.

Table 6.7: Responses to statements showing management view of employees

	Statement		Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence Level
	Permanent Employees							
1	Employees dislike work and try to avoid it	'X'	1.28	0.46	1-2	18	1.07	1.49
3	Employees just want security	'X'	3.11	1.18	1-5	18	2.56	3.66
4	Employees prefer to be told what to do	'X'	2.56	1.10	1-5	18	2.05	3.07
2	Employees like responsibility and making decisions	'Y'	4.06	1.06	2-5	18	3.57	4.55
5	Employees see work as natural and enjoyable	'Y'	4.00	0.77	2-5	18	3.65	4.35
6	Employees are committed to achieve and perform	'Y'	4.28	0.57	3-5	18	4.01	4.55
	Seasonal Employees							
7	Employees dislike work and try to avoid it	'X'	2.17	0.92	1-5	18	1.74	2.60
9	Employees just want security	'X'	3.22	1.11	1-5	18	2.71	0.51
10	Employees prefer to be told what to do	'X'	3.72	1.02	1-5	18	3.25	4.19
8	Employees like responsibility and making decisions	'Y'	2.89	0.96	1-4	18	2.44	3.34
11	Employees see work as natural and enjoyable	'Y'	3.33	0.97	2-5	18	2.88	3.78
12	Employees are committed to achieve and perform	'Y'	3.44	1.15	1-5	18	2.91	3.97

The respondents show statistically significant different views of permanent and seasonal employees. Permanent employees are generally approached by management with more trust in their work ability and ethic.

Table 6.8: Mean employers' approach towards permanent and seasonal employees

Approach towards employees	Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence level
Permanent Employees						
'X' Approach	2.31	1.23	1-5	54	1.99	2.64
'Y' Approach	4.11	0.82	2-5	54	3.89	4.33
Seasonal Employees						
'X' Approach	3.04	1.20	1-5	54	2.72	3.36
'Y' Approach	3.22	1.04	1-5	54	2.94	3.50
All Employees (Permanent and Seasonal)						
'X' Approach	2.68	1.26	1-5	108	2.44	2.91
'Y' Approach	3.67	1.03	1-5	108	3.47	3.86

6.4.7 STATEMENTS INDICATING UNDERSTANDING OF HERZBERG'S HYGIENE FACTORS AND MOTIVATORS

Respondents were asked to indicate agreement or disagreement with statements indicating satisfiers (Hygiene factors) and motivators. Five statements for each (Satisfiers and Motivators) scored in a range from neutral to strong agreement (15, 21, 16, 18 and 22). No statement scored over the entire range. Mean values indicate that respondents have some understanding of the difference between satisfiers and motivators.

Table 6.9: Employer's assessment of individual satisfiers and motivators

	Statement	Satisfier (hygiene) or Motivator	Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence level
13	People are motivated by money	Hygiene	3.89	0.68	2-5	18	3.58	4.20
15	People are motivated by work conditions	Hygiene	4.11	0.58	3-5	18	3.84	4.38
17	People are motivated by supervisors	Hygiene	3.83	0.92	2-5	18	3.40	4.26
19	People are motivated by policies	Hygiene	2.39	0.92	1-4	18	1.97	2.81
21	People are motivated by benefits	Hygiene	3.76	0.75	3-5	18	3.40	4.12
14	People are motivated by achievement	Motivator	4.33	0.77	2-5	18	3.98	4.71
16	People are motivated by recognition	Motivator	4.56	0.62	3-5	18	4.28	4.84
18	People are motivated by responsibility	Motivator	4.22	0.73	3-5	18	3.88	4.56
20	People are motivated by challenge	Motivator	4.06	0.73	2-5	18	3.72	4.40
22	People are motivated by personal growth	Motivator	4.22	0.73	3-5	18	3.88	4.56

Table 6.10: Employer's general assessment of Herzberg's satisfiers and motivators

Employers view on Satisfiers and Motivators	Mean	Standard Deviation	Range	Sample Size	95% Lower Confidence Level	95% Upper Confidence level
Satisfiers						
Employees respond to Satisfiers	3.60	0.99	1-5	90	3.39	3.80
Motivators						
Employees respond to Motivators	4.28	0.72	2-5	90	4.13	4.43

6.4.8   AWARENESS OF PLANNING AND IMPROVEMENT TOOLS

In the last section of the questionnaire an attempt was made to find out how well-known certain planning and improvement tools were among respondents. A list of common tools was presented and respondents asked to indicate if they knew the tool and to what degree they used the tool.

These tools were based on Ishikawa's basic seven tools of quality and the new seven tools developed by the Japanese Society for QC Technique Development (Foster 2003). Added to these were the basic brainstorming and Critical Path planning tools.

Figure 6.1 shows a reasonable awareness of several of these tools. On reflection, some of these tools are common words in the industry and a positive reply does not necessarily indicate awareness of these tools. This concerns Control Charts and Cause and Effect diagrams.
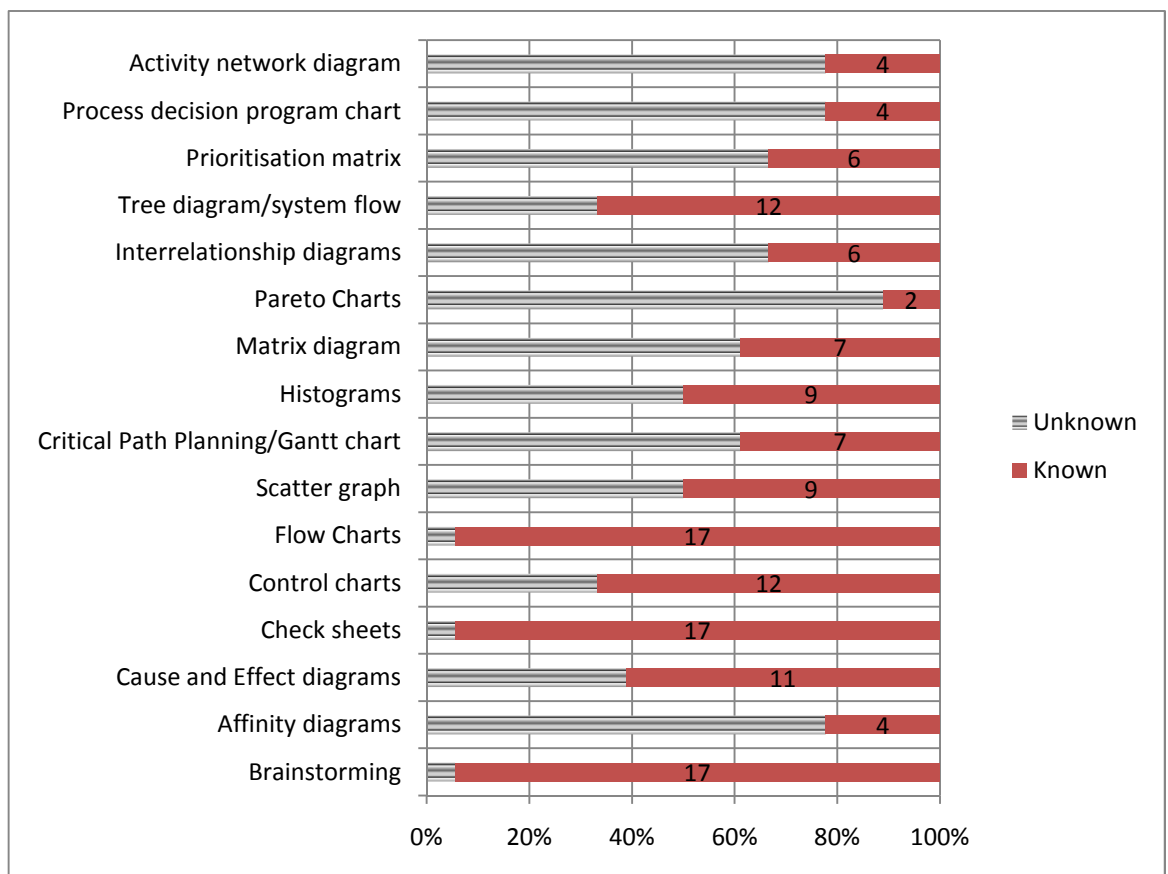
Figure 6.1: Level of awareness of Planning and Improvement Tools

From figure 6.2 it appears that if tools are known, they are likely to be used. Of the 16 tools and 18 respondents (234 options), only 13 tools were indicated as being 'used all the time'. The most common tool was check sheets with seven scores of 'Use all the time'. Brainstorming and Flowcharts showed twice each as being used 'all the time'.
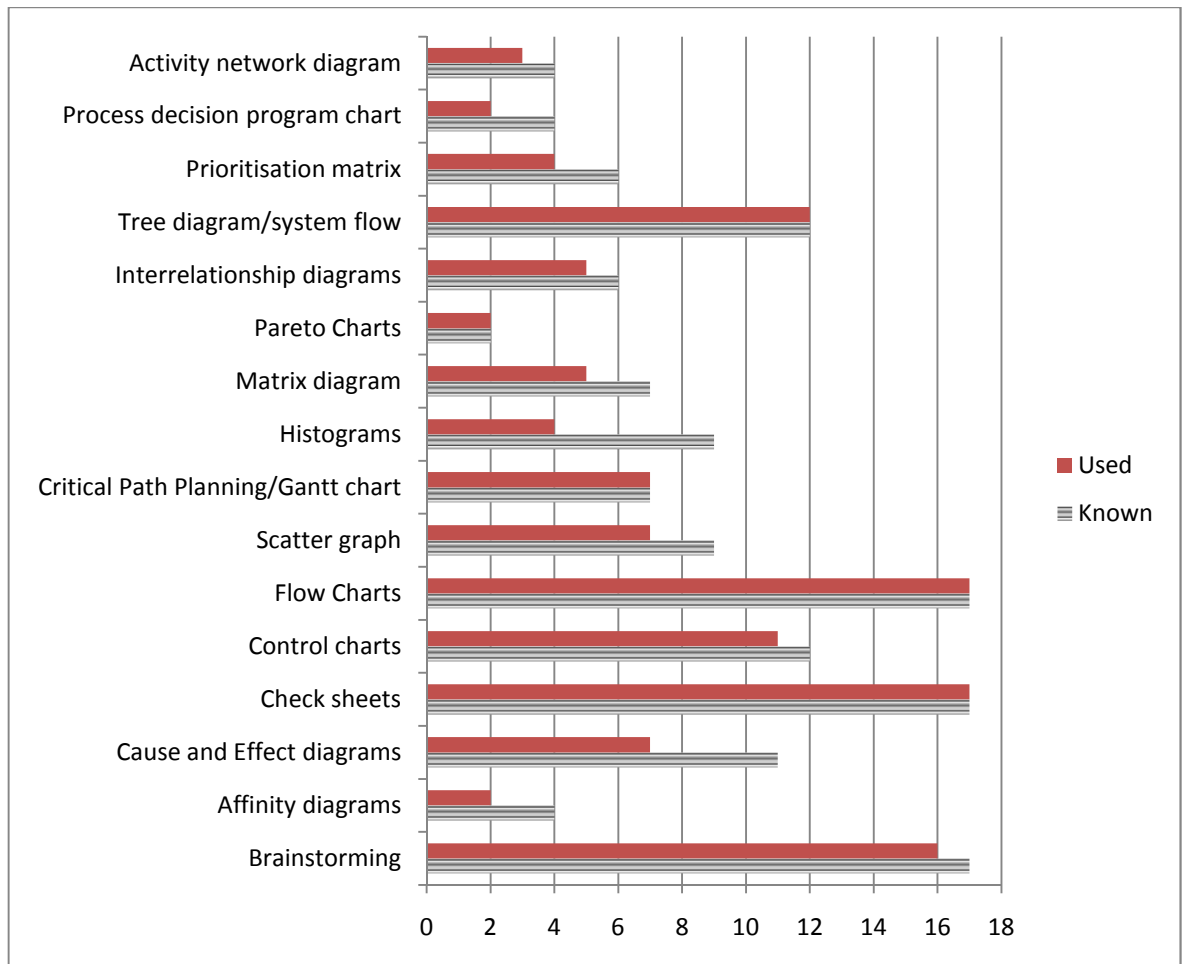
Figure 6.2: Level of use of known Planning and Improvement tools

6.5   KEY THEMES EMERGING FROM THE SURVEY

The survey asked several questions similar to the interview plus additional questions which were more specifically trying to explore TQM philosophy trends, approaches to people and motivation and TQM tools and techniques.

Themes that emerged were partly similar as themes emerging from interviews where the same questions were asked. It was consistently un-clear whether the product was a physical product, a service or a product with service attributes. There was general tendency to accept TQM-like statements with some exceptions. There was also a neutral attitude towards negative statements, also with some exceptions. Companies definitely showed a more positive 'Y' approach towards permanent employees than to seasonal employees. 'Motivators' were seen as getting better results than 'satisfiers'. The number of TQM tools and techniques known and used was relatively low and showed substantial variation. Appendix 6.1 shows key themes from interviews and survey in table form.

The findings from interviews and survey are analysed and discussed in this section. Several tables with a selection of responses are included to display typical philosophies that may help understand how the organisations view aspects of quality management. Quoted responses have been edited to maintain brevity.

Discussion of subject areas and findings are followed by recommendations. Recommendations are written as if they are aimed directly at pipfruit organisations.

7.1   DEFINING QUALITY

Interviewees generally had no strict definition in mind when asked about quality except the element that it involved fruit. Observations during the interview showed that most respondents had to think about the answer. Most respondents did however have a specific view on what constituted quality. Typical variation in definitions is shown in table 7.1. Variation is partly caused by the variety of organisations interviewed and the sometimes cloudy segregations between different commercial aspects of single integrated organisations (grower/packer/cool-store/exporter). It would be useful to treat the different type of organisation completely separate during future research.

The industry would do well to have a clear view of what quality constitutes for each industry segment. In addition, it is considered beneficial for the industry to see itself as an organisation and formalise a definition for quality for pipfruit NZ. As long as organisations see quality as physical product outcomes only, they are unlikely to achieve real quality. It is this one fundamental understanding -that quality must be achieved in all activities of the organisation- that will make the difference.

Table 7.1: How quality is defined by respondents; selection of answers

	How Quality is defined: Selection of answers (edited)
»	"Quality is the quality of the fruit; raw product is an issue. Poor quality can lose us customers"
»	"Quality is product packed and shipped to specification. It must be right for the customer. Both product and timing must be right"
»	"Quality is a way of life; give the customer what he wants. But our customers go in two directions; on the one side is the grower, and on the other is the receiver"
»	"Quality can be product, service to clients or documentation. It must be right at each stage, otherwise customers don't come back"
»	"Quality is what the customer wants. It doesn't mean perfect, it means consistency"
»	"Quality is the best product that we can produce for the market we are in; if we 'get it through the gate', the quality is good"
»	"Quality is the quality of products, how we perform from submission to export, doing everything correctly"
»	"Quality is sustainable environmental survival, commanding premiums in the market"
Note: Quality definition was not included in the survey	

7.1.1 RECOMMENDATION 1:

Start defining quality. Quality cannot be solely defined as quality of output product (apples, cartons, pallets). Quality must be seen as a major characteristic, pervading all aspects of the organisation. This includes People, Materials, Machinery and Methods. It also includes all physical products with service attributes and all service products with physical attributes. Once defined, communicate the new paradigm to all members of the organisation, including seasonal workers.

7.2 DEFINING THE CUSTOMER

Similarly to the responses about quality, the customer is not readily defined. The customer must be defined separately for each industry segment (grower, packer/cool-store and exporter). The concept of internal customers was virtually unknown amongst interviewees. The concept however is highly recommended for integrated organisations. It helps focus attention to the next step in the process. Juran defines the customer as anyone who is impacted by the product or process. Internal customers are part of the same organisation and external customers are not part of the same organisation (Juran, 1992). If we accept

Juran's definition of customer, the table below makes more sense. As one respondent says:

'We don't understand who our customer is'.

Table 7.2: Customer focus; selection of answers

	Focus on customer: Selection of answers (edited)
»	The customer is the importer, the distributor or the end user; we can't get a relation with the end-user
»	Growers and exporters are our customers. So are supermarkets. Internally, these are jobs that are affecting the next one in the line
»	We don't understand who our customer is. They all have different demands
»	The receiver is our customer for one product; the supermarket is the customer for another product
»	Our customers are growers, receivers and shareholders
»	The customer is not the exporter; supermarkets and niche outlets are
»	The customer is the importer; we listen to what he says
»	We just have them (customers); relationships with buyers allows the business to grow by itself
»	Growers, receivers, shareholders, distributors and consumers are our customers. The end customer should also be mentioned.

Considering the above, it would pay to identify and table the internal customers (where applicable) and identify and table the external customers in order to understand how those customers can be satisfied. This requires a significant change in mindset of all people involved.

Chapter three shows several relationship models, including a 'quality flow' model, a 'product and service model' and a money flow model. Each of these shows customer relationships. It would be nice and simple if an organisation had only one customer; however TQM asks to recognise all those affected by an organisation's product or service. This includes e.g. regulatory organisations like MAF and NZFSA (refer to appendix 3.3 'Compliance Requirements'). Once the right product or service is provided to all these customers, the organisation can arguably state that it is maturing as a quality organisation (Crosby, 1979).

7.2.1   RECOMMENDATION 2

Define internal and external customers for each segment and for each step within each segment of the organisation. Communicate these customer definitions to all employees and train all individual employees in the mindset that they personally 'have a customer'.

7.3   PRODUCT, SERVICE, OR BOTH?

The interviews show a bias towards the physical product (production) with several interviewees referring to service attributes. The question that was asked was to describe the product. There is reasonable variance in the way the question is answered. Most interviewees relate the question to the physical product. Not a single one describes their product solely in terms of service; however the interview results must be seen side-by-side with the survey, where e.g. two dedicated exporters responded that they delivered pure service. These dedicated exporters were not part of the interview group. A selection of typical answers is shown in table 7.3 below.

Table 7.3: Product definitions; selection of answers

	What is the product: Selection of answers (edited)
»	The product is a container of apples going to a customer
»	Apples that are fit for the intended market. Sometimes we have to move quickly
»	Every individual carton; the size, colour, grade, flavour, pressure and appearance
»	Product can be an eating sensation, a timely delivered carton or big and red apples
»	Our product is clean fruit with no spray residues and the right parameters
»	Apples with good appearance and our brand
»	Apples in different pack-types, for sales-purposes, meeting market requirements
»	The right apple, right size, crisp, right timing, right grade, right price; juice is also a product; also the way in which it is packaged and marketed

A total of eighteen (18) questionnaires were returned by respondents. Three (3) questionnaires came from growers without other business interests. Two (2) came back

from packers who were solely packing and two (2) came back from exporters who solely export. Eight (8) came back from vertically integrated organisations including growing. Three (3) came back from vertically integrated organisations excluding growing. These groupings are relevant if we intend to assess the production/service perception of these organisations.

Table 7.4: Organisations' identification of Production or Service elements

	No.	Production Mean answer	Range	Service Mean answer	Range
Grower	3	5.00	5	2.33	1-5
Packer/ Cool-store	2	3.50	3-4	5.00	5
Exporter	2	2.00	1-3	5.00	5
Vert. Integr. _Incl_. grower	8	4.63	3-5	3.63	1-5
Vert. Integr. _Excl_. grower	3	3.00	2-4	4.67	4-5

Growers: The participants that were solely involved in growing were absolutely clear that they were into production. The mean was 5 and the range was 5 as well. They agreed to a lesser degree (Mean of 2.33) that they are providing a service with views being divided over a range from 1 to 5. The result is consistent with an activity which is primarily production but has some service attributes.

Packers/Cool-stores: The participants that were solely involved in packing were similarly clear that they were into service providing. The mean was 5 and the range was 5 as well. They agreed to a lesser degree (Mean of 3.50) that they were a production organisation with views being divided over a range from 3 to 4.

Exporters: The participants that were solely involved in exporting were equally clear that they were into service providing with a mean of 5 and a range of 5 as well. They too agreed to a lesser degree (Mean of 2.00) that they were a production organisation with views being divided over a range from 1 to 3.

Vertically integrated organisations that _included_ growing as activity: These organisations were identifying the production element of their organisation strongly (Mean of 4.63 with a range of 3-5) while the service element of their organisation was positively identified with a Mean of 3.63. The range however was wide, stretching from 1 to 5.

Vertically integrated organisations that *excluded* growing as activity: These organisations were identifying the service element of their organisation strongly (Mean of 4.67 with a range of 4-5) while the production element of their organisation was positively identified with a Mean of 3.00 and a range from 2 to 4.

It appears from the table above that organisations are largely aware whether their business is about production, service or comprises both elements. The table was in response to two statements like "Our organisation is a service providing organisation' and "Our organisation is a production organisation". Interestingly, the service is often not seen as the product. The product is seen as a physical product (pipfruit).

It appears important that pipfruit organisations decide what exactly their product (physical product or service) is. A comprehensive definition will assist employees to get the product right. The product can e.g. be a physical product with some service attributes. Alternatively it can be a service with or without some physical elements. An exporter e.g. may provide a marketing and selling service to the grower which includes other elements like providing market information and assisting with crop growing decisions for specific markets or supplying specific labels for a market.

7.3.1   RECOMMENDATION 3:

Decide for each core activity (growing/packing/cool-storing/exporting) and for each step within that activity what the core product is and what the attributes for the core product are. The core product is either a physical product or a service. The attributes can be service or physical components. Communicate these product definitions to all employees and train all individual employees in the mindset that they personally 'provide a product or service'.

7.4   SENIOR MANAGEMENT COMMITMENT

The 'senior management commitment' question tried to find out where senior management is taking the organisation. Where does quality fit in and where does the organisation plan to go, short-term and/or long-term? It is beyond question that all

interviewees were dedicated people and committed to their organisations. The answers however show a diversity of philosophies. Each of these may have been considered fitting for the organisation at the time of the interview. There was however no clear pattern in the answers, indicating that senior management in the interviewed organisations had different focus and philosophies. One interviewee indicated something alike continuous improvement while another indicated regular reactive improvement. One company had a clear focus on developing skilled employees. Several organisations indicated that there was no real direction in their commitment. In other words, they just went about their business. These organisations are very reactive. Similarly, several comments were made about economics driving the organisational direction. These organisations too appear reactive and not strategy focussed.

Summarising, senior management commitment appears poorly to moderately matured in the interviewed organisations. This is not a reflection on the dedication of senior management in the pipfruit industry; it is an indication that there is an area where significant improvement is possible. Senior management in the pipfruit industry must learn to identify and commit to core strategies that help their organisation and the industry to sustain. These strategies/commitments must include internal management strategies. Short-term thinking and reactive improvement is not enough; first and foremost there must be a core commitment and strategy focussed on quality, after which plans can be developed and adjusted. The quality gurus are united in their assessment of this requirement (Beckford, 1998).

Table 7.5: Senior management commitment and strategy; selection of answers

	Senior Management Commitment and Strategy: Selection of answers (edited)
»	Economics drive our decisions. We are very dependent on the markets. There is little forward thinking
»	Management must dictate otherwise there will be confusion
»	There is some resistance because of financial drivers but management is working hard on policies and we start to see some fluency. Long-term strategy is weak
»	There is no place for complacency; there is always room for improvement. Our strategy is to grow in a controlled way.
»	We are always trying to improve by sitting down and assessing what worked and what didn't
»	We want to have skilled people from chairman to box maker; people should be valuable and well supported. Longer term, we have one specific development plan

»	We have struggled to find some 'glue'. The strategy is reflected in the budget
»	I have been thinking about strategy a lot lately but not in the past
»	We are production oriented; draconian is easy but empowerment is harder

7.4.1 RECOMMENDATION 4:

The owner/manager is the one that must formulate the organisation's commitment and strategy. She/he/they must underwrite the strategy, consciously and intentionally. The strategy must include the fundamental concepts and elements of the organisation (including quality, customer, product, people and culture) and be focussed on long-term results. Communicate the commitment/strategy regularly and make sure it shines through all actions of the organisation.

7.5 EMPLOYEES

The responses in relation to employees, skills and training showed a variety of answers, many of which were positive in nature. Several organisations commented on the importance of the selection process. Several others commented positively about training. Others commented about training in the shape of 'on-the-job training'. Although interviews showed that training was on the agenda of all interviewed organisations, interviewees also indicated scepticism about the value of training. None of the organisations was a 'learning' organisation (Fitz-enz, 1997, Womack & Jones, 2005). Few were leaning towards becoming a learning organisation.

Several comments indicated differences in approach between permanent and seasonal employees. A relevant comment was made in relation to RSE workers (refer also to Appendix 3.1). The comment relates to RSE workers that return year after year and clearly developed skills and knowledge. These workers become well trained and become supervisors and valuable to the organisations. Interviewees that employed RSE workers appeared to have a three-way split in their perception of workers: Permanent employees, RSE- and other annually returning workers, and casual 'one-season-only' workers.

Table 7.6: Staff and skills; selection of answers

	How does the organisation see staff and skills?: Selection of answers (edited)
»	We select staff carefully so that they can work with each other. Happy employees work better.
»	We are lucky with good staff, most of them permanent. Staff increasing their knowledge is a win-win situation. We invest substantially in training
»	We believe in staff training; there is always something to learn; trained 4 people last year
»	Permanent staff must have better skills; we train them within the company.
»	Permanent staff is more loyal; seasonal staff is not. We train staff on-the-job
»	Permanent and seasonal employees are like two separate and different tools. Skills are improving
»	We focus on people. If people go right, everything else falls into place; we work constantly on developing skills. We empower permanent staff
»	We recruit for attitude and train for skills. We treat all staff the same. RSE staff have been developing every year and become supervisors
»	We try and keep jobs simple for seasonal staff and buddy them up with experienced staff. There is a mix. Generally, people want to do a good job. But also people try to get away with doing the minimum

7.5.1 EMPLOYERS' PERCEPTION OF EMPLOYEES; 'X' OR 'Y'

General questions about employees were answered positively. The approach from employers was more based on McGregor's 'Y' model than his 'X' model, although there was a marked difference between permanent and seasonal employees. Permanent employees were considered more positively as seeking responsibility, finding it natural to work and committed to achieve and perform. The survey did not ask about RSE workers specifically, however the combination of interviews and survey results gives a reasonably clear insight into how employee groups are perceived by employers.

7.5.2 REWARDS AND MOTIVATION OF EMPLOYEES

Survey results indicated that employers find motivators generally more effective than satisfiers as employee stimuli (Table 6.10). The survey however did not differentiate

between permanent and seasonal workers for this segment and future research should include segmentation of various employee groupings for better understanding. Based on the interviews and survey, as well as motivational theory (Appendix 2.1), the following is proposed:

If the stages of motivational theory from Maslow or Alderfer are used, it follows that seasonal workers (unskilled workers) will be motivated more readily by monetary or basic rewards than by 'higher' levels of reward. In other words, their behaviours are more likely to be influenced by money and other lower level 'satisfiers' than the behaviour of permanent workers. Nonetheless, there is enough evidence to suggest that non-monetary factors are motivating and should be included in the reward system. Even just attention can motivate and make employees feel valued (refer Mayo's Hawthorn studies in Inkson & Kolb, 2003).

Table 7.7: Possible application of rewards for different types of employees

	Employee Type, Rewards and Targets (Satisfier and/or Motivator)					
	Permanent Employees		Returning Seasonal Workers and RSE workers		'Casual' seasonal workers	
	Satisfier	Motivator	Satisfier	Motivator	Satisfier	Motivator
Base Wage	Low Relevance	Low Relevance	Important	Important	Important	Important
Other financial benefits (e.g. extra hours, incentive)	Low Relevance	Low Relevance	Important	Important	Important	Important
Housing & Food	Low Relevance	Low Relevance	Important	Important	Important	Important
Policies	Low Relevance	Low Relevance	Low Relevance	Low Relevance	Low Relevance	Low Relevance
Benefits	Low Relevance	Low Relevance	Low Relevance	Low Relevance	Low Relevance	Low Relevance
Work conditions	Reasonably Relevant	Low Relevance	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Supervisors	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Teamwork, membership of teams	Reasonably Relevant	Important	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Recognition & compliments	Reasonably Relevant	Important	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Participation	Reasonably Relevant	Important	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Responsibility	Reasonably Relevant	Important	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Empowerment	Reasonably Relevant	Important	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Achievement	Reasonably Relevant	Important	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Challenge	Reasonably Relevant	Important	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Personal Growth, Learning	Reasonably Relevant	Important	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant	Reasonably Relevant
Key:	Low Relevance		Reasonably Relevant		Important	

Considering the marked differences between permanent and seasonal employees, an employee matrix can be completed for each group of employees. For permanent employees, a matrix should be designed that gets the right people, keeps them, allows them to grow, lays out their career-path, stimulates and reinforces their persona, rewards performance and allows individuality (Appendix 7.2). For seasonal employees, the company should ensure that those reward components that can be successfully applied during a single season are emphasized. Career development e.g. is a reward component for a permanent employee and is unlikely to have merit as a seasonal employee motivator.

An identification of reward objectives and reward components will help set the basis for a robust reward system. The figure below intends to capture a number of components that are proposed to be considered by the organisation. Casual seasonal workers are expected to attach more value to lower level 'satisfiers' while permanent workers will perform better when there are a number of motivators. The RSE worker and returning seasonal worker are expected to perform best when a balanced mix of satisfiers and motivators is applied.

Table 7.7: Possible application of rewards for different types of employees

7.5.3   RECOMMENDATION 5:

Owner/managers must maintain a positive approach to all staff, understanding that a 'Y' approach can be combined with discipline. Become a learning organisation; stop thinking that training is a waste of time and money and start investing in regular training, be it in-house or external. Develop a complete reward system that is logical and understandable and train managers and supervisors in the application of the system. Measure skill-level increase and staff turnover annually.

7.6   CULTURE AND CONTINUOUS IMPROVEMENT

A number of interviewees saw culture as the atmosphere in the work environment. A friendly group of people was seen as a good culture. This raises the question if interviewees understood what a culture actually can mean for an organisation. Organisations with strongly developed positive cultures have a natural 'buffer' against negative developments

from either within or outside. Organisations with strongly embedded negative or poisonous cultures have little or no chance of surviving.

Table 7.8: Culture and Continuous Improvement; selection of answers

	Culture and Continuous Improvement: Selection of answers (edited)
»	We like a friendly place to work; there is quite a bit of respect
»	We have a friendly co-operative culture; improvement is owner driven but also by others
»	We have a culture of leadership, pride, family and continuous improvement but one that is market focused
»	Culture is highly important; pride has always been part of our culture. Especially the people who are doing the jobs come up with good ideas; but management decides.
»	Things don't always have to be tidy for things to run ok
»	The permanent team has the culture; there are continuous attempts to improve
»	We have a positive culture with an attitude to get things done, absolutely driven from the top.
»	Every year is a new challenge; we encourage staff to come with ideas; ask them for their ideas, mostly to deal with compliance issues
»	We like to have a good atmosphere. Most improvement is driven by the owners
»	We always look at the culture; it is very important. We have good team work, there is a synergy; we always walk the floor and talk to all staff

Moorhead and Griffin (1995) table numerous definitions of organisational culture ranging from 'strong, widely-shared core values' through 'the way we do things around her' to 'a belief system shared by an organisation's members'. Peters and Waterman (1984) call culture 'the softest stuff' but in the same sentence call it 'the hardest stuff around', referring to how real and how effective organisational culture is.

The simple fact is that an organisational culture is so much more than people being friendly to each other. It is a long-term philosophy and commitment to people, careers, responsibilities, decision making philosophies, control and evaluation (Ouchi, 1981, in Moorhead and Griffin, 1995). Organisational culture is strongly based on assumptions, underlying the more easily identifiable values. There are explicit, ambiguous and implicit ways to embed a culture (Kao, 1989). An organisation e.g. that always looks tidy and where

every tool has its own place will implicitly manipulate new employees to keep things tidy. One can compare this example as 'peer pressure by environment'.

Several interviewees recognised that continuous improvement and team work were part of a good company culture. On the whole however, it is argued that pipfruit organisations do not fully understand the indirect but powerful positive benefits of a positive culture embedded in their organisations. These cultures are fully supported and driven by senior management's genuine basic philosophies.

It is understandable that employers may not be able to quickly soak up seasonal employees into a company culture. It is proposed here that not many employers have considered a deliberate attempt to emerge the permanent or seasonal employees into a company culture in the first place. Part of the problem is that organisational culture is mostly acknowledged only as a pleasant place to work.

As an organisational culture usually consists of un-written values held by individuals within the organisation, it would be useful for employers to consider ways in which these can be passed onto newcomers. Simultaneously however, it may be possible to articulate core values and unobtrusively disseminate these. For an example, refer to the Lotus Development 'Operating Principles' pamphlet (Appendix 7.3).

7.6.1 RECOMMENDATION 6:

Identify what the company culture is to be. Identify core values, including company values like e.g. continuous innovation. Ensure that the company culture is 'lived' by employers, managers, supervisors and employees alike. Find ways of emerging staff into the company culture without making it a bureaucratic system. Cherish a positive company culture as an intangible asset of immeasurable value that grows with sustained interest and contributes significantly to organisational outcomes.

7.7 COMMUNICATION

Communication processes are different for small, medium and large organisations by nature of their size. Formalised processes may be a necessity in a large organisation; they

are often considered cumbersome in small organisations. The concern is that organisations may not understand how vital communication between all levels is, including cross-functional communication. There is also a concern that the communication process itself may be misunderstood.

Looking at the interviewees' responses, a response in line with TQM understanding states e.g. that although communication is informal, it is recognised that 'it is vital for management to communicate with those that are actually doing the job'. Interviewees appeared to accept communication as something that does not require much thought, in particular the processes involved.

Table 7.9: Communication; selection of answers

	Communication: Selection of answers (edited)
»	We communicate over a cup of coffee instead of formally. This gives better input from staff. We need input from staff because they are doing the job
»	We have regular meetings with growers and marketers. Management meetings become more regular
»	There are internal meetings, grower meetings and emails but there is inconsistent awareness of communications requirements
»	We have a proper staff meeting three times per day
»	Cross-functional communication is important, so is prioritising
»	Most communication is informal; we use check-sheets for seasonal staff
»	We are starting regular and formatted internal communication and start to see the value
»	Communication is verbal, smokos, phone calls etc.
»	Both formal meetings and informal discussions

Communication is not a one-way street. Sligo (1990) offers various models to help understand the basics of the communication process. Combinations of several of these models are shown in Appendix 7.1.

The communication process, although often not emphasised, is important in TQM. Flat management structures allow quick access to people with other responsibilities. Fitz-enz

(1997) considers that best human asset management is achieved by 'massive' communications, where information is shared both top-down and bottom-up throughout the organisation. Systems and procedures are put in place to facilitate this information flow. He identifies communication as one of eight 'best-practices' that excellent companies apply consistently. The supervisory level within an organisation is often the real hub of communications, as individuals in these positions are often the 'gatekeepers' of information in both directions. Imai confirms as much in a recent article (Jayne, 2010). To assume that communication is something that anybody can do effectively is ignorant.

7.7.1 RECOMMENDATION 7:

Decide in combination with all relevant internal stakeholders how the communication process can be improved to improve outcomes. Include who, how often, when, what and how when structuring the process. Have various ways of communication depending on purpose. Always have in mind that 'informed people make informed decisions' that will benefit the organisation.

7.8   TQM TOOLS

Masaaki Imai comments that one of the most important starting points is to identify the problems that must be resolved (Jayne, 2010). His view is that too often, people focus on tools before knowing when, where and how to use the tools. Compare it to building a house. If you have the best tools in the world but don't know how to go about building a house, there is no point in having these tools.

If however an organisation is aware of its purpose and goals, it may well choose the right tools to achieve better outcomes, more efficiently. Brassard and Ritter (1994) believe that tools can be used to:

1. Focus on continuous quality improvement (CQI)
2. Improve continuous quality improvement
3. Involve employees in continuous quality improvement
4. Direct a path towards continuous quality improvement

The outcome of the survey shows that common quality improvement tools are for a large part unknown or unused. In today's environment, it is useful for organisations to use those tools that help the organisation to analyse activities more effectively.

7.8.1   RECOMMENDATION 8:

Analyse tools and select a restricted number of tools that will work beneficially for the organisation. Embed the use of these tools into the organisation and review with some regularity if the tools fulfil the requirements.

7.9   CONTINGENCY THEORY

Contingency theory is the result of the realisation that standardising theories is not possible. It is discussed to make sure that organisations do not fall into the trap of adopting 'off-the-shelve' solutions. Not a single management theory is applicable to all organisations at all times (Beckford, 1998). Although human nature is to 'keep it simple' and find 'one rule' that applies under all circumstances, reality varies too much and solutions have to be found that are contingent with the environment and specific circumstances. This is one of the reasons why human beings tend to use heuristics to guide them through complicated decision making processes (Inkson and Kolb, 2003).

Organisations exist in an environment and interact with that environment which may constantly change. Organisations adapt. This requires the management method to adapt appropriately to the circumstances in order to achieve desired results efficiently (Beckford, 1998). The contingency theory aligns itself with critical systems thinking in that it accepts that solutions are not standard; that all available methodologies are acceptable as a matter of principle and solutions must be found that fit the organisational environment. An organisation that adapts, (i.e. responds to the environment) should not be confused with an organisation that applies continuous improvement.

Make sure that recommendations are adapted to the specific environment of the appropriate organisation. Don't be afraid to interpret how recommendations will be most valuable for a given organisation but maintain the basic philosophy that strategic commitments have better sustainability than reactive short-term thinking.

7.10   CHANGE

The challenge facing the manager who wants to improve quality is the fact that improvement usually means 'change'. Kotter (1996) argues that change has become a way of life for successful companies and promotes an 8-step program to 'lead change'. But organisational change is a challenge. As Machiavelli stated "There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things" (Bounds *et al*, 1994). And change is threatening exactly that; change creates a new order of things.

Just as 'change' is inevitable, so is 'resistance to change' (Moorhead and Griffin, 1995). The approach towards changing (improving) quality must therefore manage two aspects:

- Manage the 'people-aspect' of change
- Manage the technical aspects of change; the change itself

A number of practitioners, some of which are quoted below, promote integrated forms of managing change such as participative management, dealing with both the human element and the technical element through one process.

The concept of participation in order to assist the introduction of change is not new. Tannenbaum (1966) quotes both his own research and Lewin (1947, in Tannenbaum, 1966), pointing out that participation was found to be the best way to effect change, obtaining both positive outcomes and achieve positive reactions towards management rather than hostility. A process of 'unfreeze-change-refreeze has been postulated by Lewin as early as 1947 (Lewin, 1952).

Organisations are like complex mini societies with cultures, groups, and individual people. They are in many ways like 'black boxes' because it is impossible for managers to

understand the entire organisation in detail (Beer, 1974 in Beckford, 1998). Beer states (Beckford 1998) that organisations have a degree of self-regulation arising through feedback loops within itself and with the environment. This tendency to 'self-regulate' also implies that change initiated from the top or 'outside' may be interpreted by people in the organisation as a statement of lack of trust in their competence to effect improvement themselves.

Katz and Kahn (1978, in Moorhead and Griffin, 1995) identified six major organisational sources of resistance to change and six major individual sources of resistance to change:

- Organisational sources: Over-determination; Narrow focus of change; Group inertia; Threatened expertise; Threatened power; and Resource allocation.
- Individual sources: Habits; Security; Economic factors; Fear of the unknown; Lack of awareness; and Social factors.

Moorhead and Griffin (1995) subsequently continue to identify five keys to managing change. These include: Taking a holistic view of the organisation, anticipating effects on social system and culture; securing top management support; encouraging participation by those affected by the change; fostering open communication; and rewarding those that contribute.

Juran (in Logothetis, 1992) also raises awareness that resistance to change is often based on social and cultural factors. Juran proposes two principal methods to deal with resistance:

- All those that are affected by change should be allowed to participate;
- Adequate time should be allowed for the change to be accepted.

The 2 steps above allow opportunity for evaluation and experimentation, promote ownership of the changes and help overcome resistance.

Stace and Dunphy (1994) identify four dilemmas concerning change and divide these into two groups of soft and hard approaches towards change. They show that there are 'horses for courses', and one approach does not necessarily fit all:

Table 7.10: Stace and Dunphy (1994) Hard and Soft approaches to change

	Soft approaches		Hard approaches
Dilemma 1	Adaptive Strategy	**versus**	Rational Strategy
Dilemma 2	Cultural Change	**versus**	Structural Change
Dilemma 3	Continuous Improvement	**versus**	Radical Transformation
Dilemma 4	Empowerment	**versus**	Leadership and Command

Change therefore, can be a difficult thing to manage. Change 'from within' appears easier than change forced by another source. From the above, it appears that a process of participation is likely to be more successful in effecting change.

7.10.1 RECOMMENDATION 10:

Decide on a strategy to affect change. Consider people participation and time as elements. Make certain that internal leaders/managers understand the need for change. Choose one of many effective 'change' programs and implement the program as a team project.

8. TOWARDS A PIPFRUIT INDUSTRY MODEL

8.1 GENERAL BUILDING BLOCKS

Numerous models have been created over the years to help understand systems, theories or phenomena. There are conceptual models, business models, causal models, process models, and many other types of model. Models provide quick visual overviews and summaries of proposed or actual theories. 'There is nothing quite as useful as a good model' (author). The pipfruit industry model intends to show stakeholders how Total Quality Management can be achieved. All important elements of TQM are represented in the model. The model –after adaptation to individual organisations- could become a fixture on interior walls of buildings, exposing all employees to how a quality organisation achieves quality outcomes.

8.1.1 PIPFRUIT MODEL REQUIREMENTS

The proposed model is deducted from several quality principles and pipfruit industry/organisation characteristics. In order for the model to be meaningful and useful, the following factors are considered:

- The model must depict how quality is achieved.
- Pipfruit organisations must be modelled by type, as their functions are different and cover production, service and some other elements, e.g. use of data. Each primary industry activity type (grower, cool-store, packer and exporter) has its own specific model, derived from a general model.
- Each individual pipfruit organisation needs an internal set of philosophies or principles to facilitate TQM in order for it to work for the organisation.
- Aspects that differ substantially from traditional TQM organisations must be present in each model, e.g. seasonal nature of the industry.
- The model must clarify important quality determinants for each type of organisation.

8.1.2 QUALITY MODELS IN LITERATURE

Common models depicting aspects of TQM are the Deming PDCA cycle with all its variations (Deming, 1986), the Oakland quality model, Beer's viable systems model, Garvin's manufacturing model (Beckford, 1998), Grönroos (1982) or Zeithaml *et al*'s service quality models (Zeithaml *et al*, 1990) and many more. Some of these are drawn from to create the pipfruit model.

Garvin (1988) developed 8 quality dimensions for manufacturing, while Zeithaml *et al* (1990) defined a number of quality dimensions for the service industry. Over recent years, similar tables have been developed for products that are not physical products or service products like computer programmes or internet applications (UKOLN study, 1998).

Table 8.1: Quality dimensions for manufacturing, service and database systems

	Manufacturing Dimensions (Garvin, 1988)	Service Dimensions (Zeithaml *et al*, 1990)	Database Dimensions (UKOLN study 1998)
1.	Performance	Responsiveness	Output
2.	Features	Tangibles	Coverage and scope
3.	Reliability	Reliability	Consistency
4.	Conformance	Competence	Integration
5.	Durability	Security	Error rate/accuracy
6.	Serviceability	Credibility	Ease of use
7.	Aesthetics	Communication	Documentation
8.	Perceived Quality	Understanding the customer	Value to cost ratio
9.		Courtesy	Timeliness
10.		Access	Customer support and Training

Table 8.1 above shows some of the quality dimensions, tabled by product group. The table demonstrates that there are different sets of quality dimensions, depending on the type of output. For this reason, the proposed model follows similar pathways.

8.1.3 PIPFRUIT ACTIVITIES

Pipfruit knows four distinct activities; growing, cool-storing, packing and exporting. A number of organisations in the industry have singular activities, e.g. they are growers and

not involved in any other activity. Other organisations combine several or all of these four activities. The activities are shown in figure 8.1. Not all activities are pure production or service. An estimate of the division of activity type is shown in table 8.2.
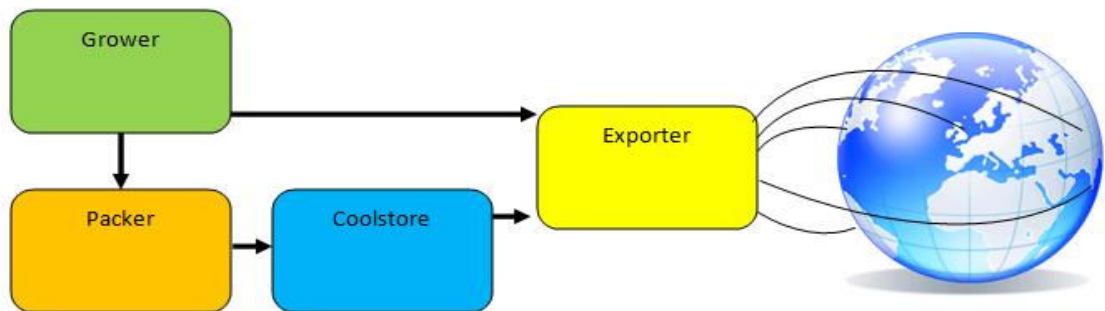
Figure 8.1: Primary stakeholder summary

The type of activity, and therefore product/service mix of that activity, can be different depending on the type of organisation. A generic model would be most helpful if it could be applied to all types of organisations. It is important for integrated organisations to consider their different activities to be specific products or services for specific customers. An organisation that grows, stores and packs would be expected to adopt a customer/supplier approach, e.g. the grower is the customer of the cool-store and packhouse. Although the industry talks about integrated organisations, it is exactly this, the internal customer approach, which will help improve overall quality development.

Table 8.2: Estimated percentage of production/service provision by stakeholders

	Orchard	Packhouse/Cool-store	Exporter	Vertically Integrated Operation	Pipfruit Industry Body
Production	95 %	10 %**	0 %	13 %***	0 %
Service	5 %*	90 %**	100 %	87 %***	100 %
	* Providing data and communicating with packer and exporter ** The tangible attributes of the product do not change as the apple is sold to the end-consumer without packaging. Most packaging is discarded on arrival (Ramaswamy, 1996). *** Depending on integrated components: average estimated over 15.000.000 TCEs with 75 packers/500 growers				

A basic model, applicable to all stakeholders is shown below. All organisations have input of product/service, have customers with product/service expectations, and produce a product or service from inputs to satisfy the customer. If the organisation has a quality assurance process, it will compare the delivered product/service with the required product/service and feed gaps (positive and negative) back to the organisation. This is the feedback loop which enables organisations to improve product/service as a result of comparison.
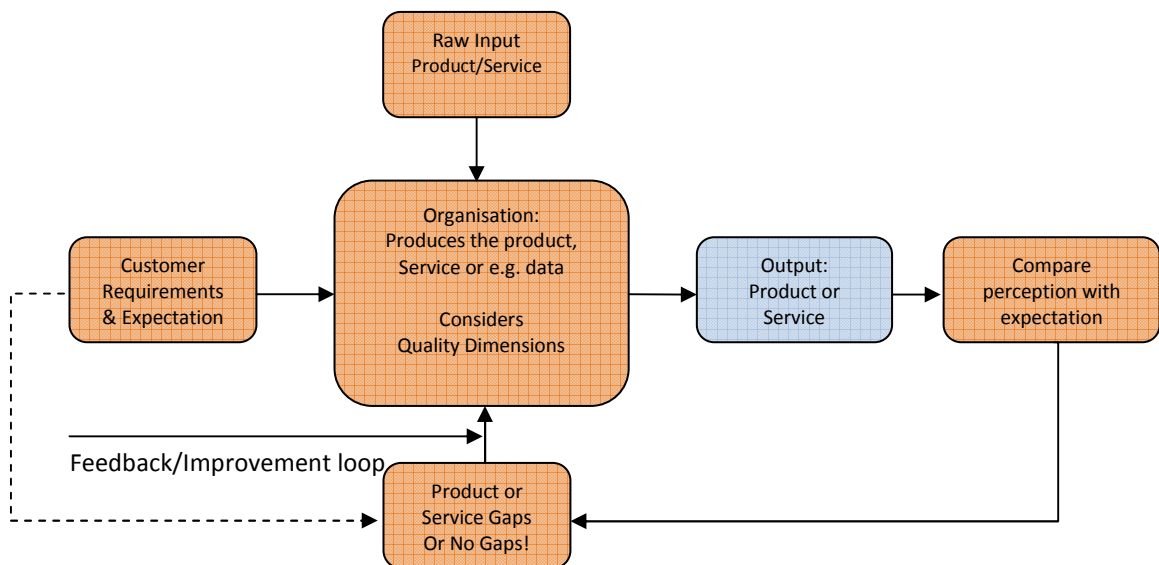
Figure 8.2: Basic Quality process

The model above shows input/output, customer expectation/perception and improvement enablement through expectation/perception gap feedback.

The model must also include elements that make an organisation a quality organisation, and elements that achieve quality. This is not the same. It is unlikely that a quality organisation fails to achieve quality; it may

Figure 8.3: Quality Organisation

well happen that a quality product/service is achieved but the organisation is immature and struggles for consistency. Throughout the whole organisation, there is a continuously ongoing process of learning and improvement.

Figure 8.3 depicts the fundamental internal requirements of an organisation in order for it to be a 'quality organisation, achieving quality products/services.

The next element to be introduced is the various quality dimensions. Although recognition of the quality dimensions is inherent to a quality organisation, quality dimensions are depicted here as product or service elements that are identifiable by the organisation.
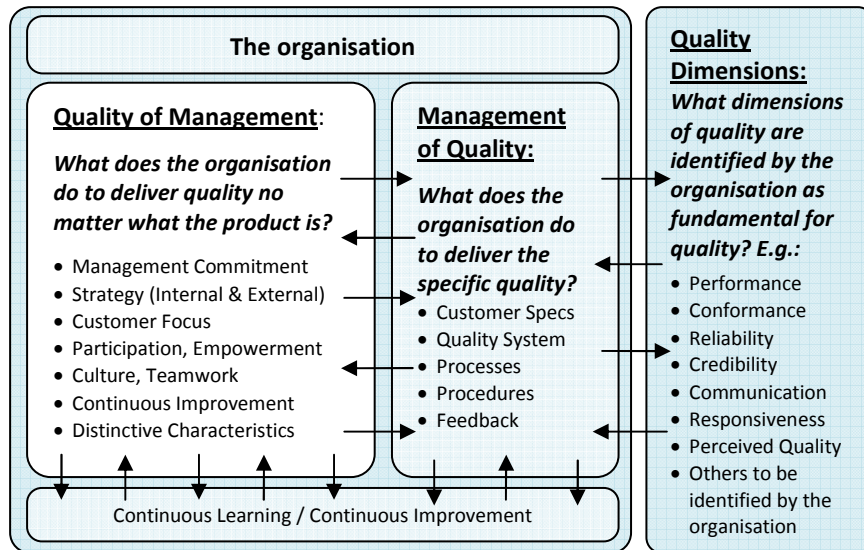
Figure 8.4: Quality Organisation identifying Quality Dimensions

The proposed model should combine inputs/outputs, consumer and customer demands, quality of management, management of quality, quality dimensions, gaps and improvement cycles. The basic model is now enriched with the organisational model and looks as follows:
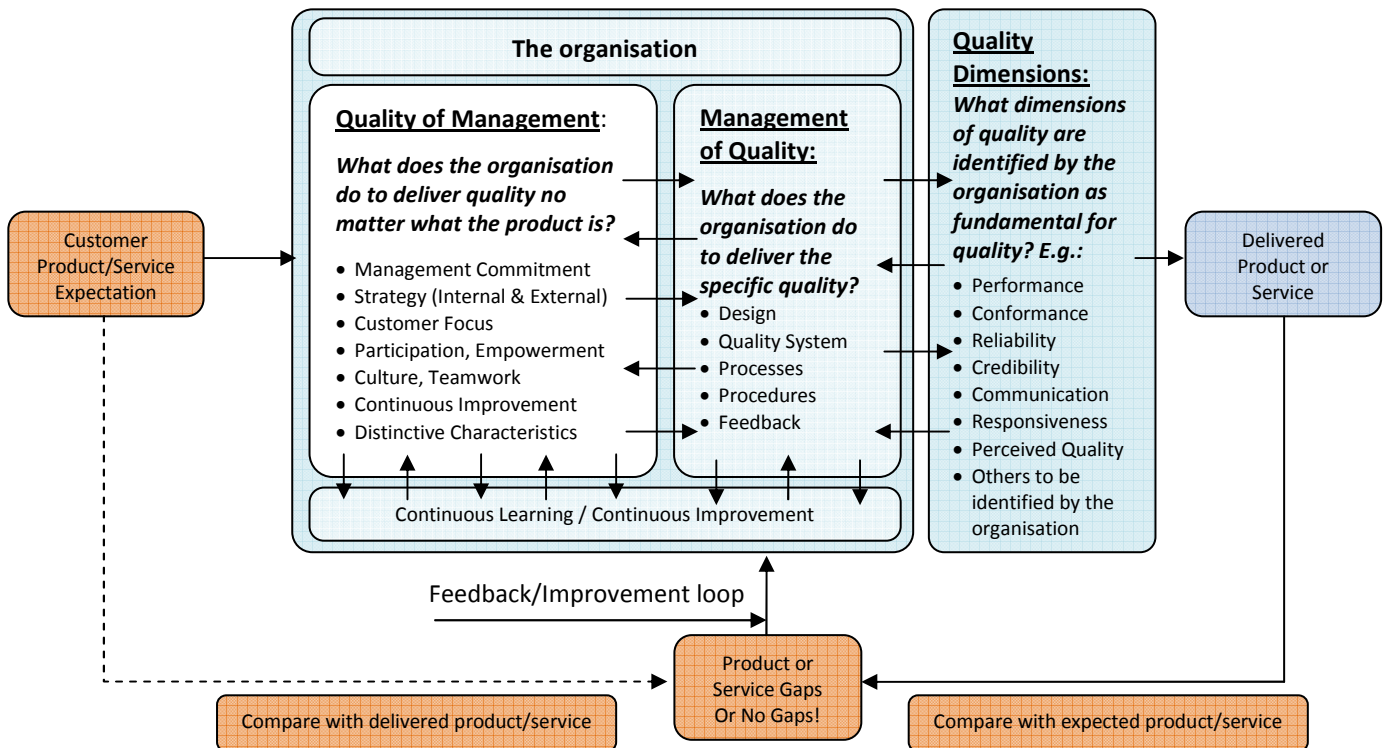
Figure 8.5: Complete Quality Organisation; not dependent on activity type

Process description: Customer expectation is absorbed by the organisation, both systemically and in terms of specific quality dimensions and systems. The output product or service is compared with the customer expectation to show up any gaps (or the fact that there are no gaps; equally useful feedback). The gaps are fed back into the organisation's quality systems to improve the specific product, but also become part of the continuous learning/continuous improvement ethos.

8.3   ADDING THE CUSTOMER DIMENSIONS

The customer dimension for -and within- the pipfruit industry is problematic as explained in chapter two. Figure 8.6 shows how the end-consumer drives the decision of the paying customer, in this case assumed to be the supermarket. The supermarket absorbs the end-consumer's product requirements into its own requirements and communicates these to the organisations delivering the product. It becomes obvious that it is easy to overcomplicate the model.
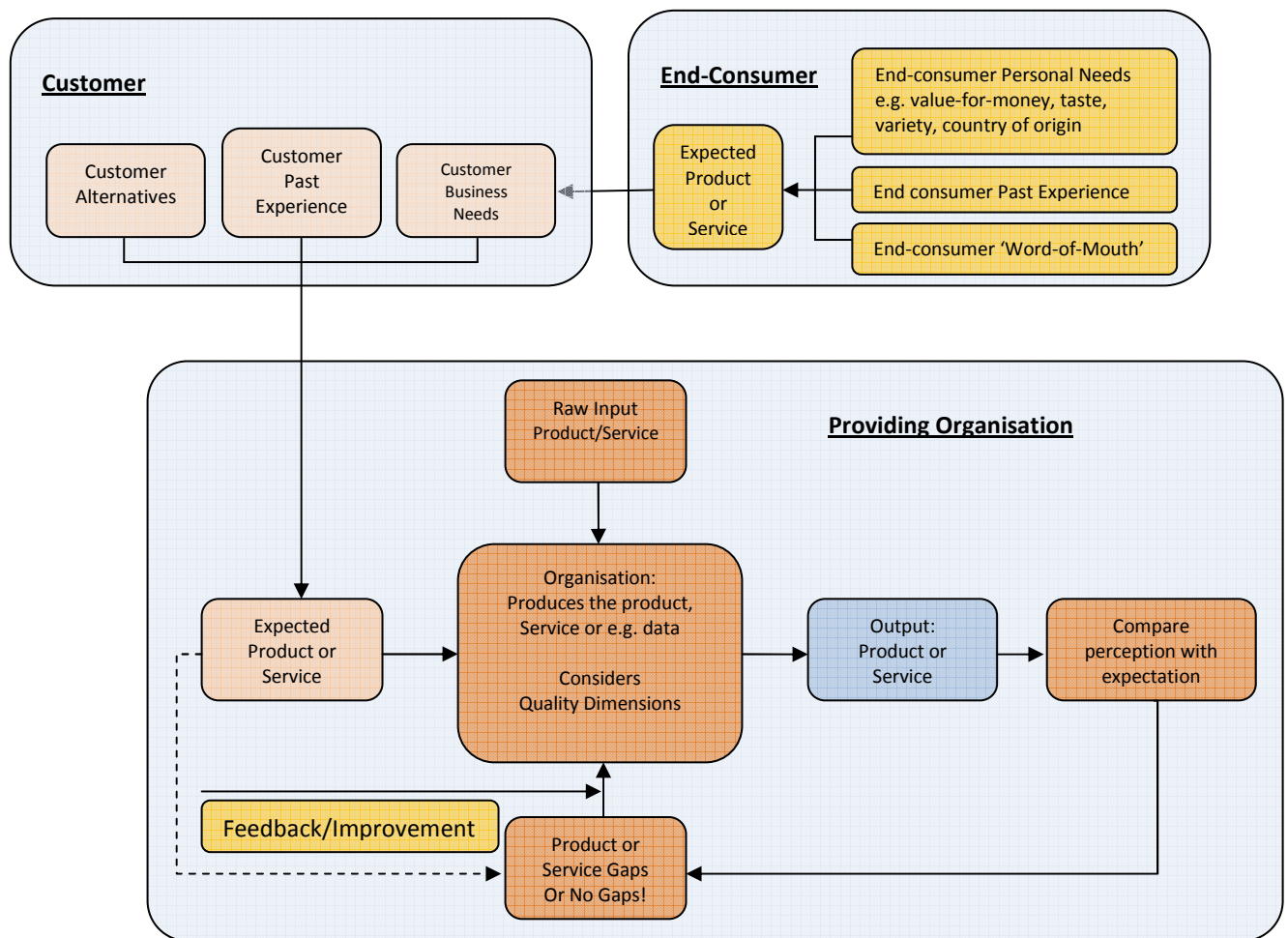
Figure 8.6: Quality Model including the customer and end-consumer

Comments:

1. Pipfruit is sold by industry to supermarket or wholesaler, not to end-consumer; the end-consumer is expected to shape the supermarket/wholesaler needs
2. The supermarket/wholesaler is the paying industry customer and translates end-consumer product/service needs into customer requirements
3. Industry organisations receive product requirements and produce product using their:
   a. Fundamental TQM principles
   b. Quality systems/processes
   c. Quality dimensions
4. Four distinctly different operations contribute sequentially (grow, cool, pack, export); the model is adapted for each type of operation
5. Product/service is delivered and compared with requirements
6. Feedback about any gaps (or no gaps) back to organisation for Continuous Improvement

8.4 ADDING THE SEASONAL WORKER DIMENSION

The New Zealand pipfruit industry once knew a culture of workers that largely worked to earn some extra dollars for children's education, an addition to the home, holidays or children's braces. These -often female- workers voluntarily worked and had an internal motivation to go to work and do the job. Often, these workers returned year after year to the same orchard/packer and consequently developed some skills. Picking and packing criteria were different. Orchards often packed their own fruit and technical and compliance demands were relatively low. The smaller size of the organisation provided for a more personal contact.

Today, the skill demand is different. The motivation of the worker is not offered voluntarily, often the worker seeks work because he 'has to'. A number of casual seasonal workers are on a working holiday and have no particular strong drive to perform; they work to earn some spending money. The introduction of the RSE worker has introduced workers that are motivated primarily by the opportunity to earn money that they cannot easily earn at home. They also have the opportunity to return year after year provided they do the job right, thus providing for their own future.

This gives most pipfruit organisations three categories of workers. The difference between 20 years ago and today lies in skill demand and motivation. Thus, for each of these three groups, the organisation may have to find a modus operandi, e.g.:

1. For permanent employees:
    a. Do the required off-season jobs during the off-season;
    b. Become supervisory staff during the season;
    c. Help create and open an embracing culture in which seasonal and casual workers are welcomed, treated with a minimum of respect, trained and made part of a group/team.
2. For annually returning seasonal workers and RSE workers:
    a. Organise housing, food, transport etc. as required; emerge staff in the company culture, train and educate and train again.
3. For casual seasonal workers:

a. Induce, train, educate, practice, monitor, on-train and achieve a sense of temporary belonging from which some internal motivation will develop.

Table 8.3: Identification of chain of customers and product/service details by activity type

Customer Type	Type of Organisation			
	Grower	**Cool-store**	**Packer**	**Exporter**
Primary Customer Product or Service? Details	Exporter: Product (Physical fruit)	Grower: Service (maintain quality & add value through CA, SmartFresh™ etc)	Grower: Service (add value by grading, sizing, packing and traceability)	Grower: Service (maximise value)
Secondary Customer Product or Service? Details	Category Manager Distributor Wholesaler Supermarket: Product (Fruit with added value)	Packer: Service (provide bins, maintain inventory)	Cool-store: Service (provide packed product)	Packer: Service (provide packing and market details)
Tertiary Customer Product or Service? Details	End-Consumer	Exporter: Service (maintain inventory, load-out for shipping)	Exporter: Service (add value by compliance to requirements)	Cool-store: Service (provide treatment, storage and shipping details)
Further customer down the supply chain: Category Manager Distributor Wholesaler Supermarket End-Consumer		Further customer down the supply chain: Service (maintain quality)	Further customer down the supply chain: Service (add value)	Further customer down the supply chain: Service (organise shipping and trading details)
Service customers through regulatory association	MAF, NZFSA, IVA (Provide 'legal' product)	MAF, NZFSA, IVA (Provide 'legal' product)	MAF, NZFSA, IVA (Provide 'legal' product)	MAF, NZFSA, IVA, Customs, Chamber of Commerce (Provide 'legal' product)
Customers through supply association	Chemical, equipment, transport providers, contractors, advisers etc.	Equipment, power, forklift, inventory systems and transport providers etc.	Equipment, power, forklift, packaging, inventory systems and transport providers etc.	Packaging and inventory systems providers

The next step in the process is to look at the types of organisations and decide what kind of product or service is provided to each organisation down the line, including internal/external/extended customers and consumers. For the sake of simplicity, the table below defines either product or service as being provided; however it is proposed that service also includes computer programmes, data etc. Similarly, not all extended customers may have been detailed in order to simplify.

8.6   ADDING STAKEHOLDER DETAIL TO THE MODEL

8.6.1 GROWER

Like all organisations, the grower's organisation will need management philosophies and systems that align themselves with the TQM philosophies and systems. These philosophies or principles are combined in the box depicting the organisation. Although basic philosophies should not differ much between types of organisations, organisations should adapt their fundamental principles where aspects differ markedly from 'standard TQM organisations' and provide contingent principles for their organisation.

For the grower, the seasonal component, specifically the manual labour component is important to be explored. Core principles here could be the different 'X' or 'Y' approach types depending on the type of employee. Similarly, training, teamwork, culture, rewards and motivation may need attention. Like the core philosophies, the quality systems, processes and procedures concerning all growing activities must be adjusted. These include pruning, spraying, irrigating, fertilising, thinning and harvesting. Required quality standards also differ, depending on core activity. Orchards require a GlobalGap standard (Global G.A.P., 2010) and possibly supermarket standards like Tesco's Nature's Choice (Tesco's nature's Choice, 2010).

The grower product can be described as pipfruit (apples/pears/nashi), coming from the orchard. The pipfruit itself has a number of quality aspects. If we take Garvin's perceptions

and quality dimensions into account, one could argue that some of Garvin's perceptions apply similarly to pipfruit as they apply to manufactured products. Some others are less applicable. There is a:

- Product based quality (taste being an obvious one),
- User-based quality (a happy consumer),
- Manufacturing based quality (here called growing quality and relating to pressures and brix),
- Value-based quality (value for money) and
- Transcendent quality (e.g. favouring a specific variety)

If we take the product from the grower before value is added, we can extract the following quality dimensions for the apple/pear/nashi:

- Performance: Primary operating characteristics like taste, bite, juiciness and shelf life can be measured and analysed.
- Conformance: Meeting pre-established standards or specifications like size of blemishes, number of blemishes or measured internal disorders for fruit can also be measured and recorded.
- Perceived quality: This is a more subjective dimension and may include e.g. the origin of the pipfruit.
- Aesthetics: This is also a subjective dimension and may include how the fruit looks, feels and presents.

Fruit does not really have features (bells and whistles), reliability (can an apple fail?), durability (an apple can only be used once), or serviceability (there is no repair). There are however several aspects of the QUALSERV model that are applicable (Zeithaml *et al*, 1990). These are:

- Reliability: Does the grower deliver the expected volume and quality of fruit?
- Responsiveness, Access and Communication: Can the Packer, Cool-store or Exporter easily access the grower, will the grower respond rapidly to enquiries and will the communication be concise?
- Competency and Security: Does the grower apply growing and regulatory protocols, avoiding regulatory risk for Packer, Cool-store and Exporter?

- Understanding the customer: Does the grower try to understand the customer's needs?

Considering the above, the following organisational picture starts to emerge (Figure 8.7):

Table 8.4: Grower Quality Dimensions

	Manufacturing Dimensions (Garvin, 1988)	Service Dimensions (Zeithaml *et al*, 1990)
1.	Performance	Responsiveness
2.	~~Features~~	~~Tangibles~~
3.	~~Reliability~~	Reliability
4.	Conformance	Competence
5.	~~Durability~~	Security
6.	~~Serviceability~~	~~Credibility~~
7.	Aesthetics	Communication
8.	Perceived Quality	Understanding the customer
9.		~~Courtesy~~
10.		Access

Figure 8.7: Grower Quality Management

8.6.2 COOL-STORE

The cool-store organisation will also need management philosophies and systems that align themselves with the TQM philosophies and systems. For the cool-store, the seasonal component has some bearing but not as much as for the grower. Some extra employees are hired and the season may stretch from January to September. The cool-store however is interacting with three customers (grower, packer and exporter). Core principles here could be the different customer approach depending on the type of customer. Some training, teamwork, culture, rewards and motivation may need attention. Like the core philosophies, the quality systems, processes and procedures concerning all cool-store activities must be adjusted. These include the submission process, treatments, storage, temperature and inventory control. Required quality standards include e.g. a BRC standard (BRC Global Standard for Food, Issue 5, 2010).

The cool-store service (product) can be described as maintaining and adding value to submitted apples by a correct cool-store process and by CA or SmartFresh™ applications. If we take Garvin's perceptions and quality dimensions into account, one could argue that some of Garvin's perceptions apply similarly to pipfruit as they apply to manufactured products. Some others are less applicable.

Table 8.5: Cool-store Quality Dimensions

	Manufacturing Dimensions (Garvin, 1988)	Service Dimensions (Zeithaml *et al*, 1990)
1.	~~Performance~~	Responsiveness
2.	~~Features~~	Tangibles
3.	Reliability	Reliability
4.	~~Conformance~~	Competence
5.	~~Durability~~	Security
6.	~~Serviceability~~	Credibility
7.	~~Aesthetics~~	Communication
8.	Perceived Quality	Understanding the customer
9.		Courtesy
10.		Access

If we take the cool-store service, we can extract the following quality dimensions for the cool-store service. Most of these are in line with the SERVQUAL dimensions as shown in table 8.1. Considering the above, the following organisational picture starts to emerge (Figure 8.8):

Figure 8.8: Cool-store Quality Management

8.6.3 PACKER

The packhouse organisation will need management philosophies and systems that align themselves with the TQM philosophies and systems as well. For the packhouse, the seasonal component has a substantial bearing as packhouse work is quite labour intensive. A large number of extra employees are hired and the season may stretch from the end of February to June or July. The packhouse is interacting with three customers (grower, cool-store and exporter). Core principles here are the approach to employees and the different customer approach depending on the type of customer. Training, teamwork, culture, rewards and motivation need attention. Like the core philosophies, the quality systems, processes and procedures concerning all packhouse activities must be adjusted. These include the packaging, planning, packing,

Table 8.6: Packhouse Quality Dimensions

	Manufacturing Dimensions (Garvin, 1988)	Service Dimensions (Zeithaml *et al*, 1990)
1.	~~Performance~~	Responsiveness
2.	~~Features~~	Tangibles
3.	Reliability	Reliability
4.	Conformance	Competence
5.	~~Durability~~	Security
6.	~~Serviceability~~	Credibility
7.	~~Aesthetics~~	Communication
8.	Perceived Quality	Understanding the customer
9.		Courtesy
10.		Access

quality control and inventory control. Required quality standards include e.g. a BRC standard.

The packhouse service (its 'product') can be described as adding value to submitted apples by a correct packhouse process and by smart packaging applications. Most of the applicable quality dimensions fall in the SERVQUAL categories with some of Garvin's elements being applicable as well (refer table 8.6).

Considering the above, the following organisational picture starts to emerge (Figure 8.9):
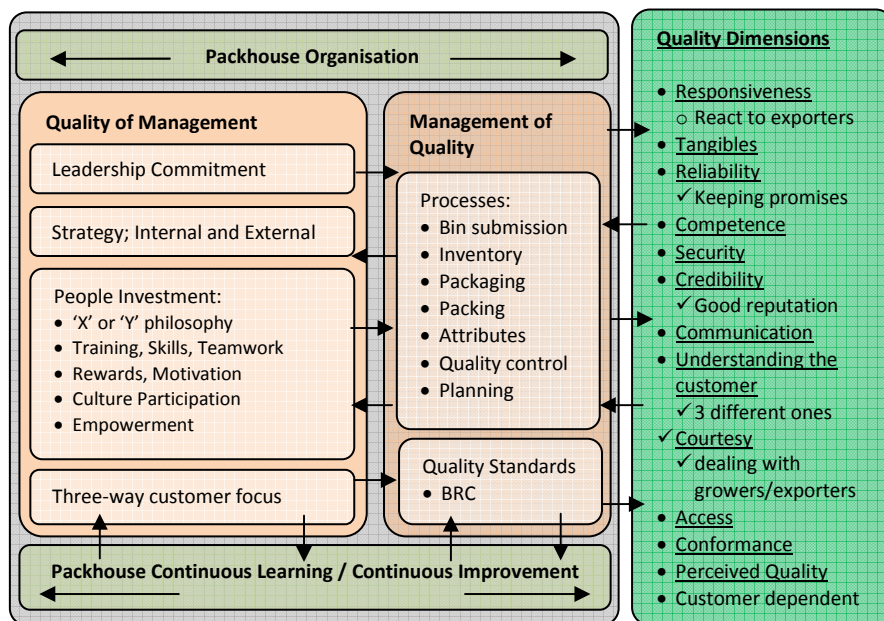
Figure 8.9: Packhouse Quality Management

8.6.4 EXPORTER

The exporter organisation will need management philosophies and systems that align themselves with the TQM philosophies and systems as exporter. For the exporter, the seasonal component has a small bearing as exporter's work is not labour intensive. Large exporters may hire some extra employees. The season is different in that the latter part of the year is filled with market research, planning and follow-up, while the season means actually doing what was planned in the off-season. The exporter is interacting with three customers (grower, packer and cool-store). Core principles here are the approach to the

different customers depending on the type of customer and the export responsibility, particularly towards the grower. Like the core philosophies, the quality systems, processes and procedures concerning all exporter activities must be adjusted. These include the market research, planning, and follow-up, booking of shipping and containers and volume and inventory control. Required quality standards include e.g. a BRC standard.

The exporter service (its 'product') can be described as maximising market value of pipfruit in its care by a correct exporter process and by smart trading. Most of the applicable quality dimensions fall in the SERVQUAL categories with some of Garvin's elements being applicable as well (refer table 8.7).

Considering the above, the following organisational picture emerges (Figure 8.10):

Table 8.7: Exporter Quality Dimensions

	Manufacturing Dimensions (Garvin, 1988)	Service Dimensions (Zeithaml *et al*, 1990)
1.	~~Performance~~	Responsiveness
2.	~~Features~~	Tangibles
3.	Reliability	Reliability
4.	Conformance	Competence
5.	~~Durability~~	Security
6.	~~Serviceability~~	Credibility
7.	~~Aesthetics~~	Communication
8.	Perceived Quality	Understanding the customer
9.		Courtesy
10.		Access

Figure 8.10: Exporter Quality Management

Finalising the pipfruit model, we end up with the model below where the organisation can be replaced by any of the four boxes depicting specific types of activity as described above.
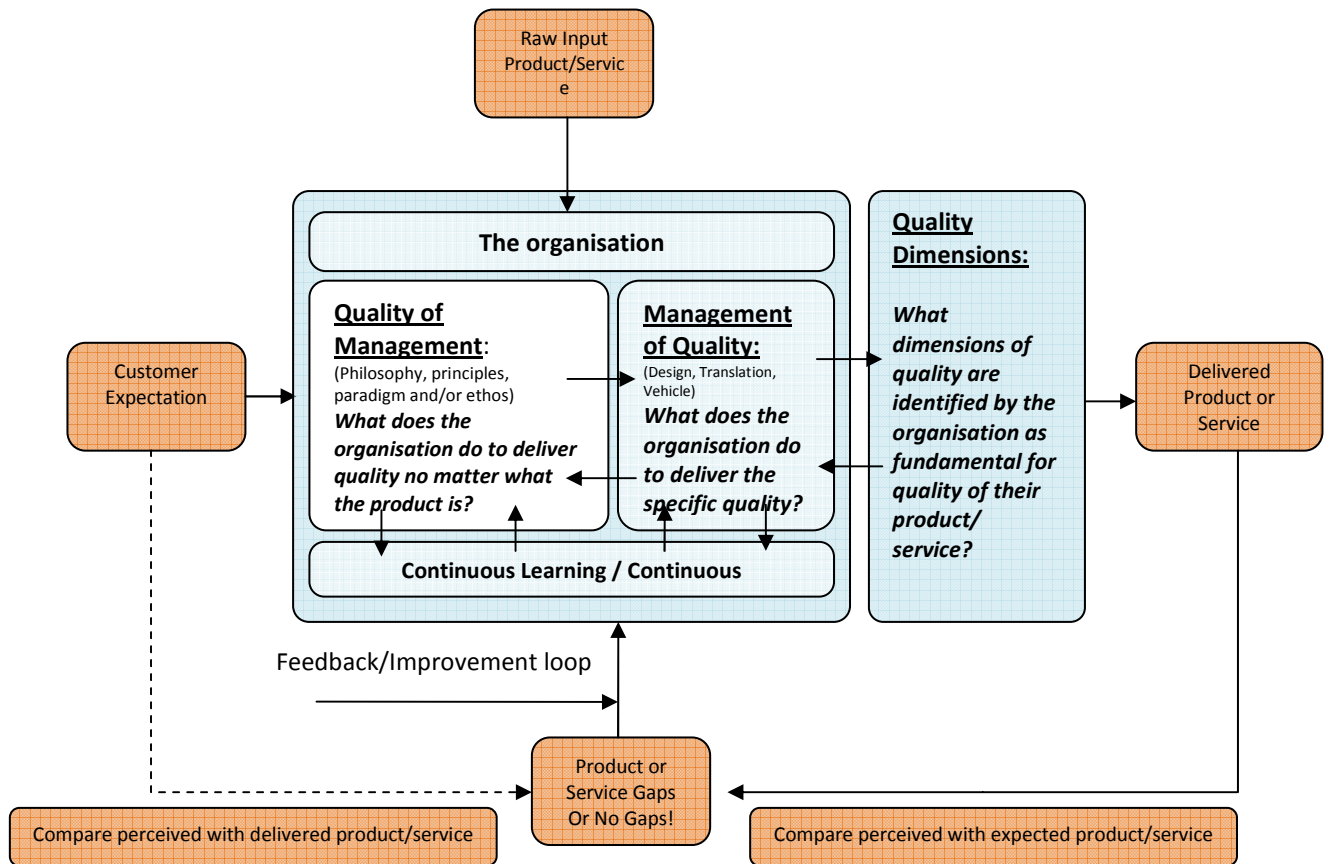
Figure 8.11: Pipfruit Model

The model above satisfies the earlier posted requirements:

- The model depicts how an organisation is a quality organisation and how quality is achieved.

- Pipfruit organisations are modelled by type, with each type having its own organisation's box, which replaces the generic organisation box inside the model.

- Each individual pipfruit organisation has an internal set of principles to facilitate TQM in order for it to work for that organisation.

- The model clarifies important quality determinants for each type of organisation.

- Aspects that differ radically from traditional TQM organisations are present in each model, e.g. seasonal nature and labour element of the industry.

Note: Organisations must consider the model carefully and adapt philosophies, systems and quality dimensions to their own specific environment in order for the model to become the organisation's own model. For example, Figure 8.13 shows the model with the Packhouse Management Section inserted as an example of how organisations can start adapting the model to their own activities.

In its alternative form -adding key-words- the model looks like figure 8.12:
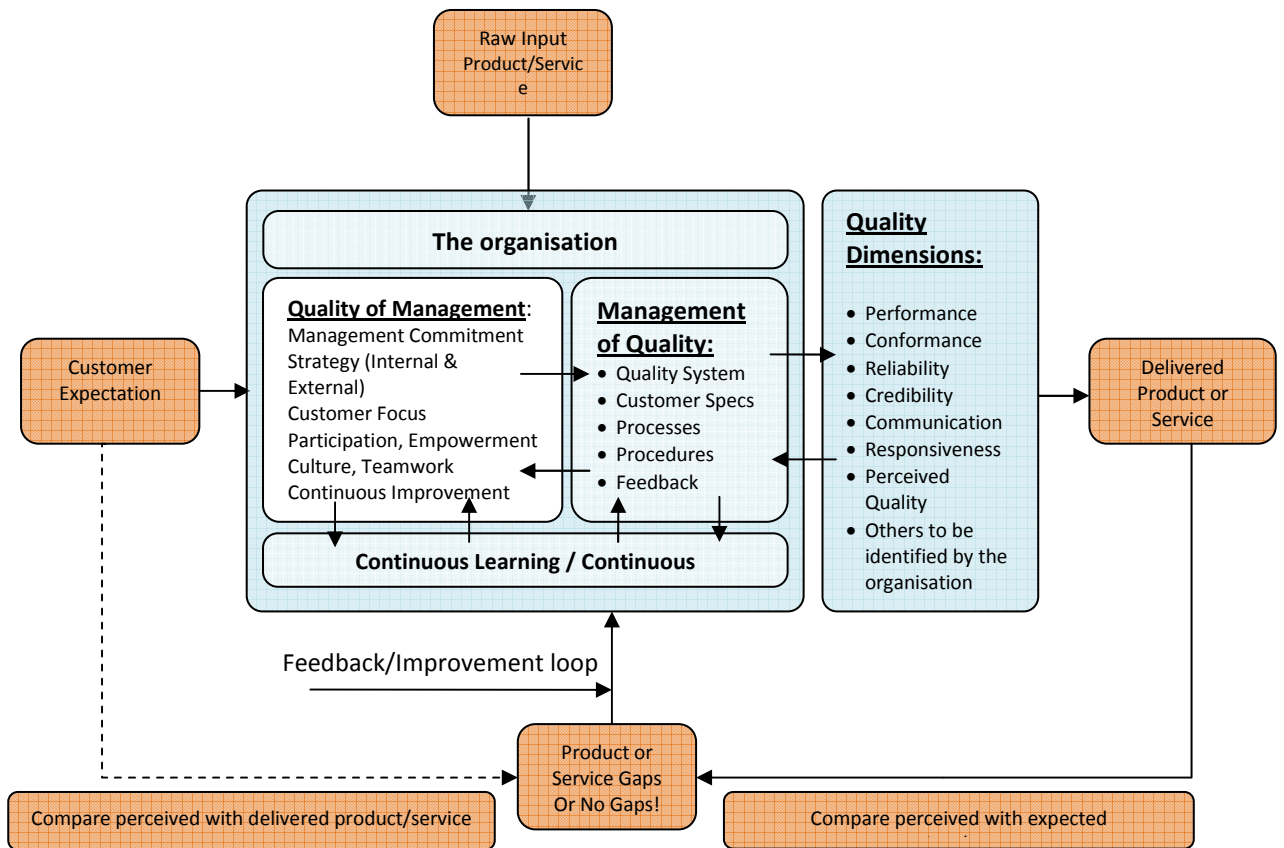
Figure 8.12: Pipfruit Model; alternative

In its alternative form - inserting specific stakeholder activity- the model looks like figure 8.13:
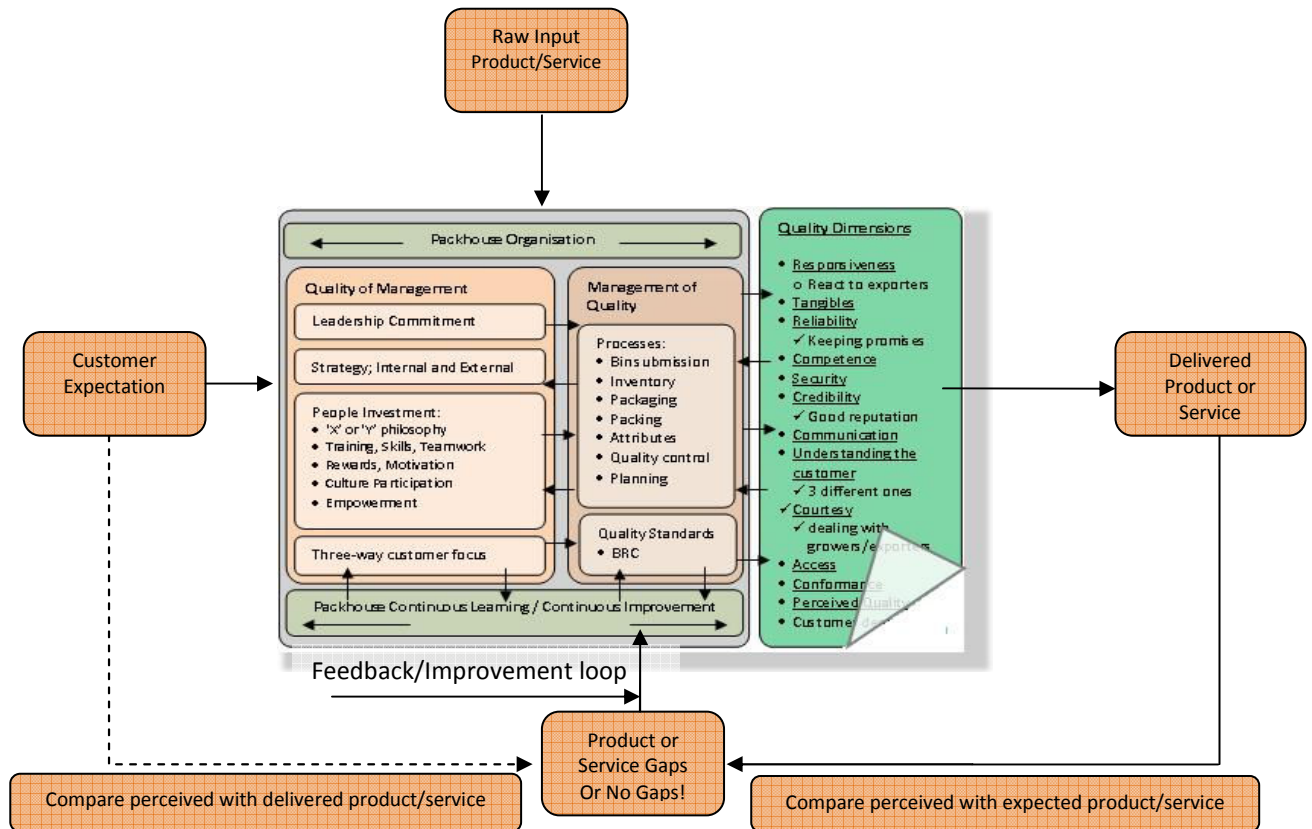
Figure 8.13: Pipfruit Model with Packhouse Quality Management inserted

Figure 8.13 shows the packhouse quality management insert. Similarly, the inserts for grower, cool-store or exporter can be inserted to provide a more customised quality system for a particular industry activity.

The present study is a necessary introductory evaluation of TQM within the pipfruit industry. The wide body of TQM literature falls short by providing very few specific references from which a seasonal horticultural industry like the pipfruit industry can draw. There is an urgent need to establish if and how TQM principles are applied within the industry and how applicable they are. There is also an urgent need to establish if the pipfruit industry can benefit from the introduction of TQM principles and which principles would be most effective.

The intention of the interviews and survey were to answer questions with a focus on specific elements of TQM. Generally, the study intended to answer the following questions:

1. Do organisations within the pipfruit industry know TQM as a management philosophy?
2. Do organisations within the pipfruit industry apply TQM elements in the running of daily business? Which elements?
3. Are any TQM philosophies applied or implemented, accidently or deliberately?
4. What makes the implementation of a TQM philosophy and TQM methods hard? Are there pipfruit inherent unique obstacles? What are they?
5. Could the industry benefit from introducing TQM techniques, tools and principles; what improvements can be made?
6. Can there be a seasonal industry model for TQM?

The literature review, interviews and survey showed that:

1. Very few organisations within the pipfruit industry are aware of TQM as a management philosophy.
2. Several TQM elements are used in the industry but use is erratic.
3. Several organisations apply some TQM elements deliberately. Generally, if any TQM elements were applied, these were applied because it was considered the right way to manage that aspect of the organisation, not because there was a holistic commitment to TQM.
4. The long-term commitment is difficult to maintain in industry organisations that have been subject to so many changes in such a short period of time. Similarly, the seasonal component with a large volume of temporary employees makes it difficult

for senior management to invest in 'Y' approaches, training and skill development and indirect reward systems when they know that the worker will only be there for a period of three to six months. The industry environment is unique to the industry while seasonality of the industry is shared with several other horticultural industries.

5. There is no question that the industry could benefit from TQM. The first improvement must rest with senior management learning to understand core TQM philosophies. Owner/managers must learn that quality must be built into all the activities of the organisation and that 'quality is free'.

6. A proposed industry model is included (Chapter 8. Towards a pipfruit model). The industry will need to mature more before a settled model might be achievable. In the mean time, it is important that the proposed model is discussed as a basis of evolving the industry.

A number of specific recommendations were included while discussing the results of the interviews and questionnaires. These recommendations are relating to the initial research subjects. A table with summarised recommendations is attached as Appendix 7.4. In addition, a table of general objectives and research findings is attached as Appendix 9.2, 'Summary Conclusions'.

General recommendations like using Deming's seven point transformation table and fourteen steps program (Deming, 1986) are recommended as universally helpful tools but are not discussed as part of this project. Other quality gurus have developed similar programs for improvement and there is a body of general literature available. Organisations that intend to set out on a path to become a 'learning organisation' should learn to understand the underlying philosophies and then select one set of transformation guidelines to assist with the transformation process. These organisations must however be aware that methods and tools must be made suitable for each organisation by that organisation itself. An expectation that the indiscriminate application of any method will lead to success is historically doomed to fail. Success starts with development of long-term fundamental principles.

To think that an organisation's current management 'style' is ok because the organisation survives is ignorant. As recently as April 2010, Masaaki Imai notes that the reaction to a recession commonly leads to cost cutting (reducing staff levels, beating up suppliers) instead of choosing quality improvement. The right pathway is for top management to

change their philosophy (Jayne, 2010). Senior management cannot be satisfied being reactive and survive. It must be pro-active and adapt and become a quality organisation.

To think that the pipfruit industry is incapable of achieving further managerial improvement is incorrect. The industry is full of very capable and enthusiastic owners, managers and people, 'believers' that can achieve anything they set their minds to. But this study is not a SWOT analysis where both Strengths and Weaknesses are tabled. This study purely assesses in how far TQM is used and can be useful. And useful it will be. But management must educate itself in all aspects of total quality management, and not be satisfied with survival.

Industry bodies in general know that sustained efficiency and prosperity go hand-in-hand with providing for the future. This is basic strategy with a focus on improved management, infrastructure, technology, technical ability, training programs for skilling and 'up-skilling' industry people, in fact all those aspects that individual organisations would have difficulty to achieve on their own. This altruistic aspect of an industry is important as it sets individual organisations on the right pathway to become quality organisations.

Introduce TQM as management philosophy. Inform, educate, train and coach organisations' senior management. Create an active continuous industry dialogue to keep the subject alive and start a complete management benchmarking program earlier rather than later.

9.1   OTHER HORTICULTURAL INDUSTRIES

The New Zealand horticultural industry consists of some 7000 growers, packers, processors and exporters. Over 20 different product groups are exported to some 120 countries, generating approximately $2 billion in export revenue (Growing a New Future, 2009). Most of the production groups are seasonal industries with a high manual labour component.

The operating models differ between industry groups. Kiwifruit e.g. operates through one dominant sales desk, has economy of scale and is the largest horticultural export group in New Zealand (Freshfacts, 2009). The kiwifruit business however still has a large seasonal and manual component to it and has both production (growing) elements and service provider elements like packing, storing and exporting.

Other horticultural industries are growing and developing markets. If the horticultural industry intends to develop into a $10 billion industry by the year 2020 (Growing a New Future, 2009), it is time to invest into development, acceptance, introduction and application of fundamental and long-term management principles that have proven to be more sustainable than any form of management by short-term objectives.

This study must therefore continue, elaborate and expand to other horticultural industries.

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APPENDIX 2.1: SOME THEORIES OF MOTIVATION

A number of theories have been proposed to explain what motivates people. Several theories like McGregor's theory 'X' or 'Y' and Herzberg's 'Satisfier and dis-satisfier' theory have been explained in the literature review. Other motivation theories developed by the behavioural sciences include Maslow's theory of hierarchical motivation, the 'Expectancy Theory', the 'Equity Theory', Reinforcement theory, and there are several other theories offered by behavioural scientists and managerial specialists (Tannenbaum, 1966, Moorhead & Griffin, 1995, Inkson & Kolb, 2003). All of these help to understand and explain the 'softer' human element.

MASLOW'S THEORY OF MOTIVATION

Maslow proposed a theory that had three assumptions. First, human needs are never completely satisfied. Second, human behaviour is purposeful and is motivated by need satisfaction. Third, these needs can be classified according to a hierarchical structure of importance from the lowest to highest (Figure 1 below).

Maslow considers that individual needs form a 5 layer hierarchy, each becoming relevant when the previous layer is satisfactorily fulfilled (Inkson & Kolb, 2003):

- Physiological needs are survival needs: Food, water, shelter, protection from harm
- Safety needs relate to health, job and emotional security
- Social (belonging) needs relate to the desire for association and belonging
- Esteem needs relate to self esteem and autonomy, appreciation and recognition
- Self-actualisation needs relate to growth, realising full potential
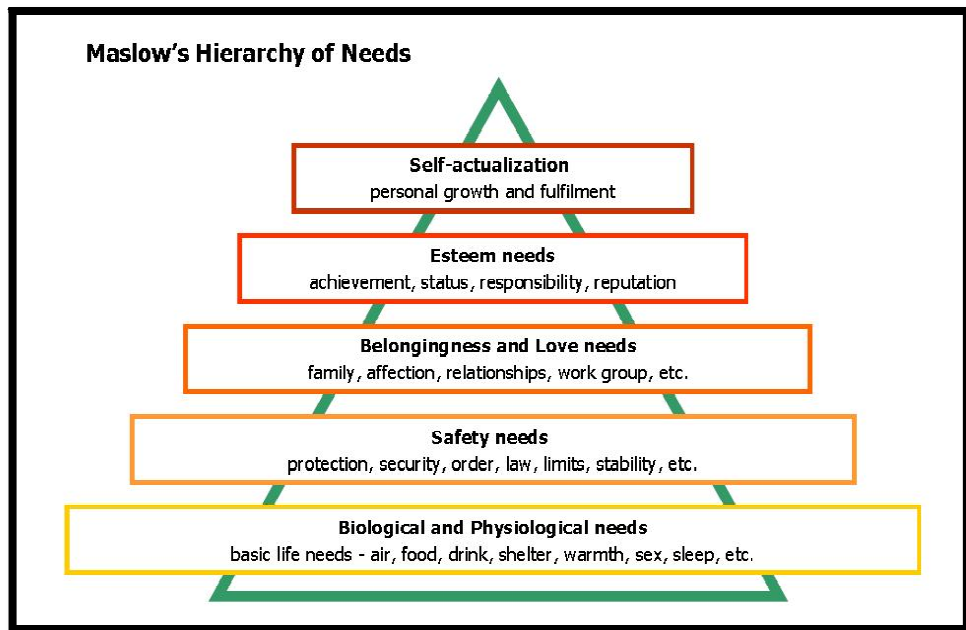
Figure 2.1: Maslow's Human Needs: The essence of Motivation.

EXPECTANCY THEORY

The expectancy theory, developed by Nadler and Lawler (in Inkson & Kolb, 2003) argues that a person will have an expectation as a result of his efforts and will measure the perceived outcome against the expectation. The theory aligns itself with Zeithaml *et al*'s Gaps Model (1990):

- When facing a problem or task, people will first ask themselves: Can I do this? What is my probability to succeed?
- Next, they will ask themselves: What will be the reward, the outcome of the performance? Is it a bonus? Recognition?
- You may receive extrinsic rewards (pay, bonus, recognition) and intrinsic rewards (good warm feeling about doing this job)
- Their importance that a person attaches to the outcomes is called 'valence'.
- Expectancy theory helps us understand why motivation is sometimes lacking. If there is uncertainty about the links between Effort and Performance, or between Performance and Outcome, a person is likely to lack motivation.
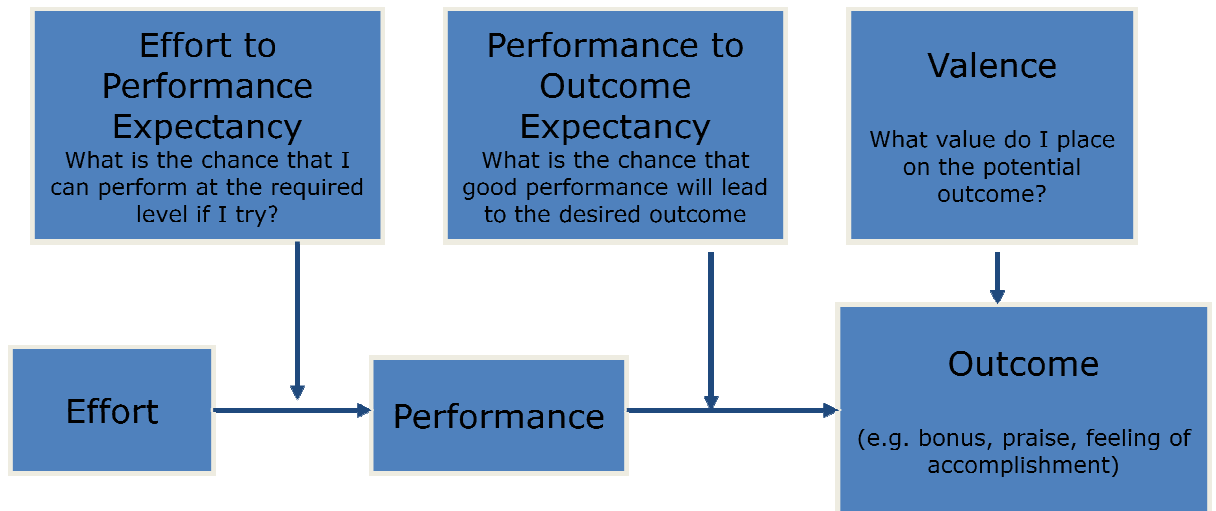
Figure 2.2: Expectancy theory

EQUITY THEORY

The equity theory (Adams, 1965) suggests that people are motivated as long as their situation is perceived to be fair and equitable. No matter what the level of motivation is:

- If a situation is judged to be fair and equitable, motivation is likely to be maintained.
- Individuals think in relative terms; reference is made to others in similar positions.
- Workers may accept hard work at low pay as long as all the others are seen to be in a similar position.
- If workers see somebody receive extra rewards for the same work, motivation will drop dramatically.

REINFORCEMENT THEORY

Reinforcement theory is based on the work of B.F. Skinner (Catania, 1984). Behavioural approaches/theories suggest that giving rewards for positive behaviours will motivate people to display the same behaviour repetitively. Praise, a bonus or more freedom at work could be used as positive reinforcements. Failure to recognise and reward good work means that that particular behaviour is likely to be scaled down to the minimum. It is scaled down to the minimum because going below the acceptable level might lead to punishment (negative reinforcement), and workers may try and avoid that.

The secret is that managers must be able to recognise what a reward or 'punishment' is for an individual, because it is different for people. Conversely, punishment of some undesirable behaviours may also curb some desirable behaviours. Reinforcement theory is based on the following principles:

- Behaviour is explained by its consequences.
- Desirable behaviour is reinforced by positive consequences (rewards).
- Undesirable behaviour is followed by negative consequences (punishment) and is not repeated.

SUMMARY

The motivational models above demonstrate that there is more to management and management of quality than classical management theory suggests. People play a vital role and the way in which people function -what drives people- is subject to a lot of variation. What motivates one person will not automatically motivate another person.

The general principle however is that people must find renewed reasons for existing. And as Mayo and others demonstrated, 'soft' thinking is a management option that motivates.

RECOGNISED SEASONAL EMPLOYER (RSE) POLICY: INTRODUCTION

The horticulture and viticulture industries are important to New Zealand and they often suffer from a shortage of local workers. The Recognised Seasonal Employer (RSE) Work Policy is a policy that facilitates the temporary entry of additional workers from overseas to plant, maintain, harvest and pack crops in the horticulture and viticulture industries to meet these labour shortages in order to remain competitive with the rest of the world. Preference is given to workers from Pacific Islands Forum countries (with the exception of Fiji).2 Five Pacific states were initially selected to have facilitation measures to support the implementation of the policy: Kiribati, Samoa, Tonga, Tuvalu, and Vanuatu (Final Evaluation Report of the Recognised Seasonal Employer Policy (2007-2009), 2010).

FACTS AND FIGURES: 2009 STATISTICAL UPDATE ON KEY RSE FIGURES

All statistics are correct as at 31 March, 2009 (DoL website, 2010)

UNDER THE RSE POLICY:

- 48 employers were approved RSE Status this year bring the total to 138 Employers in total.
- Together, these employers estimated a need for close to 10000 workers.
- At the year end, the RSE unit had estimated a total of 8000 places were required.

UNDER THE TRANSITIONAL RSE POLICY:

- 208 employers were approved TRSE status.
- At the year end, 3247 TRSE Work Permits were issued

NUMBERS OF OFFSHORE WORKERS RECRUITED UNDER RSE

- Approximately 7158 workers came to NZ to work under the RSE policy over the 12 month period.

Tonga	1362

78% of the RSE workforce were recruited from the Pacific of which:

73% were from one of the five Pacific Kick start states:

Vanuatu	2524
Samoa	1235
Kiribati	42
Tuvalu	48
Total:	**5211**

And **5%** were from a non- kick start Pacific state:

Solomon Islands	348

The remaining **22%** of the RSE workforce were recruited through existing employer relationships with workers in other parts of the world – most of whom were from Asia:

Indonesia	305
Malaysia	637
Philippines	75
Thailand	529
India	41
Taiwan	12
Total:	**1599**

Over the second 12 months of RSE, **1604** workers have returned home:

Kiribati	26
Tonga	290
Vanuatu	770
Samoa	91
Tuvalu	0
Rest of the World	427
Total:	1604
Tonga	1058
Vanuatu	1744
Samoa	1143
Kiribati	14
Tuvalu	48
Total:	4007
Solomon Islands	311
Indonesia	278

Malaysia	468
Thailand	368
Philippines	75
Unlawful	41
Deceased	2
Total:	1543

There were **5550** workers in New Zealand as at 31 March 2009. These workers were in New Zealand for pruning, picking and packing for RSE employers and contractors:

SUMMARY OF FINDINGS

Overall, the RSE Policy has achieved what it was set up to do – employers in the horticulture and viticulture sectors have access to a reliable and stable seasonal workforce. As the policy enters its third year, there are indications many employers are now also benefiting from skilled labour as workers return for their second and third seasons. The labour supply crises of previous years have been avoided and employers are now able to plan and manage their businesses with confidence. Significant productivity gains were reported in the second year, together with improvements in harvest quality. Alongside the employer 'wins', Pacific workers and three Pacific states have benefited financially from participation in the RSE Policy. Skill development has also been identified as a positive outcome for workers.

Growers: Growers are organisations (individuals, partnerships, trusts or companies) that own or lease land and grow pipfruit trees with the purpose of fruit production.

Packers: Packers are organisations (individuals, partnerships, trusts or companies) that receive fruit from growers and pack this fruit in preparation for export or for the domestic market.

Cool-stores: Cool-stores are organisations that store harvested fruit before it is packed at low temperatures for fruit quality preservation. Once the fruit has been packed, cool-stores store the fruit again until the fruit is shipped to export or domestic destinations. Cool-stores can be stand-alone organisations but are regularly linked to packing organisations.

Exporters/Traders/Marketers: Exporters/Traders/Marketers are acting on behalf of the growers and sell the growers' fruit in export or domestic markets. The activity covers both marketing (finding markets and identifying needs and prices) and organisation of transport and documentation. Exporters/Traders/Marketers typically work on a commission basis and transfer of ownership of the fruit is at times a contentious issue. Please note that where the term 'exporter' is used during the course of this paper, it is intended to encompass the wider area of trading and marketing.

Vertically Integrated Organisations (VIO): Vertically integrated organisations usually include orchards, packhouse(s), cool-stores and/or an exporting/trading arm. Some of these operations might only grow and pack or pack and export; several combinations of activities exist. Schroeder (1989) differentiates between forward and backward integration but in either case an organisation sets out to control other parts of the value chain.

During the years since deregulation, a number of organisations have changed their strategy to become complete vertically integrated operations. Complete vertically integrated operations grow, store, pack and export/trade fruit.

Pipfruit New Zealand Incorporated: Pipfruit New Zealand Incorporated will be viewed for the purpose of this paper as a stand-alone organisation and stakeholder in the industry.

Pipfruit NZ's website (http://www.pipfruitnz.co.nz/, 21-8-09) states the following:

"Pipfruit NZ Inc. represents the New Zealand pipfruit industry – primarily growers of apples, pears and nashi. We provide growers throughout the country with technical, policy and marketing information. We also represent their interests locally and in export markets. This includes providing industry information and advising the relevant authorities or other interest groups."

About membership, the website states:

"Membership of Pipfruit NZ Inc. is open to anyone involved in growing, distributing or selling pipfruit, as well as suppliers to the industry."

Although not stated on the Pipfruit NZ's website, it is here assumed that packhouses and cool-stores are considered equally important members of the value-chain.

Important to understand is that Pipfruit NZ does not have a mandate to govern the industry. It has a representative function, being an elected body representing the industry's interests. Pipfruit NZ collects levies from its members and uses these to run the organisation. A significant proportion of the revenue stream (approximately 53.32%) is spent on Research and Development (2009 Annual Report).

Suppliers to the industry: Suppliers to the industry are numerous, however several suppliers have a vested interest in industry developments. These include consultants and advisory organisations, equipment suppliers, packaging manufacturers, labour suppliers, shipping companies and like organisations. These organisations are considered to fall outside the scope of this study.

Compliance requirements in the pipfruit industry include (but are not restricted to):

General Regulatory Business Requirements

- Companies Office Registration

- Inland Revenue; all tax requirements

- Accident Compensation Commission (ACC)

- Work and Income New Zealand requirements

- Ministry of Social Development requirements

- Department of Labour requirements, including Health and Safety

- Hazardous Substances and New Organisms (HSNO) requirements

- Environmental Risk Management Authority (ERMA) certification

- Local council rules (Resource consents for building Warrant Of Fitness, Storm water discharge)

- Motor Vehicle Registration, Vehicle WOFs and COFs and registrations

- Consumer Guarantees Act/Fair Trading Act/Privacy Act

- Broadcasting Frequencies Radio Spectrum Management

- Electrical Certificates

- Gas Certificates

- Intellectual Properties Office

- Personal Properties Security Register requirements

Pipfruit related Regulatory Requirements

- Pipfruit registration

- Spray Diary

- MAF phytosanitary Certification Standards

- MAF Special Compliance Programs such as:
  - Taiwan Compliance Program
  - USDA pre-clearance program

- Customs Secure Exports Partnership

- Registration of packhouse facility in accordance with The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 via USFDA

- Local council rules (Resource consents for water use, Trade Waste, dump water discharge)

- Maximum Residue Levels (MRLs) for countries

- Registration, Evaluation, Authorization and Restriction of Chemical substances (REACH)

- EU and OECD requirements for Grade Certification

- Registration, Evaluation of Agricultural Chemicals (REACH)

Standardisation Requirements

- Label requirements such as MAF requirements: RPIN, Variety, Canada COR or US for organics, Exporter address etc.

- GS1 barcode rules

- EAN 128 for Retail product traceability

- Growing methods BioGro registration

- Carbon Footprint GHGE

- Water footprint (pending)

Customer Requirements

- Quality Management Requirements. These depend on the organisation's activities and can be:
  - Global Gap
  - British Retail Consortium Global Standard for Foods
  - Woolworths Quality Assurance Standard
  - Tesco's Nature's Choice Standard and similar requirements
  - ASDA, special weight and diameter requirements
  - LIDL's label requirements
  - Cobana's extra MRL requirements
- Fruit Quality requirements, also dependent on the receiver, such as:
  - Size

- o Weight

- o Colour

- o Maturity

- o Brix (sugar)

- o Absence of Defects such as blemishes, punctures, cuts, bruises, internal disorders etc.

- o Customer Product Lookup Code (PLU) labelling

- Traceability from customer to production site

- Food Safety and HACCP (Hazard Analysis Critical Control Point)

- Maximum Residue Levels (MRLs) for customers (different from country requirements)

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TABLE 6.4: HAWKES BAY PIPFRUIT MODEL ORCHARD EXPENDITURE

	2007				2008 FORECAST			
	WHOLE ORCHARD ($)	PER PLANTED HA ($)	PER TCE[1] GROSS ($)	PER TCE EXPORT ($)	WHOLE ORCHARD ($)	PER PLANTED HA ($)	PER TCE GROSS ($)	PER TCE EXPORT ($)
ORCHARD WORKING EXPENSES								
Hand harvesting	121 496	5 523	1.92	2.78	109 480	4 976	2.04	2.96
Pruning	31 944	1 452	0.50	0.73	31 438	1 429	0.59	0.85
Thinning	41 470	1 885	0.66	0.95	35 992	1 636	0.67	0.97
Other wages	35 904	1 632	0.57	0.82	32 670	1 485	0.61	0.88
ACC – employees	2 310	105	0.04	0.05	2 618	119	0.05	0.07
Total labour expenses	233 124	10 597	3.68	5.34	212 198	9 645	3.95	5.75
Packing	151 539	6 888	2.39	3.47	139 965	6 362	2.61	3.79
Packaging	151 975	6 908	2.40	3.48	129 994	5 909	2.42	3.52
Cool storage	78 608	3 573	1.24	1.80	70 906	3 223	1.32	1.92
Freight	12 023	547	0.19	0.28	11 270	512	0.21	0.31
Total post harvest expenses	394 145	17 916	6.23	9.03	352 135	16 006	6.56	9.54
Weed and pest control	55 682	2 531	0.88	1.28	53 746	2 443	1.00	1.46
Pollination	1 078	49	0.02	0.02	1 122	51	0.02	0.03
Fertiliser and lime	4 114	187	0.07	0.09	3 212	146	0.06	0.09
Electricity	4 466	203	0.07	0.10	4 884	222	0.09	0.13
Vehicle	8 404	382	0.13	0.19	8 712	396	0.16	0.24
Fuel	13 222	601	0.21	0.30	14 630	665	0.27	0.40
Repairs and maintenance	19 756	898	0.31	0.45	17 952	816	0.33	0.49
General	6 930	315	0.11	0.16	7 106	323	0.13	0.19
Frost protection	1 584	72	0.03	0.04	902	41	0.02	0.02
Contract machine work	1 496	68	0.02	0.03	1 562	71	0.03	0.04
Total other working expenses	116 732	5 306	1.84	2.67	113 828	5 174	2.12	3.08
Rates	6 666	303	0.11	0.15	7 062	321	0.13	0.19
General insurance	3 740	170	0.06	0.09	3 806	173	0.07	0.10
Crop insurance	12 562	571	0.20	0.29	11 990	545	0.22	0.32
ACC – owners	2 068	94	0.03	0.05	2 024	92	0.04	0.05
Communication	3 586	163	0.06	0.08	3 498	159	0.07	0.09
Accounting	3 498	159	0.06	0.08	3 454	157	0.06	0.09
Legal and consultancy	2 574	117	0.04	0.06	3 718	169	0.07	0.10
Levies and subscriptions	10 481	476	0.17	0.24	8 863	403	0.17	0.24
Other administration	2 530	115	0.04	0.06	2 750	125	0.05	0.07
Total overhead expenses	47 705	2 168	0.75	1.09	47 165	2 144	0.88	1.28
Total orchard working expenses	791 706	35 987	12.51	18.13	725 326	32 969	13.52	19.64
Wages of management	48 056	2 184	0.76	1.10	47 985	2 181	0.89	1.30
Depreciation	23 012	1 046	0.36	0.53	22 352	1 016	0.42	0.61
Total orchard operating expenses	862 774	39 217	13.63	19.76	795 663	36 166	14.83	21.55
CALCULATED RATIOS								
Economic orchard surplus (EOS)[2]	55 295	2 513	0.87	1.27	96 252	4 375	1.79	2.61
Orchard working expenses/NCI[3]	86%				81%			
EOS/Total orchard assets	3.2%				5.7%			
EOS less interest and lease/equity	–1.3%				2.1%			
Interest + rent + lease/NCI	7.7%				8.0%			
EOS/NCI	6.0%				10.8%			

Notes
1 Tray carton equivalent.
2 EOS (earnings before interest and tax) is calculated as follows: net cash income less orchard working expenses less depreciation less wages of management (WOM). WOM is calculated as follows: $31 000 allowance for labour input plus 1 percent of opening total orchard assets to a maximum of $75 000.
3 Net cash income.

⟫⟫ TABLE 11: NELSON PIPFRUIT MODEL EXPENDITURE

	2008				2009 BUDGET				CHANGE
	WHOLE ORCHARD ($)	PER PLANTED HA ($)	PER TCE[1] GROSS ($)	PER TCE EXPORT ($)	WHOLE ORCHARD ($)	PER PLANTED HA ($)	PER TCE GROSS ($)	PER TCE EXPORT ($)	BETWEEN 2008 AND 2009 (%)
ORCHARD WORKING EXPENSES									
Hand harvesting	150 200	5 563	1.99	2.71	159 600	5 911	1.93	2.53	6
Pruning	55 000	2 037	0.73	0.99	54 900	2 033	0.66	0.87	0
Thinning	53 700	1 989	0.71	0.97	54 300	2 011	0.66	0.86	1
Other wages	79 200	2 933	1.05	1.43	71 200	2 637	0.86	1.13	–10
ACC – employees	5 600	207	0.07	0.10	4 200	156	0.05	0.07	–25
Total labour expenses	343 700	12 730	4.55	6.19	344 200	12 748	4.16	5.46	0
Packing	210 300	7 789	2.79	3.79	238 100	8 819	2.88	3.78	13
Packaging	202 000	7 481	2.68	3.64	232 400	8 607	2.81	3.69	15
Cool storage	93 800	3 474	1.24	1.69	105 800	3 919	1.28	1.68	13
Freight	13 600	504	0.18	0.25	15 700	581	0.19	0.25	15
Total post harvest expenses	519 700	19 248	6.89	9.36	592 000	21 926	7.16	9.40	14
Weed and pest control	77 300	2 863	1.02	1.39	80 800	2 993	0.98	1.28	5
Pollination	4 000	148	0.05	0.07	4 400	163	0.05	0.07	10
Fertiliser and lime	12 200	452	0.16	0.22	13 600	504	0.16	0.22	11
Electricity	8 900	330	0.12	0.16	9 200	341	0.11	0.15	3
Vehicle	21 900	811	0.29	0.39	20 400	756	0.25	0.32	–7
Fuel	17 300	641	0.23	0.31	16 400	607	0.20	0.26	–5
Repairs and maintenance	34 700	1 285	0.46	0.63	29 000	1 074	0.35	0.46	–16
General	13 800	511	0.18	0.25	14 000	519	0.17	0.22	1
Frost protection	0	0	0.00	0.00	0	0	0.00	0.00	..
Contract machine work	3 300	122	0.04	0.06	4 000	148	0.05	0.06	21
Total other working expenses	193 400	7 163	2.56	3.48	191 800	7 104	2.32	3.05	–1
Rates	11 700	433	0.16	0.21	12 100	448	0.15	0.19	3
Water rates	0	0	0.00	0.00	0	0	0.00	0.00	..
General insurance	10 000	370	0.13	0.18	11 000	407	0.13	0.17	10
Crop insurance	11 000	407	0.15	0.20	11 500	426	0.14	0.18	5
ACC owners	700	26	0.01	0.01	800	30	0.01	0.01	14
Communication	6 600	244	0.09	0.12	6 400	237	0.08	0.10	–3
Accounting	4 600	170	0.06	0.08	4 500	167	0.05	0.07	–2
Legal and consultancy	6 900	256	0.09	0.12	7 300	270	0.09	0.12	6
Levies and subscriptions	6 100	226	0.08	0.11	8 200	304	0.10	0.13	34
Other administration	10 800	400	0.14	0.19	11 300	419	0.14	0.18	5
Total overhead expenses	68 400	2 533	0.91	1.23	73 100	2 707	0.88	1.16	7
Total orchard working expenses	1 125 200	41 674	14.91	20.27	1 201 100	44 485	14.52	19.07	7
Wages of management	59 400	2 200	0.78	1.07	60 400	2 238	0.73	0.96	2
Depreciation	24 600	911	0.33	0.44	26 000	963	0.31	0.41	6
Total orchard operating expenses	1 209 200	44 785	16.02	21.78	1 287 500	47 685	15.57	20.44	6
CALCULATED RATIOS									
Economic orchard surplus (EOS)[2]	230 100	8 522	3.05	4.15	262 700	9 730	3.18	4.17	14
Orchard working expenses/NCI[3]	78%				77%				
EOS/total orchard assets	8.1%				9.0%				
EOS less interest and lease/equity	6.3%				8.2%				
Interest+rent+lease/NCI	7.8%				6.5%				
EOS/NCI	16.0%				17.0%				

Notes
Figures may not add to totals due to rounding.
1 Tray carton equivalent.
2 EOS (or earnings before interest and tax) is calculated as follows: net cash income less orchard working expenses less depreciation less wages of management (WOM). WOM is calculated as follows: $31 000 allowance for labour input plus 1 percent of opening total orchard assets to a maximum of $75 000.
3 Net cash income.

Symbol
.. Not applicable.

From: Gary Jones [mailto:Gary.Jones@pipfruitnz.co.nz]
Sent: Wednesday, 11 November 2009 10:44 a.m.
To:
Cc:
Subject: FW: Pipfruit NZ Total Quality Management Review

Pipfruit New Zealand is supporting Hans Doevendans to complete his Masters Thesis in Total Quality Management. The purpose of this project is to look at the Pipfruit Industry and identify areas where the industry could adopt new or different approaches to quality management or business excellence.

Many of you will know of Hans. He has worked in the Pipfruit Industry since 2000. He holds degrees in strategy, state law and organisational psychology from the Royal Military Academy in the Netherlands, graduated from the Royal Netherlands Air Force Advanced Officers Program and has a Bachelor in Social Sciences and a Diploma in Business Studies from Massey University.

Part of the research project requires interviewing individuals who are key influencers within the Pipfruit Industry. The organisations that will be interviewed will be a cross section of (small, medium and large) growers, packers and exporters. The research project will become the foundation for further study to identify areas where stakeholders in the industry can improve to meet the markets and improve industry results. The study will make recommendations that may benefit a number of stakeholders in the industry. It could also be used to gather government support behind developing broader industry capability within our production pathway.

The interviews are 'open' interviews, exploring the way in which stakeholders approach certain aspects of their operation. There are no 'rights' or 'wrongs'. The interviews will also include a 'survey' element, a questionnaire for participants to complete. Both the interviews and the survey results will be completely confidential. No participant or organisation will be identified.

The interviews can be with one person or several people but it is emphasized that the interviewees should have responsibility in the overall management in the organisation. A QA is unlikely to provide adequate information; a senior manager is more likely to understand the issues. Interviews are planned to take place during the months of November and possibly early December.

Your organisation has been selected by Pipfruit NZ as the most suitable candidate for this study.

Pipfruit NZ asks you to support this research project by making yourself available for an interview with Hans. Can you please confirm if you are prepared to spend some time talking to Hans and completing a questionnaire? Hans will then contact you to arrange times and places for the interview.

Thank you for your consideration please accept / decline promptly.

Kind regards,

Gary JonesGary Jones I Manager Membership Services I +64 6 8737085 I +64 21 758 314 I

www.pipfruitnz.co.nz

Interview

Introduction: Obtain basic data from organisation (grower, packer, exporter, small, medium, large etc.). Critical elements to be addressed during interviews:

1. How does the organisation define the concept of '**quality**'?
2. **Senior management commitment** and leadership:
   a. Is there a deliberate commitment or leadership drive to achieve specific goals?
   b. Is quality of management one of those goals?
   c. Is the organisation seeing quality as the quality of the fruit?
   d. Or is the organisation seeing quality as aspects of all actions within the organisation?
3. **Focus on customer:**
   a. Who does the organisation see/identify as the customer?
   b. Are there different customers (groups)?
   c. Does the organisation have a concept of internal and external customers?
   d. How does the company see strategic partnerships ?
4. **What is the product**?
   a. Is the product standard (un-changed) and is the business seeking customers for this standard product, or is it adapted to demand?
      i. Is the product packed apples?
      ii. Is the product food-safe apples?
      iii. Is the product beautiful apples?
      iv. Is the product tasty apples?
5. **How does the organisation see staff**?
   a. Is there permanent staff and seasonal staff or contracted staff?
   b. How does the organisation see staff skills and knowledge?
   c. Does the organisation invest in training? How do they see the ROI?
   d. How does the organisation see reward systems? What is it using?
   e. Is there an 'X' or 'Y' management approach dominant?
      i. Does the organisation trust their staff to make decisions?
      ii. Does the organisation adopt the attitude that staff will not work unless being yelled at?
6. **Does the organisation have a strategic goal**?
   a. Where do management see the company develop in 5 years time and 10 years time?
   b. Is it a real goal or is it based on retaining the status quo while making profit?
7. **How does management see the culture** within the organisation?
   a. Is there collaboration between elements of the organisation?
   b. Is there teamwork?
   c. How does the company see improvement?
      i. Is it owner driven?
      ii. Is it management driven?
      iii. Is it supervisor driven?
      iv. Is it staff driven?
8. Does the organisation see the usefulness of:
   a. Proper design of lay-out and processes?
   b. Proper design of systems, processes and procedures?
   c. Built-in quality?
   d. Rethinking the way in which the business runs?
9. How does the company communicate internally and externally?
10. What is the organisations greatest hurdle to become the best (achieve total quality management)?

Thank you for participating in this study. The study aims to better understand quality management in the pipfruit industry. Please answer all questions openly. Outcomes of this study are for the benefit of the pipfruit industry. This questionnaire consists of four sections:

1. Organisation contact details and information
2. Organisation philosophies and principles (tick-boxes)
3. Staff philosophies and principles (tick-boxes)
4. Planning and improvement tools (tick-boxes)

The tick boxes are asking for the answer most accurately and closely related to your organisation. There are no correct or incorrect answers.

The information provided by you will be kept confidential and your organisation will not be recognisable in this study.

Part 1: Organisation contact details and information

Survey Questionnaire:

Organisation name:		(*)
Contact Person:		(*)
Person completing this questionnaire:		(*)
Please tick appropriate boxes: This organisation is:	Growing	
	Packing	
	Cool-storing	
	Exporting/Trading	
Phone:		(*)
Email:		(*)

(*) This information will be treated as confidential.

Organisation size:

No of permanent employees:			Will be treated as Confidential!
No of seasonal employees:			Will be treated as Confidential!
Annual turnover (approximately) in:	TCEs or		Will be treated as Confidential!
	Bins or		Will be treated as Confidential!
	kgs		Will be treated as Confidential!

If you are participating in the interviews, the survey form will be collected during the interview. Alternatively, please mail the completed survey to: Hans Doevendans, PO Box 2487, Hastings 4153.

Part 2: Organisational philosophies and principles

This table contains a number of random statements with which you may agree or disagree moderately or strongly, or may not agree or disagree. Please consider your own organisation and tick the box which presents the answer which best represents your organisation. There are no incorrect answers.

	Statement	Strongly disagree	Moderately Disagree	Agree nor disagree	Moderately Agree	Strongly agree
	Organisation					
1.	Quality inspections are necessary to ensure quality product					
2.	Our organisation is a service providing organisation					
3.	It is better to have several quality checks in the process than to have one inspection at the end					
4.	Sharing information between organisations allows other companies to catch up					
5.	Real improvement is achieved through 'breakthroughs'					
6.	The best way to get results is to let each department work on the problem without interfering information from other departments					
7.	Experience and the use of rules-of-thumb are generally getting better results than data collection and analysis					
8.	Business improvement has to be decided by knowledgeable management					
9.	Splitting jobs up into simple repetitive tasks is more effective than creating complex tasks					
10.	Our organisation is a production organisation					
11.	Quality should be achieved by integrating orchard, packhouse, cool-store and exporter information					
12.	Staff should be rotated regularly when performing simple repetitive tasks					
13.	Organisational culture is an important contributing factor to achieving quality					
14.	Job enlargement (adding variation) should be used to keep things interesting for staff					
15.	When staff come up with improvement ideas, it usually costs money					
16.	Our organisation uses job enrichment (adding responsibility) where necessary					
17.	Scientific models should not be adapted to our own organisation; the organisation should adapt to the model or it will lose its value					
18.	Ergonomics are applied wherever possible in our organisation					
19.	The best way to get staff improvement is to tell them off					

	Statement	Strongly disagree	Moderately Disagree	Agree nor disagree	Moderately Agree	Strongly agree
20.	Empowerment of staff is a good way to get the best results					
21.	A poor company culture will not affect quality significantly as long as there is leadership					
22.	'Hard' systems (focus on tools and techniques) are more useful in our organisation than 'soft' systems (training, participation)					
23.	Our organisation's productivity is not affected if staff do not trust their supervisors					
24.	An organisation like ours does not perform much different with a team approach					
25.	Staff often don't know what is best for the organisation					
26.	Controlling costs is what makes a business successful					
27.	Any improvement is important no matter how small					
28.	Change is best achieved when it comes from the top down					
29.	Quality models like Global Gap and BRC are often asking for irrelevant requirements					
30.	Sharing information between organisations helps improve an organisation's quality					
31.	It is more efficient to fix a problem and continue production than to try and understand what caused the problem					
32.	Equipment, tools and techniques are the most important contributors to quality					
33.	It is best to make staff aware of what is wrong and allow them to introduce change					
34.	There is no point in involving the staff in how well or poor the company is doing					
35.	Team work implies collective responsibility					

Notes:

Part 3: Staff philosophies and principles

Statement	Strongly disagree	Moderately Disagree	Agree nor disagree	Moderately Agree	Strongly agree
Permanent Employees					
Staff dislike work and try to avoid it					
Staff like responsibility and making decisions					
Staff just want security					
Staff prefer to be told what to do					
Staff see work as natural and enjoyable					
Staff are committed to achieve and perform					
Seasonal Employees					
Staff dislike work and try to avoid it					
Staff like responsibility and making decisions					
Staff just want security					
Staff prefer to be told what to do					
Staff see work as natural and enjoyable					
Staff are committed to achieve and perform					
People Motivation (General)					
People are motivated by money					
People are motivated by achievement					
People are motivated by work conditions					
People are motivated by recognition					
People are motivated by supervisors					
People are motivated by responsibility					
People are motivated by policies					
People are motivated by challenge					
People are motivated by benefits					
People are motivated by personal growth					

Notes:

Part 4: Planning & Improvement Tools

The following is a table of planning and improvement tools, mostly created by Japanese and American practitioners. We would like to find out if any / how many of these are known and used in the New Zealand pipfruit industry. Can you please tick the box that applies to your organisation. We would expect that most of these are not used in the New Zealand pipfruit industry. If a tool is unknown, please leave the line blank and go to the next line.

Planning & Improvement Tools	Never Used	Use sometimes	Use	Use often	Use all the time
Brainstorming					
Affinity diagrams					
Cause and Effect diagrams					
Check sheets					
Control charts					
Flow Charts					
Scatter graph					
Critical Path Planning/Gantt chart					
Histograms					
Matrix diagram					
Pareto Charts					
Interrelationship diagrams					
Tree diagram/system flow					
Prioritisation matrix					
Process decision program chart					
Activity network diagram					

Notes:

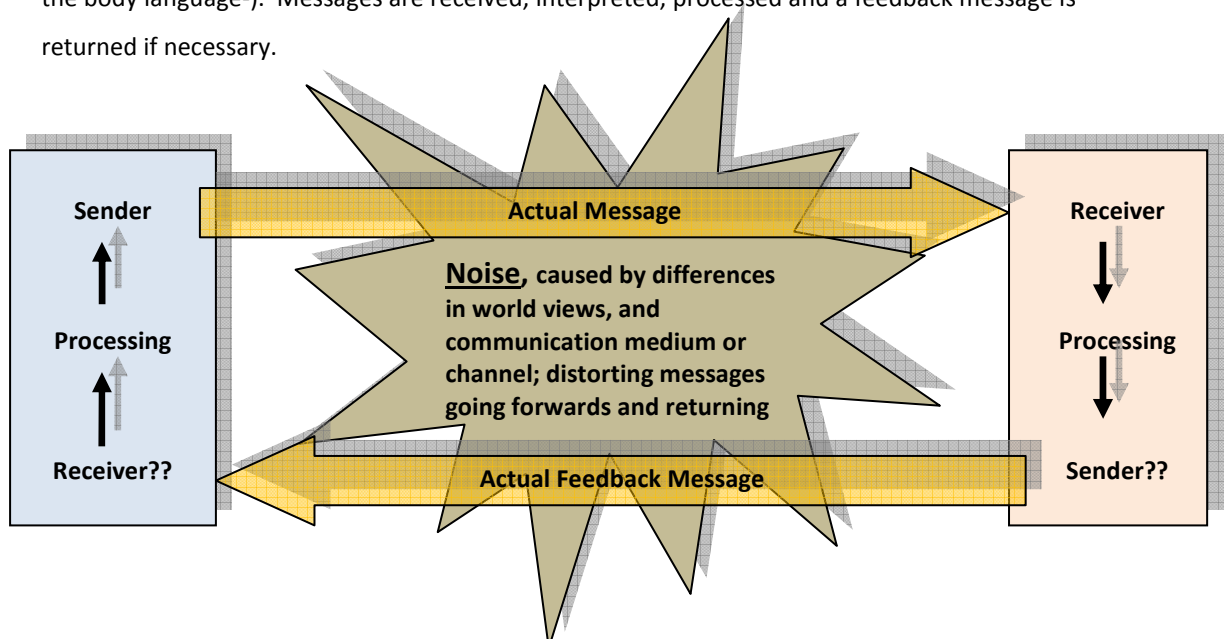| Key themes emerging from interviews and survey	
Key Themes: Interviews	**Key Themes: Survey**
There is significant variation in definition of quality amongst interviewees	Quality standards are often asking for irrelevant requirements
Senior management commitment is a mixture of economy driven, keeping things simple, doing things right, improve, lead by example and innovation (breakthrough)	There was general agreement with statements indicating 'better TQM' with three statements scoring significantly lower: • Job rotation (disagreement) • Ergonomics (disagreement) • Inform employees/participation (disagreement)
Most organisations appear to be unclear about their strategy; some have no strategy, others have a formalised 5 year strategy, others have a vague idea	Negative statements also showed unity in responses, indicating a neutral approach towards statements that were considered 'poorer TQM'. Exceptions were: • Quality inspection requirement (agreement) • Sharing information (agreement) • Splitting jobs in simple tasks (agreement) • Get results through telling off (disagreement) • Trust not affecting productivity (disagreement)
There is variation in product description	Some apparent confusion about what was delivered, a service or a product
There appears to be a tendency towards a 'Y' approach, particularly for permanent employees	Permanent employees seen more as 'Y' than seasonal employees and less as 'X' with a general tendency towards a 'Y' view of all employees
There is no clear identification of the customer	'Motivators' were considered more effective to get the best out of employees than 'Satisfiers'
Culture is often seen as having a pleasant work environment, not as a work culture where continuous improvement plays a role.	There is wide variation in the number of TQM tools known and used by organisations with a general tendency of low use
Continuous Improvement appears not a philosophy; improvement is reactive, often driven from the top.	
Built-in quality generally not understood	
Communication varies between irregular, informal, formal and cross-functional	
Organisations described a wide variety of circumstances as the greatest hurdle, ranging from exchange rates to bureaucracy, erratic industry, resistance to change, finance and lack of strategy, critical mass or supply	

INTERCULTURAL MODEL OF COMMUNICATION:

People have grown up differently and will share common elements of their environment (e.g. loving to work outdoors). There will also be cultural differences that make communication harder (e.g. pro-active thinking versus re-active thinking). Language and culture are inextricably intertwined, resulting in different interpretations of a single message, depending on the background of the person. Understanding the other person's background facilitates good communication (Sligo, 1990).

Common beliefs and way of thinking: Easy communication

What person A's world looks like:
- View of the world
- Traditions
- Beliefs
- Way of thinking

What person B's world looks like. Different:
- View of the world
- Traditions
- Beliefs
- Way of thinking
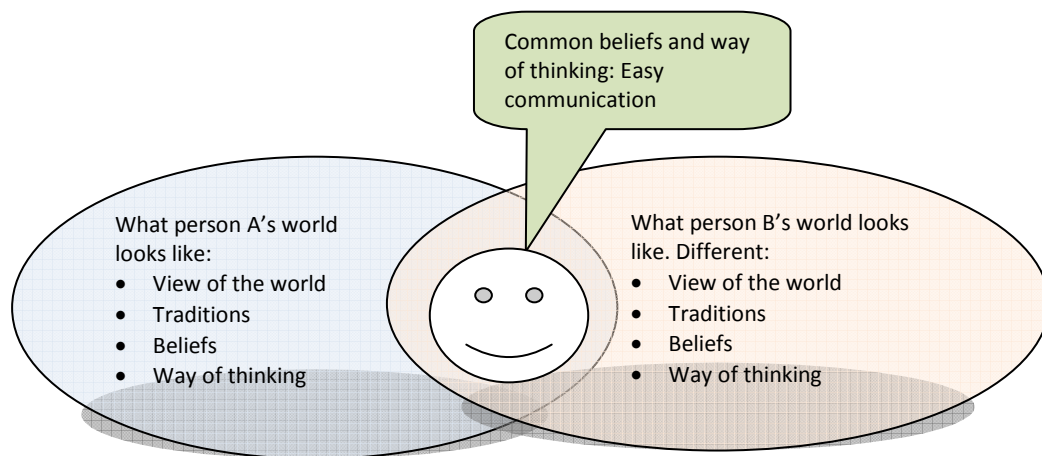
COMPOSITE MODEL OF COMMUNICATION

Messages are sent from a cultural background and get distorted through the medium or channel used (e.g. verbal and over a cup of coffee –opening up the receiver-, by email or phone –not seeing the body language-). Messages are received, interpreted, processed and a feedback message is returned if necessary.

Sender

Processing

Receiver??

Actual Message

Noise, caused by differences in world views, and communication medium or channel; distorting messages going forwards and returning

Actual Feedback Message

Receiver

Processing

Sender??

Within the present environment, an organisation must consider effective rewards for permanent staff. Employers can consider a number of reward types and match these to reward objectives. Organisations cannot sit back and assume that the present reward system will allow it to continue to perform. Changes may be needed, in particular where rewards stimulate motivation, skill levels and commitment.

An identification of reward objectives and reward components will help set the basis for a robust reward system. The figure below (adapted from Haigh (1990, in O'Neill, 1995) captures the reward components that are proposed to be addressed by organisations for their permanent employees. This matrix has to be completed by senior management, after establishing a human resources philosophy.
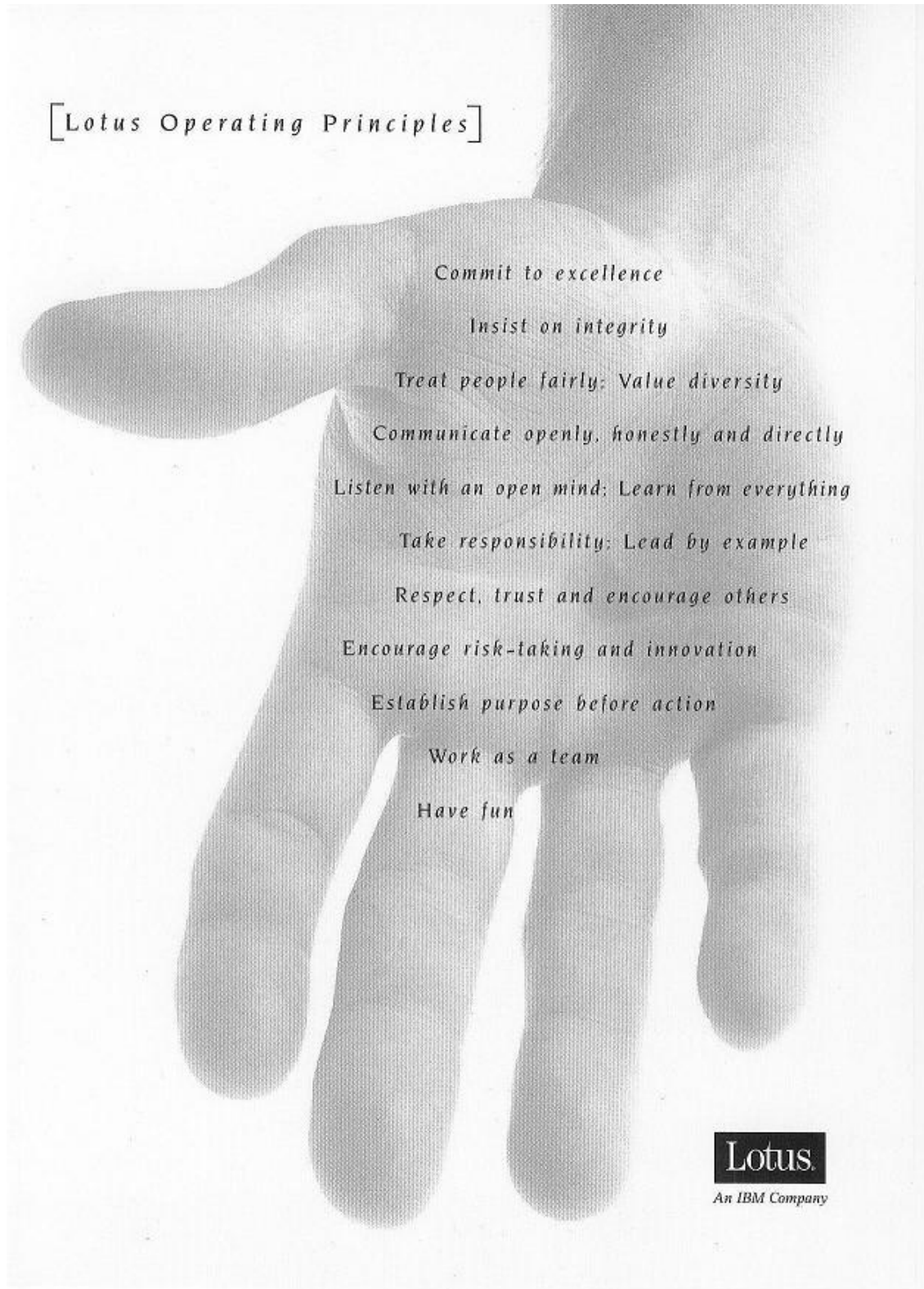
An assessment needs to be made of which reward components are important to achieve for which reward objectives. These need to be aligned with the philosophy. The assessment has to include how to 'weight' reward objectives; what is important to the organisation? The reward components in table 6.2.1 are useful suggestions.

Table 6.2.1: Reward strategy matrix for permanent employees

Reward Component	Reward Objectives						
	Attract	Select-Recruit	Retain	Productivity	Individual Contribution	Employee Security	Company Performance
Base Salary							
Other financial benefits (e.g. car)							
Personal growth (courses etc.)							
Career Development (vertical or horizontal)							
Personal attention (interest, guidance, compliments)							
Performance Incentive							
Reinforce Individual anchors; other benefits							

Key:	Not Relevant	Secondary Importance	Of Prime Importance

This sheet was handed out to every employee, together with the contract. Every office location had this pinned as a poster in every office room.

1.	**Quality**: Start defining quality. Quality cannot be solely defined as quality of output product (apples, cartons, pallets). Quality must be seen as a major characteristic, pervading all aspects of the organisation. This includes People, Materials, Machinery and Methods. It also includes all physical products with service attributes and all service products with physical attributes. Once defined, communicate the new paradigm to all members of the organisation, including seasonal workers.
2.	*Customer: Define internal and external customers for each segment and for each step within each segment of the organisation. Communicate these customer definitions to all employees and train all individual employees in the mindset that they personally 'have a customer'.*
3.	*Product: Decide for each core activity (growing/packing/cool-storing/exporting) and for each step within that activity what the core product is and what the attributes for the core product are. The core product is either a physical product or a service. The attributes can be service or physical components. Communicate these product definitions to all employees and train all individual employees in the mindset that they personally 'provide a product or service'.*
4.	*Commitment/strategy: The owner/manager is the one that must formulate the organisation's commitment and strategy. She/he/they must underwrite the strategy, consciously and intentionally. The strategy must include the fundamental concepts and elements of the organisation (including quality, customer, product, people and culture) and be focussed on long-term results. Communicate the commitment/strategy regularly and make sure it shines through all actions of the organisation.*
5.	*Employees: Owner/managers must maintain a positive approach to all staff, understanding that a 'Y' approach can be combined with discipline. Become a learning organisation; stop thinking that training is a waste of time and money and start investing in regular training, be it in-house or external. Develop a complete reward system that is logical and understandable and train managers and supervisors in the application of the system. Measure skill level increase and staff turnover annually.*
6.	*Culture: Identify what the company culture is to be. Identify core values, including company values like e.g. continuous innovation. Ensure that the company culture is 'lived' by employers, managers, supervisors and employees alike. Find ways of emerging staff into the company culture without making it a bureaucratic system. Cherish a positive company culture as an intangible asset of immeasurable value that grows with sustained interest and contributes significantly to organisational outcomes.*
7.	*Communication: Decide in combination with all relevant internal stakeholders how the communication process can be improved to improve outcomes. Include who, how often, when, what and how when structuring the process. Have various ways of communication depending on purpose. Always have in mind that 'informed people make informed decisions' that will benefit the organisation.*
8.	*Tools: Analyse tools and select a restricted number of tools that will work beneficially for the organisation. Embed the use of these tools into the organisation and review with some regularity if the tools fulfil the requirements.*
9.	*Adapt models/systems to the organisation: Make sure that recommendations are adapted to the specific environment of the appropriate organisation. Don't be afraid to interpret how recommendations will be most valuable for a given organisation but maintain the basic philosophy that strategic commitments have better sustainability than reactive short-term thinking.*
10.	*Change: Decide on a strategy to affect change. Consider people participation and time as elements. Make certain that internal leaders/managers understand the need for change. Choose one of many effective 'change' programs and implement the program as a team project.*

TQM Elements Researched	Broad Research Questions				
	Do organisations within the pipfruit industry know TQM as a management philosophy?	Do organisations within the pipfruit industry apply TQM elements in the running of daily business? Which elements?	Are any TQM philosophies applied or implemented accidently or deliberately?	What makes the implementation of a TQM philosophy and TQM methods hard? Are there pipfruit inherent unique obstacles? What are they?	Could the industry benefit from introducing TQM techniques, tools and principles? What improvements can be made?
Quality definition	Most organisations were quite unfamiliar with the concept of Total Quality Management, its fundamental philosophies and its associated methods, techniques and most tools	No: Different definitions of quality applied and most related to the physical end-product	Deliberate quality definition but mostly restricted to physical end-product and not to organisational quality	Unfamiliarity with the concept. A unique and confusing value chain with 85%-90% seasonal workers	Yes, define quality by activity (growing, packing, storing, exporting) and apply throughout organisations
Senior management commitment (SMC) concerning quality		No: Economic drivers lead to short-term focus; SMC focus predominantly on physical end product	Not many deliberate or accidental long-term commitments except economic ones	External competitive environment creating short-term survival focus; high staff turnover in industry	Yes, educate senior management to start implementing committed internal quality strategies
Customer identification; Strategic partnerships		Some clear customer identification and some strategic partnerships	Paying end-customer awareness is deliberate as are some strategic p/ships; most are accidental	Unique confusing value chain makes customer identification confusing; economics drive suppliers	Yes, complete customer identification provides better product; strategic p/ships for better suppliers/customers
Product identification		Some are quite clear; integrated organisations not	Physical Product is mostly based on customer specs	Confusing information through value chain	Yes, define product by activity and apply
Staff; training, skills, rewards, motivation, 'X' & 'Y' approach		Yes, 'Y' approach for permanents; some others	Deliberately but not as known TQM elements	Seasonal staff, very sharp accelerated start to seasons	Yes, more training, also in rewards and motivation
Strategic goals - Short-term or long-term		Mostly short-term goals; some long-term economic drivers	Not many deliberately; some accidental	Struggling industry trying to survive; little TQM knowledge	Yes, long-term strategy adoption for improved sustainability
Culture; teamwork, continuous improvement (CI)		Some teamwork; very little continuous improvement	Improvement often deliberate but reactive, not TQM CI	Lack of understanding, seasonal staff too short to develop a CI culture	Yes, more focus on teams and participation; use tools
Design, built-in quality		Some; built-in quality partly understood through economics	Partly deliberate design; built-in quality poorly understood	Tendency to create and take short-cuts through hardship	Yes, learn to understand and apply built-in quality
Communication, internally, externally		Communication not always structured or cross-functional	Not as TQM philosophy but as 'normal' management	Communication skills; Value chain confusion	Yes, introduce training in participative management