

The role of Management Support and Shared Understanding of 20 Keys for Continuous Improvement: An employee perspective



A thesis submitted in partial fulfilment of the requirements for the degree of
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Faculty of Economic and Management Sciences at the University of the Western Cape.

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Declaration

I Charl De Morny declare that “The role of Management Support and Shared Understanding of 20 Keys for Continuous Improvement: An employee perspective,” is my own work. It is submitted in partial fulfillment of the requirements for the degree of Masters in Commerce at the EMS Faculty, University of the Western Cape. It has not been submitted for any degree or examination at any other university. All references and sources of information to my knowledge are accurately reported.



.....
Charl De Morny

.....
Date

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Abstract

Continuous improvement (CI) has become a strategic option for many Cape Town (CT) manufacturing organisations that want to compete successfully in the global economy. To successfully survive in this modern competitive environment companies should continuously improve in order to manufacture better products and render better services faster and cheaper than their competitors. According to Kobayashi companies must strive to be better, faster and cheaper than their competitors. Despite the benefits of CI, its effects are claimed to induce high pressure on shop floor workers and increase stress. The change process should be about people and about unlocking their innate human potential to be the best they can be.

This study investigated the role of Management support and shared understanding (interpretation) of the CI initiative on successful CI implementation, from an employee perspective.

This study aimed to assess employee's responses with regard to the implementation of a new workplace improvement programme. The purpose of this research was to focus on the understanding that could be gained about employee's responses to organisational change using qualitative research.

Case study research was conducted in Cape Town at a manufacturing company in order to assess how shop floor employees responded to CI implementation. Qualitative data was collected through face-to-face in-depth interviews with shop floor employees. Unstructured interviews were conducted as informal conversations on the shop floor with the researcher asking follow-up questions in response to statements made by the interviewees. Observations of

shop floor work practises as well as the evaluation of company documents was used to gather data.

All employees were made aware of the purpose of the research and were assured of their right to participate or decline. The names of the interviewees were not taken as to keep the confidentiality of the interviewee. Information collected from the organisation and respondents were made public in such a way that the information could not be traced back to the organisation.

The results of this study suggested that successful implementation of CI process can provide many benefits to any organisation, irrespective of the industry in which it operates. In general, the findings show that most employees' responses to CI are positive. This demonstrates that, if CI methods are used correctly to address production problems, operational performance will improve. In other words, the implementation of the CI played a significant role in improving the company's performance. An additional finding of the research (which emerged from the employees responses) showed that work intensity and stress did not increase as a result of the implementation of CI in the organisation.

Keywords

Continuous improvement

Manufacturing organisations

Shop floor

Employee responses

Workplace improvement programmes

Management support

Work teams

Employee stress

20 Keys for continuous improvement

Cape Town.



Chapter 1: Introduction

1.1 Introduction

It is well known that the manufacturing environment has become extremely competitive with rapidly changing technology and global competition (Hayes and Wheelwright, 1984; Slater and Narver, 1994; Amoako-Gyampah and Acquah, 2007). Customers are demanding a greater variety of high quality, low cost goods and services (Ghalayini and Noble, 1996; Tu, Vonderembse and Ragu-Nathan, 2001). There is growing opinion amongst international and local experts that South Africa is losing the battle to compete with other developing nations in global markets, mainly as organisations struggle to achieve world-class status (Edwards and Golub, 2003). Numerous solutions have been presented for achieving world-class status in a manufacturing environment which includes Total Quality Management (TQM), Business Process Re-engineering (BPR), Lean Thinking (LT), World-class Manufacturing (WCM), Total Productive Manufacturing (TPM), Agile Thinking (AT) and Continuous Improvement (CI). These organisational improvement initiatives under the banner of Contemporary Manufacturing Approaches (CMA) seek to align the organisational manufacturing strategy with that of operational excellence (Monden, 1983; Schonberger, 1986; Suzaki, 1993; Womack & Jones, 2003).

1.2 Background to the study

1.2.1 The Workplace Challenge Project

The Workplace Challenge (WPC) was a South African government project to help small and medium-sized manufacturers to introduce workplace change. The WPC was seen as an initiative to enhance the competitive capability of local companies and sectors to compete in the global

market and ensure high investment and employment security with economic growth (National Productivity Institute, 2003). At firm level, the WPC took place by organising participating firms into sectors, mostly by virtue of the similarity of products and/or markets. Through the WPC companies were coached in implementing world-class manufacturing principles and had access to powerful world-class manufacturing materials (the Workplace Transformation Toolkit). The programme is intended to provide technical assistance to different organizations and companies to increase productivity, profitability and service, as well as to save and retain the current jobs.

1.2.2 Research context

The researcher became interested in the problem while taking part in a Workplace Challenge Programme (WCP) sponsored by the Department of Trade and Industry (DTI). The programme aimed to improve the competitiveness and productivity of organisations in the manufacturing environment and in turn reaching world-class status in their respective market. Through the WCP the researcher visited a few manufacturing companies and noticed that such changes or innovations were often received with different emotions. Some employees accepted the change while others were reluctant to try new methods. Through various WCP cluster meetings it was highlighted that management had to be aware that it was important for employees to be properly consulted and informed in preparation for any change. The WCP therefore encouraged a co-operative and participative approach to the implementation of improvement programmes. Due to the drastic changes in the economic environment for manufacturing enterprises in South Africa and the demand for lower costs and higher quality, Parmalat initiated a new structure, strategy and culture with the aim of having positive effects on profitability. Through the WPC and under the 20 Keys programme Parmalat focused on quality improvement and cost-cutting. The 20 Keys Programme comprises of 20 very practical and synergistically integrated key methods required to

strengthen the organisation's delivery system focusing on making products and services better, faster and cheaper. The researcher chose the manufacturing environment due to the ease of access to the organisation as well as having a good understanding with regard to the CI initiative that this organisation implemented.

1.3 Problem statement and research questions

The transformation of organisations introducing CI requires change which impacts on the way things are normally done and involves redesigning systems (Earl, 1994; Benjaafar, Heragu and Irani, 2002), as well as changing the culture within the organisation (Detert, Schroeder and Mauriel, 2000). Continuous improvement and other workplace improvement initiatives aim to improve the work situation and productivity (Bicheno, 2004). Through insufficient information regarding the shared benefits of 20 Keys relayed to shop floor employees, CI could speed up productivity and lead to a loss of control on the shop floor which adds stress to shop floor workers (Forza, 1996; Hines and Rich, 2004). The attitudes of employees which influence behaviours can affect the outcome of the CI process (Zhou and George, 2001 as cited in Bryant, 2006). Shop floor employees sometimes respond differently to what is expected, or do not give their full cooperation when there is not sufficient and clear communication about the workplace improvement initiative (Sim and Rodgers, 2009). Was the CI method welcomed by employees at Parmalat? What benefits did employees perceive through the introduction of CI? How did employees respond to the implementation of CI at Parmalat? This issue was analysed by looking at the case of CI as employed by Parmalat. According to Bicheno (2004), many companies who have implemented CI have realised substantial improvements in the productivity of both workers and equipment. Most research, however, has not addressed how employees responded to the

implementation of CI. There is a need, therefore, to assess employees' responses with regard to the implementation of 20 Keys for CI.

The research questions addressed by this study, therefore, are as follows:

Primary research question:

- How did shop floor employees respond to 20 Keys for CI at the manufacturing organisation?

Secondary research questions:

- Do shop floor employees have a shared understanding of the characteristics and purpose of the 20 Keys for Continuous Improvement?
- How does Team Dynamics play a role in how employees have a shared understanding of the characteristics and purpose of the 20 Keys for CI?
- How does Workplace Factors play a role in how shop floor employees respond to 20 Keys for CI at the manufacturing organisation?
- And lastly, did management support the employees in the CI initiative?

1.4 Aims of the research

This study aimed to assess employees' responses with regard to the implementation of 20 Keys for CI at the manufacturing company. The purpose of this research was to focus on the understanding that could be gained about employees' responses to organisational change using qualitative research. This study highlighted the factors which are necessary for the successful implementation of CI on the shop floor. The level of analysis within the organisation was individual employees on the shop floor as previous research has shown that this level is predominately where most value-added work is done (Wickens, 1999; Liker, 2004; Drew, McCallum and Roggenhofer, 2004).

1.5 Rationale for the study

This research will contribute to the body of knowledge that exist with regard to the effect that CI has on shop floor employees and consequently how shop floor employees respond to 20 Keys for CI. Operational managers can use the responses of employees as a starting point to determine what additional training needs to be performed or what additional resources need to be made available. The researcher concluded that taking the human factor into consideration is vital in the introduction of CI and the organisation should be cognisant of the fact that it is crucial for employees to be properly consulted, informed or cultivated for any change. The research will highlight shop floor employee responses to the workplace improvement initiative and to what extent there was a shared understanding with regard to CI. Drawing from the findings of this research, organisations as well as consultants of the CI programme can adapt or modify the implementation of 20 Keys for CI so that it encourages a co-operative and participative approach.

1.6 Limitations

The study's conclusions will be restricted to organisations which are similar to that of the research due to the limited nature of this study in terms of the sample size and the fact that only one manufacturing organisation was studied.

1.7 Delimitations

This study focussed on employee responses to the implementation of CI on the shop floor of a manufacturing organisation in CT. Case study research was conducted in Cape Town at a manufacturing company in order to assess how shop floor employees responded to CI implementation. The researcher chose the manufacturing environment due to the ease of access to the organisation as well as having a good understanding with regard to the CI initiative that

this organisation implemented. This research is sector specific as the case study was conducted in a dairy manufacturing environment. The company consists of 3 departments namely; production, receiving/despatch and engineering which consist of 10 teams with an average of 12 employees per team. The 3 departments are excluding the office staff. Interview subjects were selected from half the amount of members in 5 teams from different departments within the organisation which totalled 30.

1.8 Structure of research project

This report consists of six chapters. Chapter One consists of following: the background to the study; problem statement; the research questions; the research aims and objectives; and the rationale for the study.

Chapter Two is an extensive literature review on the important constructs related to CI. The literature review incorporates CI implementation and the effect it has on shop floor workers.

Chapter Three deals with the research design and method, specifically, reflecting on the research instrument, the sample of the study, procedure, and data analysis. The qualitative method associated with interviews and more specifically based on a case-study approach, was employed.

Chapter Four provides a description of Parmalat, with specific reference to the implementation of CI on the shop floor. It presents an analysis of the case study using the CI model developed in Chapter Two.

Chapter Five presents the interpretations and discussions of the findings of this study.

Chapter Six presents the conclusions and recommendations of this study.

Chapter 2: Literature review

2.1 Introduction

This literature review incorporates CI implementation and the effect it has on shop floor workers. Successful implementation includes employee involvement and creating an environment where employees feel part of the implementation process.

2.2 Diffusion of continuous improvement initiatives

According to Juergensen, 2000 (as cited in Bhuiyan and Baghel, 2005) Continuous improvement (CI) is described as the initiation of improvement projects that increase the likelihood of success in the organisation and subsequent reduction in the number of failures. While changes in operational systems hard and soft, (hard relating to the process redesigning and soft relating to culture, leadership and motivation), may come about through CI, the real focus of CI is on changing work practices on the production process at shop floor level (Spear and Bowen, 1999 as cited in Grütter, 2007 ;Sirkin, Keenan and Jackson, 2005). CI can therefore be defined as a culture of sustained improvement and elimination of waste in all systems and processes of an organisation. It involves the whole organisation working together to make many small improvements throughout the entire organisation.

2.2.1 The process of doing continuous improvement

The process steps to continuously improve are at the heart of CI which is the desire to do better. Numerous problem-solving and decision-making techniques have been developed since the Plan-Do-Check-Act cycle was introduced by W. Edwards Deming (Deming, 1986). The following steps for doing a CI project have been compiled from a few sources on how to do it (Lee and

Chuah, 2001; Moses and Stahelski, 1999; Grunberg, 2004; Jones and Holloman, 2000; Grütter and Faull, 1997; Furuhashi, 1996).

1. Identify problem/improvement area in which to do project,
2. Learn to understand the process in that area by documenting the process,
3. Clarify what creates value for the customer,
4. Identify appropriate measures and collect data,
5. Analyse data to identify wastes most susceptible to improvement,
6. Identify possible countermeasures and decide which to implement,
7. Plan and implement the countermeasures,
8. Evaluate the results and repeat if necessary, and
9. Update process documentation with improved operating practices.

Obviously, there are many variations on the abovementioned steps of doing CI. However, CI, in essence, simply amounts to affording shop floor employees the opportunity to undertake systematic process improvement in addition to their direct production work (Wellins, Byham and Wilson 1991; Cohen, Ledford and Spreitzer 1996).

2.2.2 The difficulties doing continuous improvement

One of the difficulties of doing CI is to release shop floor employees from direct production work to do CI because it changes the associated cost from an expense with a return in the short term to an investment with an uncertain future return (Grütter, 2007). In some organisations, CI is integrated into the daily routine of permanent teams. The teams may address problems and process improvement during their regular team meetings when these are brought to light by performance monitoring. Alternatively, CI project teams may be temporarily constituted to address specific objectives. The former approach is less disruptive but may lead to inadequate

attention to and/or effort in achieving CI. The latter allows for more focused CI but is more disruptive.

Another difficulty is the effectiveness of CI when it is being undertaken. Even after adequate training, the techniques are regarded as too onerous and therefore neglected (Zbaracki, 1998). The consequence is that identification of special causes and root-cause elimination is based on intuition and improvement suggestions are haphazardly selected (MacDuffie, 2000).

Lack of resources and time to effect improvements after recommendations for improvement have been made can also be an obstacle. Apart from the direct effect of delaying improved performance, difficulty with implementation of suggestions also affects the motivation of employees and the credibility of the CI programme (Mohrman and Novelli 1985; Womack and Jones, 1996).

2.2.3 Factors influencing the successful implementation of continuous improvement

In order for organisations to continually improve many organisations have adopted a Lean thinking approach as a vehicle for competitive advantage. Lean thinking involves eliminating wasteful activities and creating an environment for continuous improvement. Vermaaks' study in 2008 highlighted factors influencing the successful implementation of CI in South African manufacturing organisations. He proported the following;

1. A CI mindset and attitude amongst all levels of employees in the organisation is critical for successful implementation of CI.
2. Knowledgeable and supportive CI leadership is key to successful CI implementation.
3. The appropriate CI tools and techniques must be applied at the appropriate time for CI to be successfully implemented.

4. For CI to be successfully implemented basic stability in manpower, machine, methods and materials must first be achieved.
5. And lastly for CI to be successfully implemented it must be considered as an important strategic driver of the organisation's business strategy.

In summary strategic alignment occurs when people of all levels of the organisation and in all functions and divisions work together to define and achieve their shared goals (Vermaak, 2008).

2.2.4 A continuous improvement initiative in industry – 20 Keys

According to Bicheno (2004), Kobayashi's concept of 20 Keys is gaining increasing acceptance as a benchmarking tool for manufacturing organisations and an implementation blueprint for CI on shop floor level. The Practical Program of Revolutions in Factories (PPORF system) developed by Kobayashi, guides organisations in their efforts towards change and continuous improvement. The PPORF system is also known to the Western business world as the 20 Keys Workplace Improvement Programme (Kobayashi, 1998).

2.2.4.1 The aim of the 20 Keys programme

The aims and objectives of the 20 Keys are to:

- Achieve the strategic goals of the business;
- Improve the speed of learning and innovation of the business and improve the productivity and flexibility of the organisation to adapt more readily to changing market requirements;
- Eliminate all forms of waste (non value-adding activities) to improve customer satisfaction and market share by making products and services better, faster and cheaper;

- Energise and motivate employees to work towards achievement of the goals of the business, and
- Improve competitiveness, profitability and long term sustainable business success.

The 20 Keys Programme comprises of 20 very practical and synergistically integrated key methods required to strengthen the organisation's delivery system focusing on making products and services better, faster and cheaper.

2.2.4.2 Explanation of the 20 Keys

2.2.4.2.1 Key 1 – Cleaning and organising

The essence of this key is to explain how the consistent application of cleaning and organisation techniques can make work easier. It should fundamentally contribute towards re-energising the workplace by creating a functional environment in which people have great pride and which makes the workplace worth working in. Cleaning and organising is the foundation of all productivity improvement. The main message of Key 1 is - 4S to Make Work Easy.

4S is derived from the Japanese words:

- Seiri: Identify and get rid of all obsolete items (that is anything not used for the last twelve months).
- Seiton: Now that all unnecessary items are removed, organise that which remains.
- Seiso: once everything is organised, clean up.
- Seiketsu: Maintain cleanliness and orderliness through writing simple procedures so that the unacceptable situation will not reoccur.

(20 Key Programme, Manual Key 1, 2000).

2.2.4.2.2 Key 2 – Rationalising the system / Goal alignment

The fundamental objective of Key 2 is to match top-down and bottom-up management, to streamline the organisation and to improve the alignment of the whole business.

The importance of the following two concepts must become clear to all employees:

- Rationalising the system – this refers to action taken to streamline the organisation structure and ensuring:
 - a clear and simple underlying organisation logic,
 - a flat structure with optimised spans of control,
 - clear reporting relationships and
 - clear and non-overlapping responsibilities.
- Goal alignment – this refers to actions taken to ensure that:
 - company and individual goals are aligned,
 - policies and goals are translated and deployed to the lowest levels,
 - teams and departments work together to achieve common goals and
 - there is an integration of top-down decision making with bottom-up participate management.

(20 Key Programme, Manual Key 2, 2000).

2.2.4.2.3 Key 3 – Small Group Activities

Small group activities (SGA) gather the wisdom of first-line employees and drive improvements in the workplace. SGA focus improvements on where the real work takes place. For this key it is

essential that managers provide active support and encouragement with regard to improvement suggestions made on the shop floor.

Active SGA form the foundation of an organisations world-class competitive drive and can lead to the following benefits:

- Team spirit is created by encouraging members to become part of a team.
- Team members learn from one another by exchanging experiences and information.
- Teams are challenged which promotes energy and enthusiasm.
- Visible support and co-operation in the workplace is developed.
- Effective SGA make an employee's work life interesting and impact positively on job satisfaction.
- Communication and initiative is enhanced.

(20 Key Programme, Manual Key 3, 2000).

2.2.4.2.4 Key 4 – Reducing work in progress

The essence of this Key is that high Work in Progress (WIP) is not only unwanted because of the negative financial impact but that there are many other indirect negative effects. By reducing WIP, problems and wasteful activities will come to light. By identifying and addressing these, workflow is made more efficient. This in turn allows for operational improvements so that optimum levels of WIP can be established and maintained.

Reducing inventory will uncover many other problems which would previously have been hidden. If we keep reducing inventory, more and more problems will be uncovered which can then be addressed, reduced or eliminated. This continuous focus on solving problems will enhance the continuous improvement drive and the efficiency of the production system (20 Key Programme, Manual Key 4, 2000).

2.2.4.2.5 Key 5 – Quick changeover technology

A key to organisational competitiveness is flexibility and customer responsiveness. Key 5 aims to improve the flexibility and responsiveness of the company. The aim is to eliminate waste by reducing all changeover times in the workplace. Shorter lead times are a key ingredient for adaptability and customer focus (20 Key Programme, Manual Key 5, 2000).

2.2.4.2.6 Key 6 – Kaizen of operations

Kaizen is the Japanese word meaning – do better, continuously improve. The essence of this key is that by continuously making systematic improvements, rather than ad hoc ones, productivity can be dramatically increased. By analysing operations that add value, by reducing unnecessary motions, by combining, simplifying and eliminating others, real cost and productivity improvements can be made and sustained. Through this product and service excellence are enhanced by only performing value-added work (20 Key Programme, Manual Key 6, 2000).

2.2.4.2.7 Key 7 – Zero monitor manufacturing / Production

Zero Monitor Manufacturing focuses on the goal of zero defects in production and at the same time increasing the operation rate of machines. By progressively enhancing machines and equipment to eliminate monitoring for an entire cycle, flawless manufacturing of quality products is made possible. The idea is to make machine tasks become self-regulating and self-interrupting. At the same time operators are freed from mindlessly watching machinery perform

its tasks and can engage in other activities such as maintenance, cleaning and organising, training or other value-adding tasks (20 Key Programme, Manual Key 7, 2000).

2.2.4.2.8 Key 8 – Coupled manufacturing / Production

The aim of coupled manufacturing is to establish a smooth, fast process flow through visually managed optimised inventory levels, effective communication, and co-operation between upstream and downstream processes. The idea is to simplify processes and production lines (20 Key Programme, Manual Key 8, 2000).

2.2.4.2.9 Key 9 – Maintaining machines and equipment

Often in companies both the workers and management are too busy to care for maintenance of machines and equipment. Equipment is normally run until it breaks down. These breakdowns create various problems, such as negatively impacting quality and morale. All of this result in loss of income, delayed schedules and wasted resources.

To maintain equipment is an essential task for a best practice organisation. In terms of best practices organisations have their operators run daily checks on equipment using specific checksheets. These checksheets should be provided by the maintenance department. In addition operators must regularly clean equipment and ensure that equipment is never mishandled (20 Key Programme, Manual Key 9, 2000).

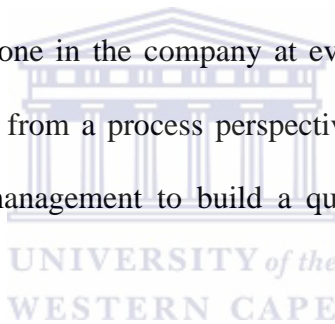
2.2.4.2.10 Key 10 – Time control and commitment

The focus of this key is to create a positive work atmosphere, good work order and a high level of commitment in the workplace. Employees must be committed to rules which ensure efficiency and competitiveness. It should not be the role of management to police and control their workforce, but rather to lead in establishing basic workplace policies. Once again these basic

policies should be aligned with the organisations strategic goals and mission. Key 10 relates to how the workplace is managed. It aims at creating a work atmosphere characterised by a positive attitude, efficiency and high team spirit (20 Key Programme, Manual Key 10, 2000).

2.2.4.2.11 Key 11 – Quality assurance

The concept of this Key is to build quality into processes through the involvement of operators. The objective is to create a quality-focussed workplace where the focus is on preventing defects through operator involvement, addressing root causes of quality problems. The ultimate aim would be to achieve zero defects. Quality is an essential part of competitive manufacturing. Today quality has become a basic requirement and no longer provides a unique competitive advantage. Quality involves everyone in the company at every stage. It should not be viewed from a functional perspective, but from a process perspective. It does however begin with the management commitment from management to build a quality culture (20 Key Programme, Manual Key 11, 2000).



2.2.4.2.12 Key 12 – Developing your suppliers

Developing your Suppliers extends the quality and workplace improvement activities to suppliers for the overall benefit of the supplier-customer chain. Suppliers are an integral part of the business. If the suppliers deliver poor quality components, information or services it will result in your own company doing the same. This key is intended to extend the quality and workplace improvement activities and related benefits to company suppliers. This will establish a long-term partnership-like relationship with a selected number of suppliers on the joint basis of quality, cost, speed, safety and morale (20 Key Programme, Manual Key 12, 2000).

2.2.4.2.13 Key 13 – Eliminating waste

The focus of this Key is to create a positive attitude towards the identification and elimination of waste created. This entails a bottom-up participative approach recognising waste as an improvement opportunity. Employees must also be trained to recognise, measure and eliminate wasteful human activities. The true meaning of waste is often misunderstood. The bottom line is that no matter how hard people work, if value is not added, all of this work is classified as waste. The different forms of waste must be clearly understood by all employees. These forms of waste can be summarised as follows:

- Waste of handling material
- Waste of walking
- Waste of waiting
- Waste of watching
- Waste of breakdowns
- Waste of meetings
- Waste of searching
- Waste of phone calls



(20 Key Programme, Manual Key 13, 2000).

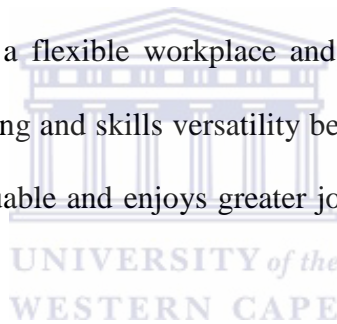
2.2.4.2.14 Key 14 – Empowering employees to make improvements

The purpose of this Key is to make the workplace easier, more visible and to promote improvement. This Key has very strong links to Key 1 and Key 3. The core idea is the creation

of the improvement workshop and the empowerment of people to utilise the improvement workshop and to design, make and build their own improvements. In best practise organisations it is recognised that employees at all levels have the capability and willingness to generate and implement many improvements in their work. The main principle is that improvements in the workplace must originate from the workplace and relate to it. Successful organisations regard every employee as a knowledgeable and valuable person (20 Key Programme, Manual Key 14, 2000).

2.2.4.2.15 Key 15 – Skills versatility and cross training

The concept of this Key is that a company needs to be able to respond rapidly to any change in customer demands. This requires a flexible workplace and the development of employees to meet these challenges. Cross training and skills versatility benefits both the organisation and the employee who becomes more valuable and enjoys greater job satisfaction (20 Key Programme, Manual Key 15, 2000).



2.2.4.2.16 Key 16 – Production scheduling

This Key deals with the way in which the organisation ensures on time delivery to customers through effective scheduling and process control. Production scheduling relates to the execution phase of any production planning and control system. It is about the efficient and effective utilisation and control of the organisation's resources to completely satisfy customer demand (20 Key Programme, Manual Key 16, 2000).

2.2.4.2.17 Key 17 – Efficiency control

Key 17 focuses on how to motivate employees to achieve realistic schedules and for employees to continually set targets themselves as better efficiencies are obtained. The whole idea is that it must not be a management imposed efficiency control system. Efficiency control is about

visually displaying efficiency performance in an easily understandable and relevant way at point of production so that productivity improvements and appropriate rewards are measured and aligned respectively (20 Key Programme, Manual Key 17, 2000).

2.2.4.2.18 Key 18 – Using information systems

The message of this key is that the use of computers and new technology has changed and will continue to change just about everything we do in the workplace and at home. It is important however to ensure that Information Technology (IT) is not applied in isolation but that it is rather integrated with the overall strengthening of the organisation using the 20 Keys. If this is not done the result of IT can have the opposite effect (20 Key Programme, Manual Key 18, 2000).

2.2.4.2.19 Key 19 – Conserving energy and materials

In today's ever-increasing competitive business world a company can not only rely on improvements on quality and delivery to ensure survival and growth. Costs also need to be continuously reduced. By conserving energy and raw materials, these cost savings can be achieved. These savings may at first seem insignificant and often targets relating to production, delivery and quality are regarded as more important priorities. A company must however not miss out on the opportunity to become more competitive by saving on consumption of energy and other resources (20 Key Programme, Manual Key 19, 2000).

2.2.4.2.20 Key 20 – Leading technology

Key 20 concentrates on what is most vital in terms of technology development for a particular company and industry. The critical aspect here is speed of core technology development including process/product design and development. It also includes the ability of people to learn new technology and their skills level operating the technology. It is of no use to have the best and latest up-to-date hardware if you do have the skills to operate it.

In this Key the entire company is evaluated on the application of leading technology (hardware) and on site technology (skills) in relation to its competitors. Every company must determine that set of technologies that provide the basis for its core competence to compete in the market. The set of technologies should always include the ability of the company to design and develop new products and services better, cheaper and faster than its competitors (20 Key Programme, Manual Key 20, 2000).

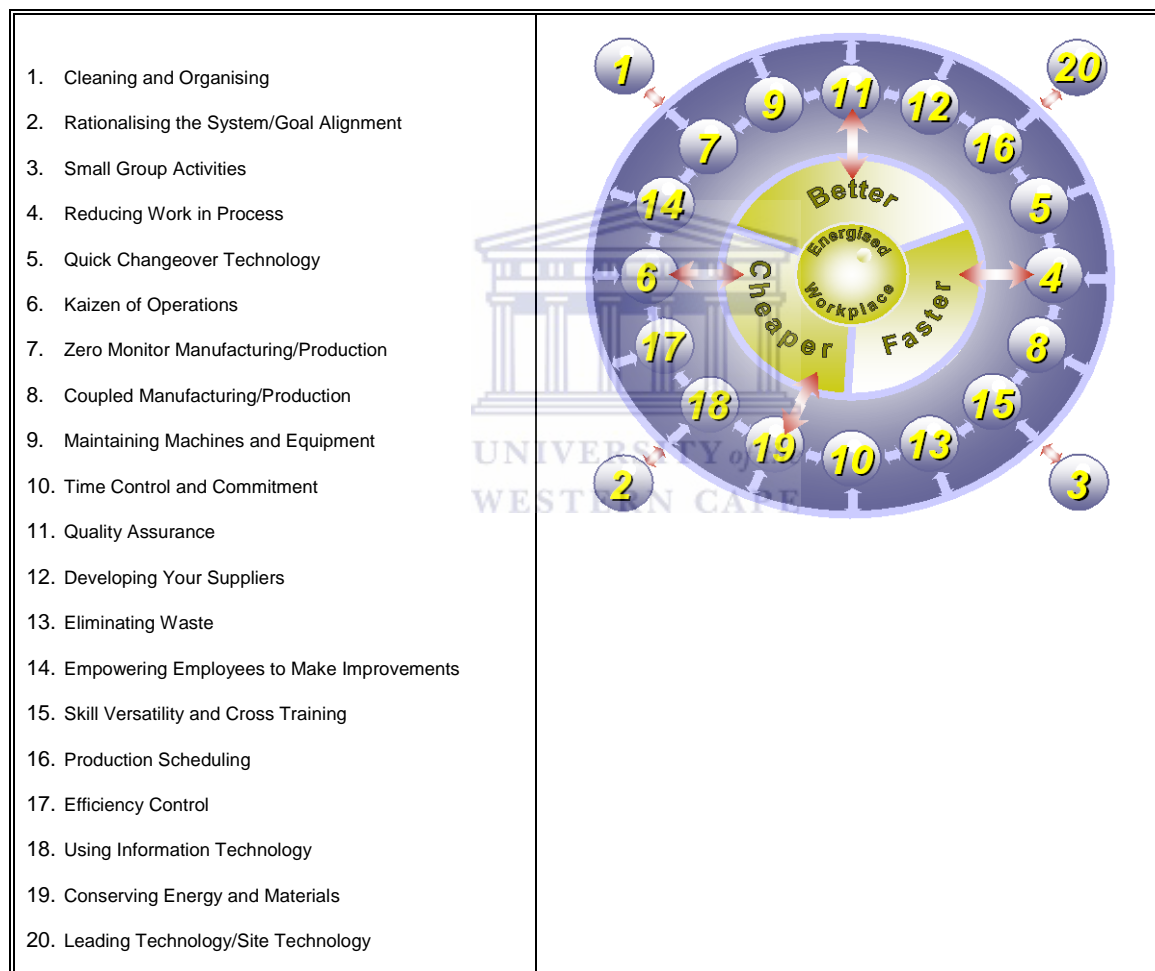


Figure 1 – 20 Keys Relationship Diagram

Source: 20 Key Programme, Facilitators Manual, PFORP Development Institute, Japan, 2000

Figure 1 above summarises the 20 Keys arranged in a circle with Key 1, 2, 3 and 20 forming the cornerstones of the system. There are four keys outside the circle. Three of them (keys 1, 2, and

3) must be implemented before the rest, and key 20 is the result of implementing the other 19 keys. These are the foundation keys and implementations of these keys are crucial as they impact on the development of the other keys. The diagram shows the relations between the keys and their influence on the three main factors: quality, cost, and lead time. Each key is related to either Q (better quality), C (lower cost) or D (delivery/cycle time). Through the development of all 20 Keys and the active involvement of all employees the goal is make work better, faster and cheaper. With the challenge of utilising 20 Keys to make work better, faster and cheaper the idea is that employees are energised, unlocking their true potential for Continuous Improvement.

2.2.4.3 The 20 Keys 5 level scoring system

Figure 2 illustrates that there are five levels in the 20 Keys Map which easily illustrates the level of your company and what should be done to improve it. This Programme makes it possible for employees at every level to participate in benchmarking their company in terms of the constitution of the workplace and provides a specific method for them to improve towards their goals

Level	Description
1.	This level of organisation performance signifies the lowest possible score and it is characterised by very traditional, “old style” thinking.
2.	In level 2 organisations people have been fully trained in the concepts of the particular Key. Thinking has changed. Improvement efforts are under way with a single focus or they have undertaken a range of (relatively speaking) unrelated initiatives.
3.	Positive results are being achieved with significant improvements in motivation, productivity, quality, cost and speed of delivery.
4.	Organisation wide teamwork is required to move to this level – in addition, the company usually needs to introduce new technology. The company adds value through all of its activities.
5.	A world leader in its field. Highly flexible, reliable, innovative, productive and competitive. Able to continuously improve itself.

Table 1 – 5 Level Benchmarking Evaluation System

Source: 20 Key Programme, Facilitators Manual, PFORP Development Institute, Japan, 2000

Organisations embarking on this journey would typically start at level 1 and work their way up to level 5, signifying a world-class organisation.

20 Keys Benchmarking and regular reviews of progress are important, not only to keep track of improvements made but also as a basis for action planning and the PDCA cycle (Plan, Do, Check, Action cycle).

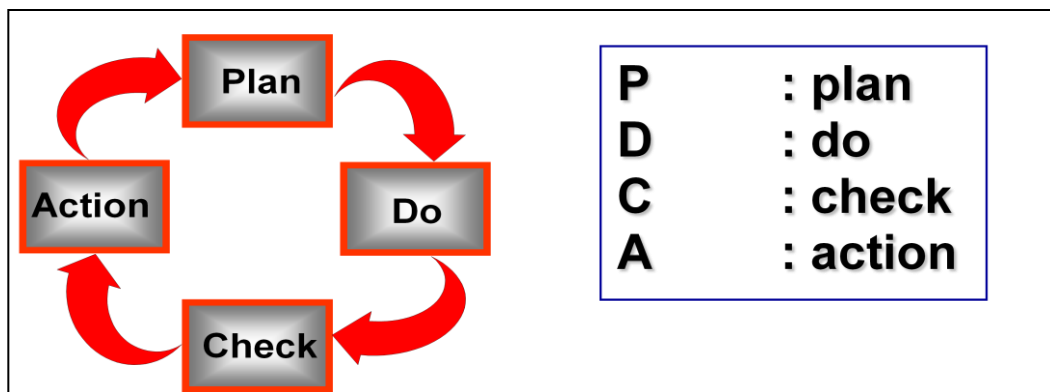


Figure 2 – PDCA Cycle

Source: 20 Key Programme, Facilitators Manual, PFORP Development Institute, Japan, 2000

Through continual improvement in all the 20 Keys, organisations can achieve world class levels of performance and sustain and enhance market share, competitiveness, profitability and customer satisfaction. It is through the holistic application of the 20 Keys that this becomes possible.

2.2.4.4 The key benefits of the 20 Keys programme

This Programme makes it possible for employees at every level to participate in benchmarking their company in terms of the constitution of the workplace and provides a specific method for them to improve towards their goals.

Even skilled employees, provided with superb information, will not contribute to organisational success, if they are not motivated to act in the best interest of the organisation or if they are not given freedom to make decisions and take action.

The 20 Keys therefore act as an enabler for the objectives of CI and focus on the organisational climate for employee motivation and initiative. The benefits of 20 Keys clearly show that organisations are able to enhance market share, competitiveness, profitability and customer satisfaction. By adopting 20 Keys for CI, Management has made an active decision to include 20 Keys in its business strategy and there is a clear link between 20 Keys, Key Objectives and Organisational goals. As on a ship to avoid major disasters the Captain (Management) needs to be focused on the Vision or Strategic issues of the business. However people at the engine room should also know the destination (goal alignment) as well. The Captain (Management) must issue clear cut information to all levels so as to have a shared understanding of 20 Keys for Continuous Improvement. If the information is not issued correctly or not clearly explained it could lead to employees having a different understanding of the improvement initiative.

The next paragraph explores how employees engage in CI whether it is individually or as a group. There are also different schools of thought regarding Continuous Improvement and what the perceived benefits are to organisations as well as the negativity regarding stress in the workplace.

2.3 Shared understanding of the continuous improvement initiative: The employee version

2.3.1 Introduction

Although CI was designed to achieve business excellence, Hines and Rich (2004) reported that CI systems could be viewed as inducing high pressure on employees as well as exploiting them. Williams, K., Harlam, Williams, J., Cutler, Adcroft and Johal (1992) added that CI is de-humanising and exploitative, and Forza (1996) maintains that improvement initiatives could lead to higher stress levels and work intensity among shop floor workers. Employee responses can be defined as a response, usually verbal or by action, by which employees express their dissatisfaction or acceptance towards CI (Boje, 1995 cited in Bryant, 2006). Employee responses to the implementation of Continuous Improvement can impact positively or negatively to the successful implementation throughout the organisation. Zhou and George, 2001 (cited in Bryant, 2006) suggested that employee responses is an active attempt to improve conditions, actively searching for and coming up with new ways of doing things and advocating changes to make things better. Employee responses could be viewed as a constructive response that sends a clear message from employees to upper levels of management concerning problems that exist and need to be corrected. These responses could also be in response to having been taught the basic principles of CI, employees are now equipped with the necessary tools and techniques to engage

in structured problem solving techniques. Employees are able to make pertinent decisions regarding work practices and processes with the aim of making work easier.

According to Wood, 1995 as cited in Zairi, 1999, it is important to associate change to empowerment and learning, and sell it as an opportunity for employee's strengths and skills to be applied to new roles to deliver organisational goals. This process of Continuous Improvement as well as Continuous Personal Improvement asks the employee to accept the challenge to modify their own behaviour, and recognize that self development is a never ending process. As employees improve they realise that mistakes will be made, but these will be viewed as positive sources for reflection, enhancing their self awareness, and serve as indispensable elements for future development. A critical part of an employee's development is the levels of social support the employee experiences. The employee should be able to rely on the employee's supervisor when things get tough at work or the employee should be able to rely on support from the employee's team members. The support of fellow team members in an environment which relies on individuals to work together as a team is key to achieving organisational goals. The next paragraph deals with shop floor teams and how the team collectively takes responsibility for managing their daily work.

2.3.2 Shop floor teams

A shop floor team is likely to be a permanent group of 5 to 15 employees who work in an inter-dependent way to produce a product or service as a whole for internal or external customers, with a high degree of autonomous team based decision making (Wellins, Byham and Wilson, 1991). The teams collectively take responsibility for managing their daily work, including work allocation, co-ordination of supplies and other resources required, monitoring and improvement of performance, and interaction with other teams and/or organisational functions. In addition,

they are likely to have a participative leader, set their own team goals, and encourage training towards being multi-skilled to facilitate job rotation, be involved in staff recruitment and discipline, and possibly set their own budgets (Katzenbach and Smith, 1993). The researcher believes that working in team, individuals need to be empowered to share various management and leadership functions. Individuals must set their own goals which are aligned to the greater good of achieving the team's goals. The team has to make use of individual's strengths of employees to meet the challenges of a changing working environment. As many organizations either willingly, or out of a need to survive become more efficient, they are beginning to embrace many of the benefits offered by flexible, self-disciplined, multi-skilled work teams. Although team work as describe above has its benefits there are also forces that influence team behaviour. An organisation has to determine whether the forces are acting for good or ill, and make interventions to make the effect of those dynamics more positive. The next paragraph examines the unseen forces that operate in a team between different groups of people.

2.3.3 Team dynamics

The Webster's New World Dictionary by Agnes (2003) gives the following definition of dynamics: the science dealing with motions produced by given forces and the forces operative in any field. The interactions of team members are subject to many forces, both external and internal. External forces might include pressure to complete a task by a deadline, or within a limited budget, while internal forces might include pressure from domineering team members to choose a certain course of action, or impatience of some team members with others' modes of participation.

Team dynamics is influenced by many factors, such as the larger context in which the team operates, the organization, the team identity itself, and the mix of individuals within the team.

Within this mix of influences are the individual team members who likely have specific kinds of work to perform and specific roles on the team. Individual members influence the team dynamics as well, so much so that when the composition of the team changes, the team dynamics will change (Berens, Ernst and Smith, 2004). According to Toseland, Jones and Gellis (2004), Team dynamics can be conceptualized as falling within the following five domains:

- a) Communication Processes and Interaction Patterns,
- b) Interpersonal Attraction and Cohesion,
- c) Social Integration and Influence,
- d) Power and Control, and
- e) Culture.

The five domains highlighted the power that group dynamics have to change the lives of people. The synergy that is created when people come together to work in these groups transcends the collection of individual efforts. The group takes on a life of its own, and the group dynamic processes that result have an impact far beyond what the collection of individuals working alone could accomplish by themselves (Toseland et al, 2004). So as the team has to make use of individual's strengths of employees to meet the challenges of a changing working environment, it also has to contend with team dynamics. Failure to recognise the power of team dynamics will minimise the ability of the team to achieve its goals and identify the team as merely a group of individuals. As individuals work in teams to achieve tasks that require collective action, Team Dynamics plays a role in how 20 Keys is understood within the team environment and it should be a variable to be considered when researching how employees understand 20 Keys for CI. To be able to implement and sustain Continuous Improvement an organisation needs the synergy of

people working together as described by Toseland et al (2004), and the next paragraph explores these important keys in the long term sustainability of the improvement initiative.

2.3.4 Teamwork and continuous improvement - key elements in long-term sustainability

As the literature has shown in paragraph 2.2, Continuous Improvement consists of a host of practices intended to improve the operational performance of firms. Some of the practices, such as set-up reduction, improved process capability, and reduced down-time are ends in themselves in that implementation of the practice leads directly to a reduction of operational waste.

Other practices, such as training, statistical process control, housekeeping, and so on are means to the end of waste reduction. Of these different means, process improvement and teamwork are regarded as crucial practices. The management literature has often credited 'kaizen' and the participation of the workforce in process improvement and refinement as being a key element in Japanese manufacturing success. SGA's refers to small group activities which form the core of kaizen activity (Brunet and New, 2003).

Problem-solving teams are central to the kaizen, or continuous improvement, process and are a prominent feature of the work organization of large Japanese manufacturers. (Ichniowski and Shaw, 1999)

The pre-occupation with these two practices, in short, is because CI is the mechanism by which changes are made to the production process to improve operational performance, and teams are the organisational unit regarded as most effective to make these changes. While there are other means by which these changes can come about, such as new technology, in CI, the concern is with improving existing production processes through changing work practices rather than changing the production technology. The problem was that neither management nor employees were prepared for this change. Change involved business processes re-engineering, increased

productivity and effectiveness which led to elements of stress on the shop floor as well as in the organisation as a whole. Including Workplace factors in the framework is important in unravelling how the change impacted on individuals and the organisation.

The next paragraph explores Workplace Factors and looks at a model designed by Karasek & Theorell (1990) which could play a role on how employees respond to CI when faced with these factors.

2.3.5 Workplace factors – The Karasek model

In 1979 Karasek designed a model (Figure 3), which seeks to understand how psychological strain results not from a single aspect of the work environment, but from the joint effects of the demands of a work situation and the range of decision-making freedom (discretion) available to the worker facing those demands. High stress jobs are associated with high job demands, low job control and low social support. Jobs with high demand and high job control produce well-being; learning and personal growth (Karasek & Theorell, 1990). The model incorporates the effects of job demands (physical and psychological), job control and social support. When employees are exposed to Continuous Improvement it more than often results in Continuous personal improvement which challenges employees to modify their own behaviour, and recognize that self development is a never-ending process.

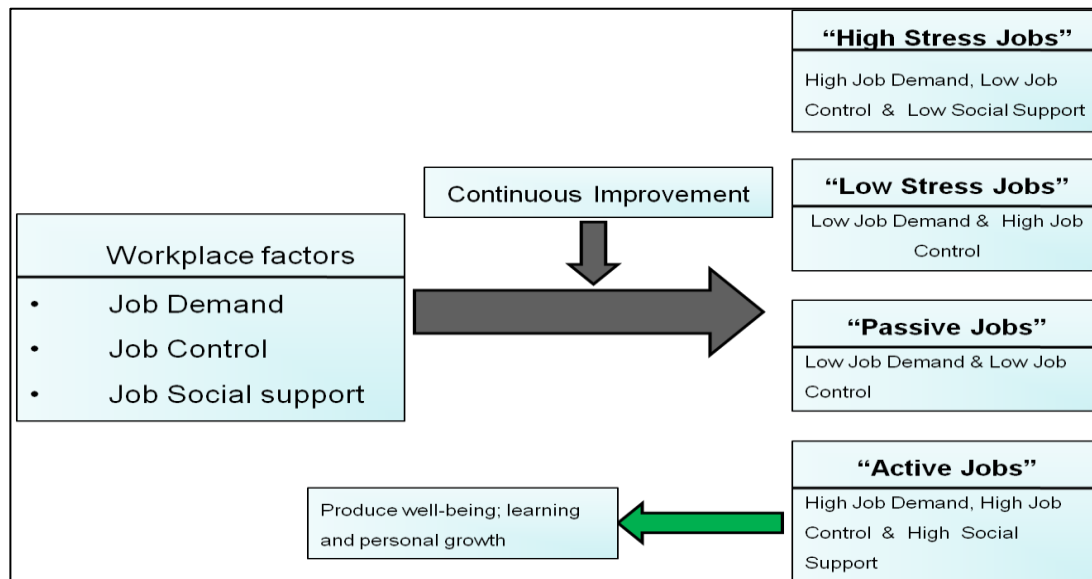


Figure 3 - Karasek's (1979) job demands-decision latitude model

The model highlights that in a manufacturing environment where there is a continuous operation a shop floor employee could be faced with the demand of completing large amount orders or rush to complete a late order. This demand creates a sense of anxiety in some employees leading to levels of stress. This research will not measure the level of stress experienced by the individual, but rather focus on the sources of the stress called stressors. Although there are clear policies and procedures in place to aid the employee in facing these demands, there is often insufficient time or resources to meet the deadlines. One method of assessing how employees cope with these demands is to assess the extent to which the onset of a stressor is predictable (e.g. role clarity and performance feedback). Does the employee have the necessary information in order to plan more efficiently? It is important to include this model in the research as it is an objective measure that plays a role in assessing the employee's well-being.

The next paragraph focus on Management support and to what extent there is support and well as leadership towards the shop floor employees who are embarking on this CI journey. As management is an important to eliminate unnecessary constraints on decision making which makes it a desirable strategy to reduce job strain in specific instances.

2.4 Management support to the CI initiative: The employee version

Management support is important for CI which empowers people to improve and subsequently raise the goals for improvement (Chan, 1993; Worley and Doolen, 2006). Management should provide adequate resources for the implementation of CI efforts, particularly investing in human resources (Boyer and Sovilla, 2003). Kasul and Motwani (1996) define management support as the participation of the upper management team in leading or supporting the CI implementation. Kasul and Motwani (1996) adds that their research has uncovered four distinctive ways that management can support CI implementation namely, allocating budgets and resources, controlling through visibility, monitoring progress and planning for change. By using these four variables as a benchmark, the organisation can measure the level of commitment and leadership that management should invest in the change initiative. Management should not only lead the implementation process, but play an active role in creating a sense of interest and excitement in the implementation to extent that management provides a climate for successful CI implementation (Boyer and Sovilla, 2003). Implementation and planning of the change initiative must be clear throughout the organisation to ensure that there is a clear understanding of what the CI initiative is and aims to achieve.

2.5 Summary of literature review

The literature review incorporates the study of principles, tools and techniques of CI and identified that CI has become a strategic option for many Cape Town manufacturing organisations that want to compete successfully in the global economy. Success with CI can be limited unless it is recognised that employees reception to new improvement initiatives must be considered and form an integral part of the initial implementation process. Below is a list of all

constructs used as well as the authors which forms the basis of the conceptual framework to follow.

Concepts / Variables	Nominal definition	Operationalisation
20 Keys for Continuous Improvement	A company-wide process of focused and continuous incremental innovation leading to a culture of sustained improvement and elimination of waste in all systems and processes. Bicheno, (2004)	The 20 Key's approach ranks the workplace on a five - point scale, with level one designating the worst workplace and level five the best world class workplace. This evaluation forms the standard by which improvement is measured.
Shared Understanding of 20 Keys for CI	Employees demonstrate a shared belief and understanding of the aims and objectives of the CI initiative. Bessant et al., (1994)	Employee participation in CI activities; CI activities are part of main business activities; Employees use appropriate tools and techniques to support CI; Employees use measurement to shape the improvement process; Employees use structured problem solving processes; and Increased levels of experimentation and innovation.
Team Dynamics	Team /Group dynamics are the forces that emerge and take shape as members interact with each other over the life of a team. Toseland, Jones and Gellis (2004)	Communication processes and interaction patterns, Interpersonal attraction and cohesion, Social integration and influence, Power and control, and Culture.
Management support	The participation of the upper management team in leading or supporting the CI implementation. Kasul and Motwani, (1996) Management must play an active role in creating a sense of interest and	Leading the CI initiative (Leadership), Supporting the CI initiative (Support), Providing a climate for the CI initiative.

	<p>excitement in the implementation to extent that that management provides a climate for successful CI implementation.</p> <p>Boyer and Sovilla, (2003)</p>	
Employee Responses	<p>A response, usually verbal or by action, by which employees express their dissatisfaction or acceptance towards CI.</p> <p>Zhou and George, (2001) cited in Bryant, (2006)</p> <p>Workplace Factors - a model which seeks to understand how psychological strain (stress) results not from a single aspect of the work environment, but from the joint effects of the demands of a work situation and the range of decision-making freedom (discretion) available to the worker facing those demands.</p> <p>Karasek & Theorell, (1990)</p>	<p>Responses relating to High Stress Job</p> <p>Responses relating to Low Stress Jobs</p> <p>Responses relating to Passive Jobs</p> <p>Responses relating to Active Jobs</p>

Table 2 - List of Constructs and authors (Key arguments) Researchers own list

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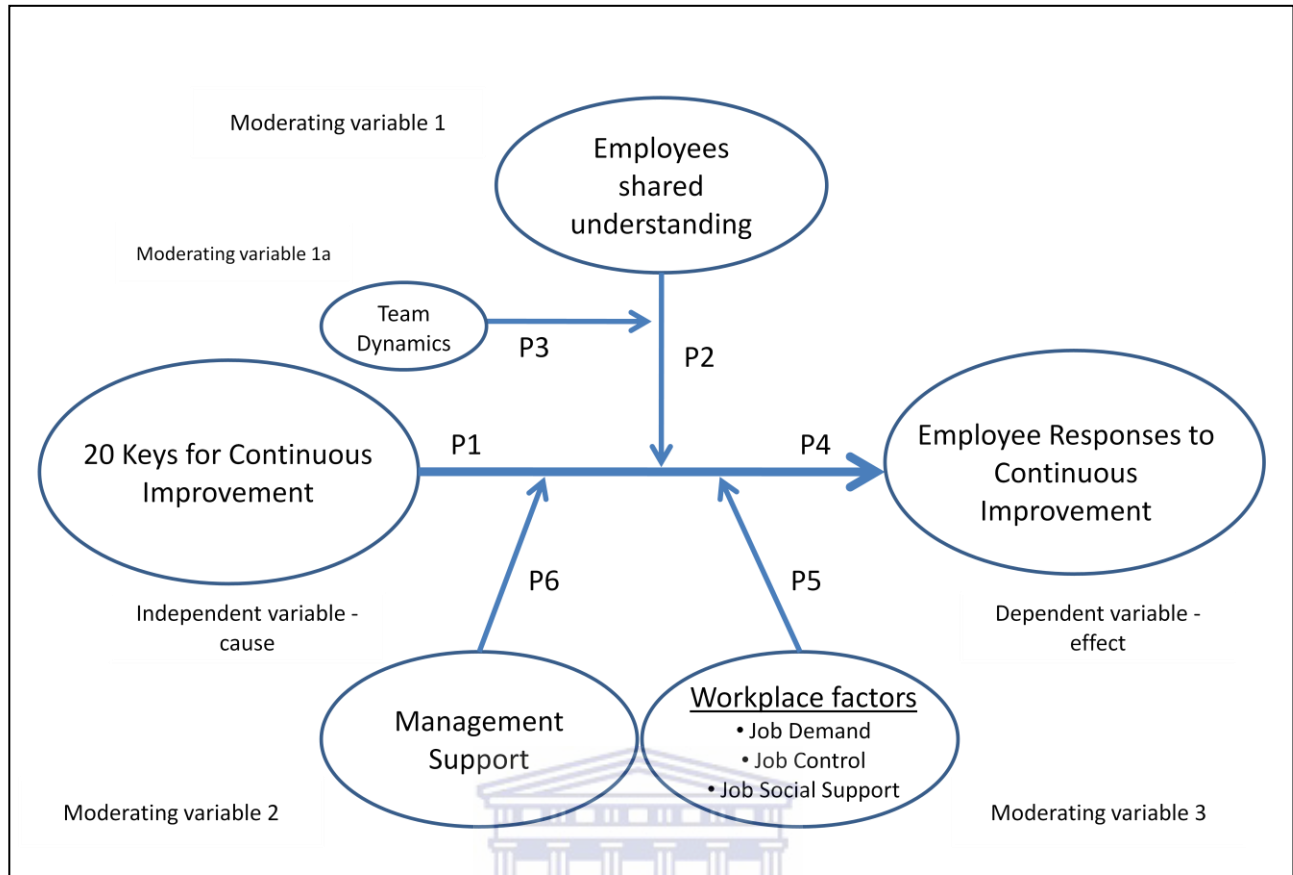


Figure 4 – Conceptual Framework Employee Responses to CI

Source: Researchers own framework developed from the Literature Review

2.5 Conceptual framework development – employee responses to 20 Keys

The Conceptual framework was developed from the literature review which encompasses the introduction of 20 Keys for CI at the Manufacturing Company. Management had decided to invest in an improvement initiative such as 20 Keys which concentrated on what was most vital in terms of technology development for the company. It also included the ability of people to learn new technology and their skills level operating the technology with idea of long term improvement. Implementation and planning of the change initiative must be clear throughout the organisation to ensure that there is a clear understanding of what the CI initiative is and aims to achieve. An important aspect of CI is that all employees play an active role in the successful implementation and subsequently the long term viability of the improvement initiative.

Employees must have a clear understanding of the benefits of such a CI initiative and take ownership of the process on a shop floor level. As individuals work in teams to achieve tasks that require collective action, Team Dynamics plays a role in how 20 Keys is understood within the team environment and it should be a variable to be considered when researching how employees understand 20 Keys for CI. Management should play an active role in creating a sense of interest and excitement in the implementation to extent that it provides a climate for successful CI implementation. The problem was that neither management nor employees were prepared for this change. Change involved business processes re-engineering, increased productivity and effectiveness which led to elements of stress on the shop floor as well as in the organisation as a whole. Including Workplace factors in the framework is important in unravelling how the change impacted on individuals and the organisation.



Chapter 3: Case description

This chapter informs the contextual survey background (manufacturing organisation) and provides an understanding of the organisational changes and challenges experienced at Parmalat with regard to 20 Keys for CI.

3.1 Introduction

Parmalat is controlled by the Lactalis Group since July 15, 2011. The Parmalat Group is a global player in the production and distribution of foods that are essential for everyday wellness: milk, dairy products (yogurt, cream based sauces, desserts and cheese) and fruit beverages, which generated revenues of about 4.5 billion euro's in 2011. About 14,000 people work at Parmalat's facilities in Europe, the Americas, Africa and Australia. The Group is present in 16 countries with 69 factories and in 9 countries through licensing agreements.

Parmalat has a strong tradition of innovation and develops products with a high value added to improve the diet of its customers. The global brands of the Group are Parmalat for milk and dairy products and Santal for fruit beverages. Vaalia and Zymil are international brands dedicated to functional products with a high value added. Among other local brands that play a key role in their respective markets, the most important include: Lactantia, Black Diamond and Astro in Canada; Pauls, Ice Break and Oak in Australia; Bonnita, Everfresh, Simonsberg, Melrose and Sterie Stumpie in South Africa; Centrale del Latte di Roma, Berna, Chef, Puro Blu, Carnini, Lactis and Latte Sole in Italy; Galbani, Président, Sorrento, Precious e Mozzarella Fresca in the United States of America. (Parmalat website, [www. Parmalat SA.co.za](http://www.Parmalat SA.co.za))

3.2 Parmalat SA

3.2.1 Company background

The name Parmalat is a combination of the Parma region in Italy's name and latte, the Italian word for milk. Parmalat is one of the major players in the South African dairy industry and has been active in the South African dairy industry since 1998. Parmalat is known for its dairy innovations and quality and the company's annual top performances at the prestigious SA Dairy Championships is testament to the company's delivery on its promise of producing products on a par with international best standards. Parmalat's product basket includes award-winning cheeses under the Parmalat, Simonsberg and Melrose brands, iconic flavoured milks such as Steri Stumpie, a delicious range of yoghurts and long-life milks, as well as butter, ice cream, cream and fruit juice. (Parmalat website, [www. Parmalat SA.co.za](http://www.Parmalat SA.co.za))

3.2.2 Business environment

The Group's activities are focused on increasing sales volumes and revenues. Marketing activities that target the Group's primary brands and programs to strengthen its presence in market segments with high growth rates, albeit with lower profit margins, are already being deployed in support of this goal. Acceleration in the implementation of innovation-oriented projects is another important element in the effort to stimulate growth. Programs already under way to contain costs along the entire value chain, which, consequently, will affect the procurement, transformation, distribution and service processes, are aimed at freeing resources to support growth, while maintaining and adequate profitability profile. (Parmalat website, [www. Parmalat SA.co.za](http://www.Parmalat SA.co.za))

The thrust of Parmalat's multinational strategy is to play an integral part in the health and well-being of consumers throughout the world. An increasingly significant pillar of this strategy is the group's aim to establish itself as a top player in the emerging global market for high value-added functional foods. To enable the organisation to achieve this it needed the full support of its supply chain and Parmalat's main raw materials supplier was the South African dairy industry.

The South African dairy industry provides healthy, nutritious products to millions of South Africans each year. South Africa roughly produces 200 million litres of milk per month, translating into 2.4 billion litres of milk per year, while Namibia produces 22 million litres per year. The South African dairy industry operates to free market principles and Parmalat is one of the leaders in this highly competitive industry. The local industry provides work to more than 60000 people, contributing to the country's economy and sustaining job industries in the industry. The South African market is characterised by high competition in an unregulated market where no cooperatives exist at national level, but production and raw materials supply are highly fragmented; the Ultra-High-Temperature (UHT) milk business is considerably more profitable than that of pasteurized milk: Parmalat's strategy is, in fact, that of gradually reducing its fresh milk business and concentrating on UHT milk. (Parmalat website, [www. Parmalat SA.co.za](http://www.ParmalatSA.co.za))

3.3 Reasons for 20 Keys implementation

Over the last ten years, the economic environment for manufacturing enterprises in South Africa has changed drastically. Low costs and high quality are already taken for granted as essential to competitive success, and increasing attention is now being paid to the element of time. Faster product development and shorter lead times in procurement, production and distribution are the critical competitive factors of today (Stalk et al, 1990). For this reason, various economic

systems are being employed to address this issue. More specifically, it is argued that the reorganisation of manufacturing according to CI principles can trigger a radical organisational change towards a CI enterprise. This implies a new structure, strategy and culture with positive effects on profitability.

In 2010, CEO Nick Wentzel announced that the company would implement the 20 Keys system with immediate effect. The 20 Keys approach is aimed at improving operational excellence and implementing best operating practices within Parmalat. The mini business concept seeks to develop a sense of purpose and belonging among employees, allowing them to understand the needs of customers and the demands of the greater business. 20 Keys was initiated in 2010 at Parmalat and implementation occurred over a three-year period and affected all functions within Parmalat.

The program was made up in order to:

- Realise the strategic objectives in an effective manner
- Increase the learning capacity of the company
- Eliminate all forms of waste
- Motivate the employees to strive for continuous improvement
- To stay ahead of the competition in a fast changing world, profitably and with a long-term perspective.



Figure 5 - 20 Keys implementation at Parmalat

Source: Presentation by Riaan Van Greuning, Parmalat Group Manager SA: Manufacturing, 2013

Figure 6 explains the journey that Parmalat took when it embarked on 20 Keys for Continuous Improvement. At the start a 20 Keys Site Programme Sponsor and Manager were appointed which would oversee and manage the programme. Respective Key champions were appointed and received extensive training. A support structure was established in the form of a 20 Keys Steering Committee which included the necessary stakeholders (Fig. 7). Floor champions from all levels were trained in relevant areas to support Key champions. Monthly audits were done by Floor and Key champions and these audits formed the basis for improvement. External audits were done twice a year and there were also monthly supportive meetings and feedback sessions.

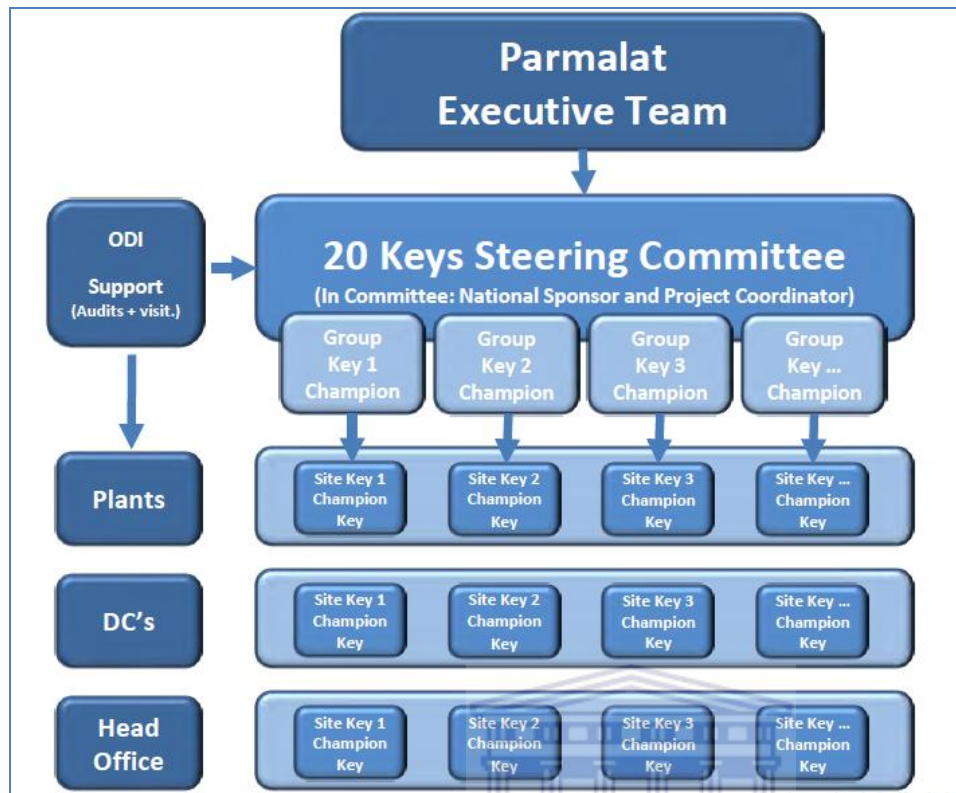


Figure 6 - Parmalat 20 Keys Committee and Support Structure

Source: Presentation by Riaan Van Greuning, Parmalat Group Manager SA: Manufacturing, 2013

In the beginning there was initial resistance to change with employees feeling that 20 Keys was not for them and that 20 Keys would be extra work. Employees felt that they preferred the “old” way of doing things and that only management should see the respective information. There were also language barriers as english was not necessarily the first language of the trainer or the team. Teams had to wait too long to implement a key after training was received and the team would find it difficult to remember the critical principles of the key.

Nevertheless Parmalat continued with 20 Keys for CI and started seeing more and more model areas in the various plants. Employees exerted a positive energy towards achieving yearly targets and adopted 20 Keys concepts as a method of conducting daily tasks at Parmalat because they felt empowered and valued by the organisation. The organisation started seeing productivity

improvements in all plants, such as Process milk per man hour and Pre pack Kg production per man hour which impacted on the organisations bottom line.

Through the 20 Keys methodology and employee empowerment, teams were inspired to provide ideas for improvement and it encouraged them to build a problem solving capacity at work. Teams were also challenged to identify all forms of waste and to eliminate it by using several of the tools and techniques derived from the 20 Keys programme.

3.4 20 Keys for continuous improvement sustainability at Parmalat

In 2010 Parmalat started using a global benchmarking system called 20 Keys to engage and train their employees so that a common language could be spoken throughout the business regarding Continuous Improvement. The company believed that by doing it in that manner it had been an important component in their subsequent success. The Key 2 (Goal Alignment) champion is responsible for the goals of each mini business within the company aligning with those of the next level, the company and its Chief Executive Officer. Although simplistic in nature the company believed that if you wanted to implement something at a shop floor level where for example literacy and numeracy is a problem, these tools are extremely important since the programme uses pictures but also world class practices. The company has seen huge improvements in many of the keys and is sharing these successes with other companies. Aligned with this and against the national backdrop of major skills shortages, Parmalat has created a large, well structured development programme for its 2,000 employees (Pulse, 2010. Parmalat company magazine, Issue no: 48). Parmalat is extremely proud of its structured development programme. In each factory the company has human capital development for people, focusing on a plan for every department on how to develop individuals.

According to Liker (2004), an organisation aiming to embrace CI completely must understand CI as a long term philosophy which is about the correct processes that will produce the correct results which adds value to the organisation, by continuously developing its employees by continuously solving problems.

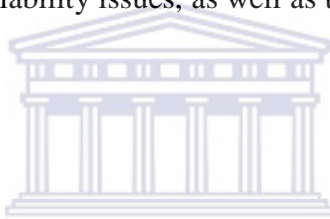
Parmalat is spending a lot on apprentice and graduate programmes which is very successful. In the past the company had to battle to get technical staff for its operations and had to pay huge premiums to find these technicians in the marketplace. Parmalat are now developing many of these technical staff in-house. Some will be the company's future managers, with a general worker able to follow a specific route up to a managerial role. The company strongly believes that many other companies can learn from Parmalat's success.



Chapter 4: Research methodology

4.1 Introduction

This chapter describes the research design and methodology used to assess employees' responses with regard to the implementation of a new workplace improvement programme. The chapter begins by stating the research assumptions and the related paradigms. It starts by discussing the philosophical underpinnings and identifying the specific paradigm that guides the selection of the research methods used in the study. This is followed by a discussion of the different research methods and the research design selected for the study. A further discussion includes the data-collection methods, validity and reliability issues, as well as the ethical considerations, which are also presented.



4.2 Research design

A research design maps out the overall framework for the procedures that guides the researcher in collecting the appropriate data and in turn analysing the data correctly (Leedy and Ormrod, 2005). A case study research was conducted in Cape Town at a manufacturing company in order to assess how shop floor employees responded to 20 Keys for CI.

4.3 Research method

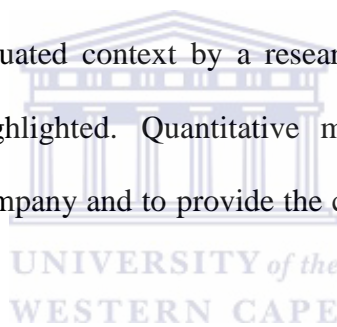
4.3.1 Introduction

Several definitions of what cases are or case method is, as used in the social sciences, offer a starting point for clarifying what the method entails. The classic text on case method, Yin (2003), defines a case as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident. Verschuren (2003) (as cited by Grütter, 2007), is critical of definitions of cases

or case method based on the unit of analysis or the process of doing case research and he asserts that the distinguishing characteristic of case method is its holistic nature.

4.3.2 The case study method

This case study made use of a qualitative research approach. Qualitative research was used to answer questions about the complex nature of phenomena, often with the purpose of describing and understanding the phenomena from the participant's point of view (Leedy and Ormrod, 2005). Merriam (1998) defines case study as the product of an investigation, a case study is an intensive description and analysis of a single entity, phenomenon, or social unit. Chelimsky and Grosshans (1990) offer similar definitions, in which complexity of subject matter and the richness of data gathered in a situated context by a researcher with relatively low power to manipulate the situation are highlighted. Quantitative methods were used to gather the background information on the company and to provide the context within which the study took place.



4.3.2.1 Reason for case method choice

The reason for undertaking a case-study method in this research is that CI is a real-life event where more insight can be gained as well as allowing for a better understanding of the employees responses regarding CI, which will be studied within a real-life context (on the shop floor) (Mhlongo 2006). When research contexts are complex, methods such as case method can enable the researcher to capture the complexity as required (Stuart, McCutcheon, Handfield, McLachlin and Samson, 2002). Yin (2003) added that the case study is appropriate when the researcher has little control over the events being studied.

Mohrman et al (1985) and Voss, Tsikriktsis and Frohlich (2002) proposed that qualitative case techniques are better suited to unravel the changes within the organisation, while quantitative

techniques can be used to measure impact. While other conditions may be present that also justify the use of case method, the ones listed above are regarded as sufficient to justify the use of the case technique in this research.

4.3.2.2 Case study research process

Face-to-face in-depth interviews were conducted with managers and shop floor employees in order to extract qualitative data as per Table 1. Unstructured interviews were conducted as informal conversations on the shop floor with the researcher asking follow-up questions in response to statements made by the interviewees. The detail and depth of information that can be gathered by qualitative means is itself of great value when interpreting why and how organisational initiatives impact on performance (Samson and Terziowski, 1999; Voss et al, 2002). Observations of shop floor work practices as well as the evaluation of company documents will be used to gather data. The interviews consisted of two major parts: a personal profile of the respondent and questions relating to their interpretation of the characteristics and purpose of the CI initiative. The employees were asked to respond to questions about their pre-conceived ideas of CI implementation and the use of 20 Keys on the shop floor. In addition to questions on CI, several questions relating to workplace factors will be included in the interview.

4.3.3 Data collection process and sampling

Data was collected through semi-structured interviews, observations and evaluation of company documents. The interviews conducted by the researcher took place at the Parmalat factory over a two month period with the researcher spending certain days at the manufacturing organisation to interview five interviewees per day. The company consists of 3 departments namely; production, receiving/despatch and engineering which consist of 10 teams with an average of 12 employees per team. The 3 departments are excluding the office staff. Interview subjects were selected from

half the amount of members in 5 teams from different departments within the organisation which totalled 30. Selecting interview subjects from various teams throughout the organisation allowed for good representation for the interview process. The researcher spent half of the day on certain days in the month on the shop floor observing and having informal discussions with shop floor employees. Judgement or purposeful samples was utilised so that the most productive sample could be selected to answer the research question. A purposeful sample is one where sample members are chosen with a specific purpose or objective in mind; the sample is thus intentionally selected to be non-representative (Diamantopoulos & Schelgelmilch, 2004). The participants were selected by the company representatives to include an equal number of persons with positive and persons with critical opinions, as there was no aim to survey how common the different opinions were. The unit of analysis was shop floor employees who had sufficient training with regard to 20 Keys for CI. The reason for choosing this method is because those employees would be able to provide the most information about 20 Keys for CI and the implementation thereof. The population consisted of 160 employees and the sample size was 30 employees.

Month	no. of employees interviewed
September	15
October	15

Table 3 - Employee interview schedule 2013

4.3.4 Questionnaire design

In August 2013, the researcher took the pilot questionnaire and tested the interview questions at the researchers own company which also utilises 20 Keys for CI. He was assisted by an office

staff member to distribute and explain the questionnaire to seven employees. The samples were selected randomly. The researcher collected the questionnaires immediately after they were completed by the respondents. The reason the researcher chose to test the interview questionnaire at the researchers own organisation was because the employees understood the principles of 20 Keys for CI and could highlight vagueness in the questionnaire. The questionnaire was tested for reliability and validity. The questionnaire was also tested for efficacy of judgement respondent approach (employees who had sufficient training with regard to the principles of 20 Keys for CI) and timing to complete.

The researcher found there were some problems with vagueness in the pilot questionnaire as certain questions had to be simplified with regard to wording. The researcher also found that certain questions were double barrelled and had to be changed for clarity.

The researcher made the changes as follows:

Concept	No. of questions in first draft	No. of questions in the final draft	Comments
Shared Understanding of 20 Keys for CI	3	3	Left the question amount as is no changes.
Team Dynamics	4	5	Changed 1 double barrelled question
Management Support	3	4	Changed 1 double barrelled question Changed wording in Q15
Workplace Factors	5	5	Left the question amount as is no changes.

Responses to 20 Keys for CI	7	8	Added 1 more question to measure the concept better
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Table 4 - Modification of Interview Questionnaire

The final questionnaire consisted of 30 questions and the interview was timed with a stopwatch to take an average of 50 minutes to respond.

4.3.5 The Interview questionnaire

The interviews consisted of two major parts: a personal profile of the respondent and questions relating to their understanding of the characteristics and purpose of the CI initiative. In addition to questions on CI, several questions relating to workplace factors were included in the interview. Regarding the personal profile, the respondents completed information about their gender, age, years of work at Parmalat, educational qualification and job title. The decision-making part consisted of several questions to which the respondent had to reply with a numerical figure ranking from 1 to 5. The scores signified the following:

- (a) 1 = strongly agree;
- (b) 2 = agree;
- (c) 3 = do not know
- (d) 4 = do not agree; and
- (e) 5 = strongly disagree

These numerical figures were in separate boxes, and respondents indicated their choice by an “X” in the selected box. There was a space for comments below these boxes.

The researcher followed the Likert scale style in designing the questionnaire. The research variables were measured on a 5-points Likert style scale, with a score of 1 representing “strongly

agree” and a score of 5 representing “strongly disagree”. In such scales no judges are used to rank the scale statements: it is assumed that all subjects will perceive “strongly agree” as expressing greater favour towards the attitude statements than “moderately agree” and “strongly disagree” (Likert, 1967; Lankford 1994).

In summary the interview questionnaire comprised of 2 sections; Section A requires a list of biographical data and Section B consists of a list of qualitative, open-ended interview questions that required participants to rate their typical behaviour of responses according to the Likert-type scale. The researcher was able to probe with questions such as “explain why” and “how”. Open-ended questions were added which would seek further understanding from the participants and to close-out the interview. Where participants gave incomplete answers or provided an answer which they did not elaborate on, the researcher probed further. Probes helped to elicit more responses to open-ended questions.

From the beginning of this study, the researcher started making notes regarding his observations on the shop-floor. He also recorded the conversations with various employees during the visits to Parmalat. Questions 6 to 8 of the questionnaire related to employees shared understanding of 20 Keys for CI. An important aspect of CI is that all employees play an active role in the successful implementation and subsequently the long term viability of the improvement initiative. Employees must have a clear understanding of the benefits of such a CI initiative and take ownership of the process on a shop floor level. Question 9 to 13 related to team dynamics. As individuals work in teams to achieve tasks that require collective action, team dynamics plays a role in how 20 Keys is understood within the team environment and it should be a variable to be considered when researching how employees understand 20 Keys for CI. Question 14 to 17 related to management support. Management should play an active role in creating a sense of

interest and excitement in the implementation to extent that it provides a climate for successful CI implementation. Question 18 to 22 related to workplace factors. Including Workplace factors in the questionnaire is important in unravelling how the change impacted on individuals and the organisation. Question 23 to 30 related to employees responses to 20 Keys for CI. Successful implementation includes employee involvement and creating an environment where employees feel part of the implementation process.

4.3.6 Data analysis

Although the method of data collection was qualitative and quantitative; the interpretation is based primarily on a qualitative approach. Qualitative studies require sufficient freedom and scope to unlock the natural development of action and representation that the researcher wishes to capture (Henning, Van Rensburg and Smith 2010). After the interviews were transcribed and checked for completeness and errors, the text was ready for the next step in the research process which is called the analysis process. While analysing qualitative data, the notes transcribed were integrated and categorized under appropriate themes, the response categories then grouped, and subjected to appropriate data analysis. By using multiple methods such as interviews and questionnaires, the researcher establishes convergent validity and a sense of reliability of the data (Sekaran, 2003).

The researcher extracted key themes from the individual interview transcripts, according to the research questions. These themes were categorised in a coherent way, and placed in a tabular format, as shown in Table 5 below. Keywords or behaviours were listed under the individual themes which allowed the researcher to note a positive or negative response relating to particular research question. Thematic analysis refers to ‘coding and categorising as well as extracting and constructing themes from categories’ also referred to as ‘thematic organisation’ (Henning et al.,

2010). The actual coding and categorizing of the data is to get to grip with the content which then becomes part of the analysis process.

Question 7:	Categories – sorted according to themes' relevance. Example: Theme – A Continuous Improvement mindset & attitude amongst all employees
20 Keys provides me with the necessary tools and techniques to engage in structured problem solving techniques.	<ul style="list-style-type: none"> • We can gather information and get down to the root cause of a problem. • Using the 5 Why's I can get to the root cause and analyse problems. • Small group activity to solve the problem by using the 5 Why's or the Fishbone diagram.

Table 5 – Example of key themes extracted from the individual interview transcripts

4.4 Construct and internal validity

Construct validity ensures that the variables used in the research are measured correctly and appropriately. In order to prevent bias, multiple sources of information will be collected through triangulation. The purpose of triangulation is to corroborate whether the phenomena observed or recorded through qualitative data collection are indeed as it was observed. Triangulation is important to confirm both constructs and the relationships between constructs (Eisenhardt, 1989). Semi-structured, face-to-face interviews with employees, observation and an evaluation of company documents were used as sources of information for triangulation (Mhlongo 2006).

According to Yin (2003) internal validity is the extent to which we can establish a causal relationship, whereby certain conditions are shown to lead to other conditions. Yin (2003) regarded pattern matching as a good way to strengthen internal validity and in case study research patterns may be related to the independent or dependant variables (or both). Pattern matching can also be used for explaining simpler patterns with few variables provided. This

research will rely to a large extent on pattern matching to interpret the qualitative findings. Pattern matching always involves an attempt to link two patterns where one is a theoretical pattern and the other is an observed or operational one (Trochim, 2005). This research will seek to assess if there is a variation in the independent variable (CI implementation) and matching variation in the dependent variable (employee's response to CI).

4.5 External validity and reliability

External validity undertakes to find if in fact the researcher's conclusions are generalizable to other environments outside of the current research. The outcomes of the study will be difficult to generalize to other organisations due to the limited nature of this study in terms of the sample size and the fact that only one manufacturing organisation will be studied. The study's conclusions will be restricted to organisations which are similar to that of the research (Mhlongo 2006).

Reliability is concerned with the level to which the research can be repeated by other researchers to test the findings of the research. Reliability refers to the issue of whether the evidence and the measures used are consistent and stable (Yin, 1994). This requires making data collection procedures and/or the data itself explicit, so that analysis can be replicated.

4.6 Ethical considerations

Ethical guidelines were practiced during the fieldwork process, as human subjects participated in the in-depth interviews. Before, the in-depth interviews were conducted; the participants were informed about the research project and were provided with an overview of the research. Prior arrangements between the researcher and the participants occurred to determine the date, time and place of the commencement of the interviews. Gubrium and Holstein (2001) state "once the

researcher identifies a respondent, she or he must then ask them if they will agree to be interviewed, a process that usually accompanies obtaining informed consent”. The researcher is thus responsible for presenting the informed consent form to the participant, and is only able to commence with the interview after the participant has agreed to the terms of the form and signed it. Gubrium and Holstein (2001) explains that assurance must be given to the participants while the research is conducted. The informed consent form served as a surety given to the participant from the researcher. The informed consent form is designed to ensure that the researcher will respect the participants’ wishes to remain anonymous, unless requested otherwise by the participant.

4.7 Conclusion

This chapter has outlined the methodological structure of the study. The two main schools of thought intended to guide the various research methods were the positivist for quantitative research methods, and the interpretivist for qualitative research methods. However, based on the data-collection outcome, the researcher adopted a single main school of thought, that is, the interpretivist paradigm. The interpretivist considers the world to be socially constructed and allows in-depth study of the phenomena; while the researcher becomes a significant part of the study progression. Selecting the right paradigm was dependent on the philosophical assumption of the researcher, given the research questions; hence, this study was mainly informed by the Interpretivist school of thought.

Chapter 5: Interpretation and discussion of findings

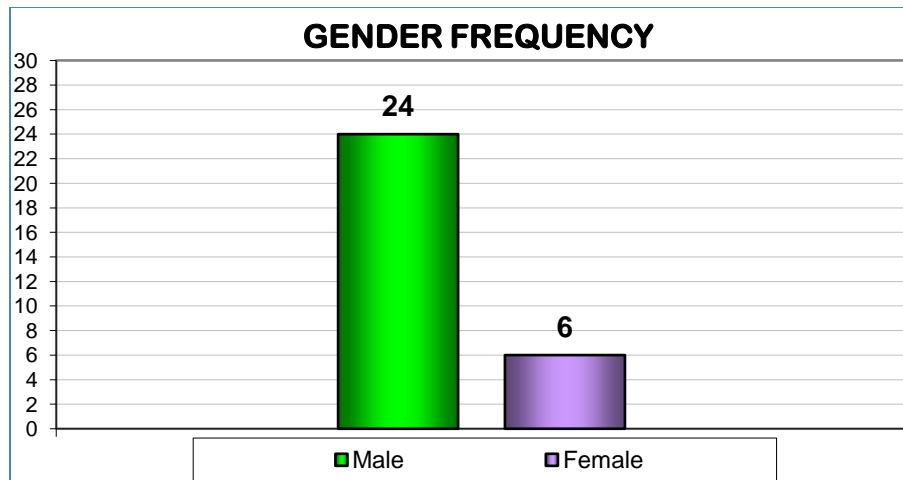
5.1 Introduction

This study has used the conceptual model presented in Chapter 2 to assess employees' responses with regard to the implementation of a new workplace improvement programme. The purpose of this research was to focus on the understanding that could be gained about employees' responses to organisational change using qualitative research. This study highlighted the factors which are necessary for the successful implementation of CI on the shop floor. This chapter presents and discusses the results of the measuring instrument and interview sessions conducted. It will conclude with all the other findings that the researcher observed. The study has used documents and semi-structured interviews for the data collection. The findings from the interviews are presented in a graphical as well as narrative format; and direct quotes are provided in some areas. The content-analysis technique is used to extract both the themes identified by the literature review and the emerging themes from the empirical study. Quantitative methods were used to gather the background information on the company and to provide the context within which the study took place.

5.2 Personal profiles of the respondents

5.2.1 Gender

Thirty people were surveyed at Parmalat. From the 30 respondents 24 (80%) were male and 6 (20%) were female. The majority of respondents were male. As displayed in Graph 5 there is a high job frequency of operators which is largely attributed to the type of process jobs available on the shop floor. This is dominated by males and hence the high respondent rate from males.

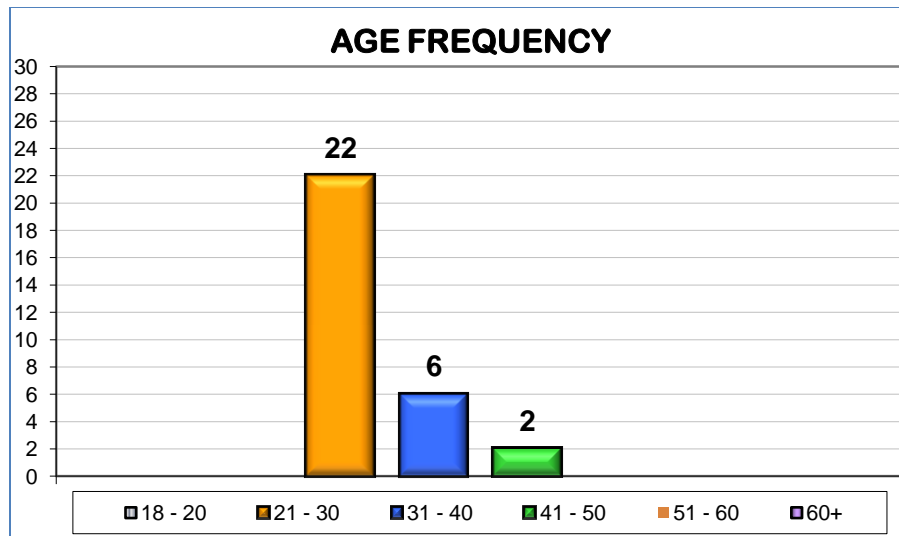


Graph 1 - Gender Frequency

5.2.2 Age

All the respondents were between ages 21 and 50 years. The majority of respondents 22 (73%) were aged between 21 and 30 years. Six respondents (20%) were aged between 31 and 40 years. Two respondents aged between 41 and 50 years, were the least at 7%.

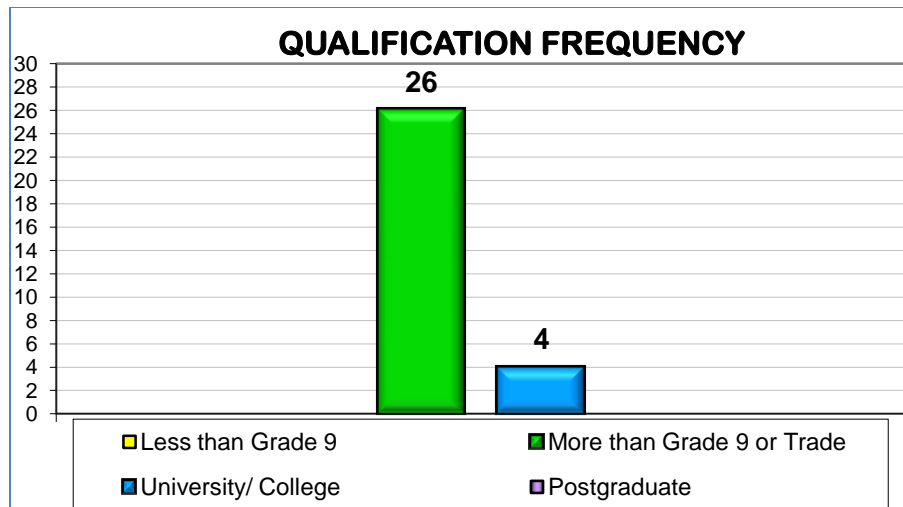
Based on graph 2, it can be argued that majority of the employees interviewed at Parmalat were young, aged between 21 and 30 years. This could be considered positive for CI as younger employees engage actively in CI activities and these employees use measurement to shape the improvement process by using root cause analysis to eliminate wasteful activities (Bessant et al, 2004). In best practise organisations it is recognised that employees at all levels have the capability and willingness to generate and implement many improvements in their work.



Graph 2 - Age Frequency

5.2.3 Qualifications

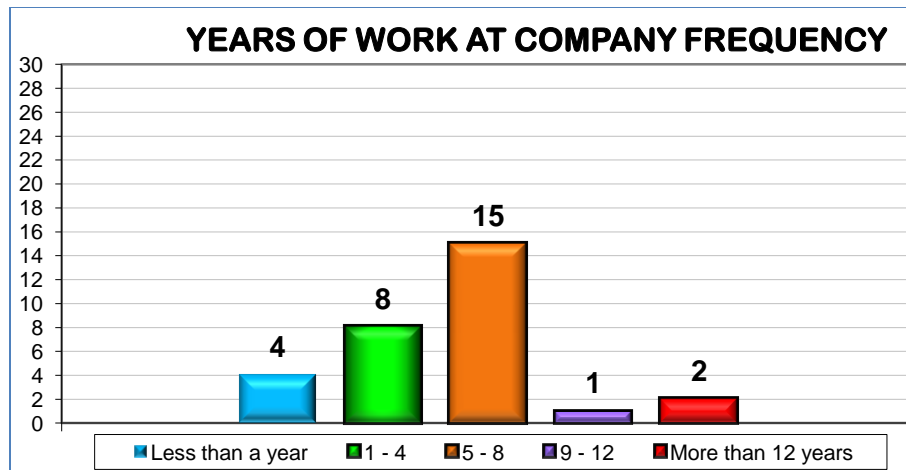
At Parmalat, as reflected in graph 3, 26 (87%) respondents indicated that their level of education is more than grade 9 or have some form of trade. Majority of respondents in this category are mainly shop floor workers who are either operators or general workers. Only 4 (13%) respondents are holding an Undergraduate University or College degree. It is interesting to note that the percentage of respondents who hold an Undergraduate University or College degree are those respondents who are considered specialist/technician or play a supervisory role. Based on the above and as indicated in Graph 2, it can be argued that Parmalat's work force is young with basic education and most of the training occurs in house with general workers gaining experience and valuable skills by learning on the job and in turn becoming operators and supervisors.



Graph 3 - Qualifications Frequency

5.2.4 Years of work at company

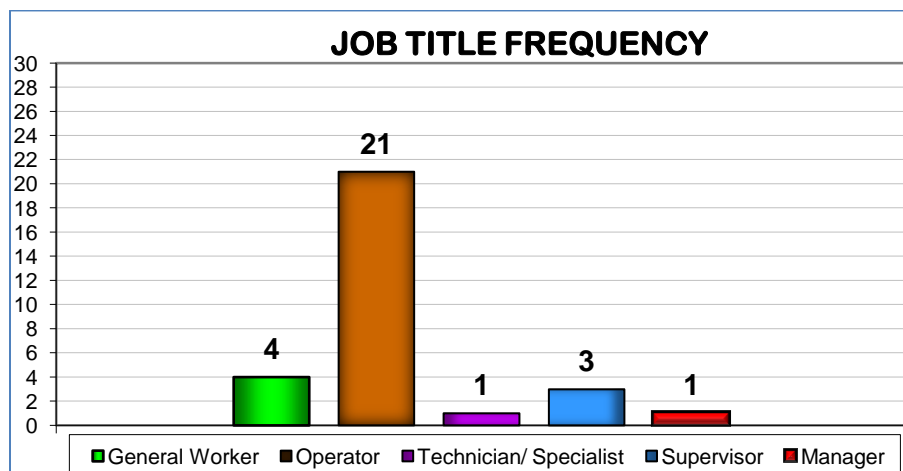
Respondents working at the company for less than a year totals 4 (13%). Respondents working at the company between 1 and 4 years totals 8 (27%), this is the second highest in this category. Majority of respondents are in this category 15 (50%) and have been working for the company between 5 and 8 years. Only 1 (3%) respondent has been working for the company between 9 and 12 years and 2 (7%) respondents are working for the company for more than 12 years. From graph 5 it is noted that general workers 4 (13%) occupy the category with less than a year's occupation at the company. Based on graph 5 it is noted that senior operators occupy the category between 5 to 8 years occupation at the company. The researcher was advised by the shift supervisors that senior operators have to be trained and become skilled in all parts of the process which takes an average of 6 years to complete.



Graph 4 - Years of work at Company Frequency

5.2.5 Job title/Position

From the 30 respondents surveyed 4 (13%) are general workers which as highlighted in graph 4 are only working at the company for less than a year. Operators make up the majority of this category amounting to 21 (70%) and are dominated by males. Only 1 (3%) respondent is a specialist/technician. Respondents that are supervisors are 3 (10%). Only 1 (3%) manager was surveyed which as highlighted in graph 4 has more than 12 year's service at the company.



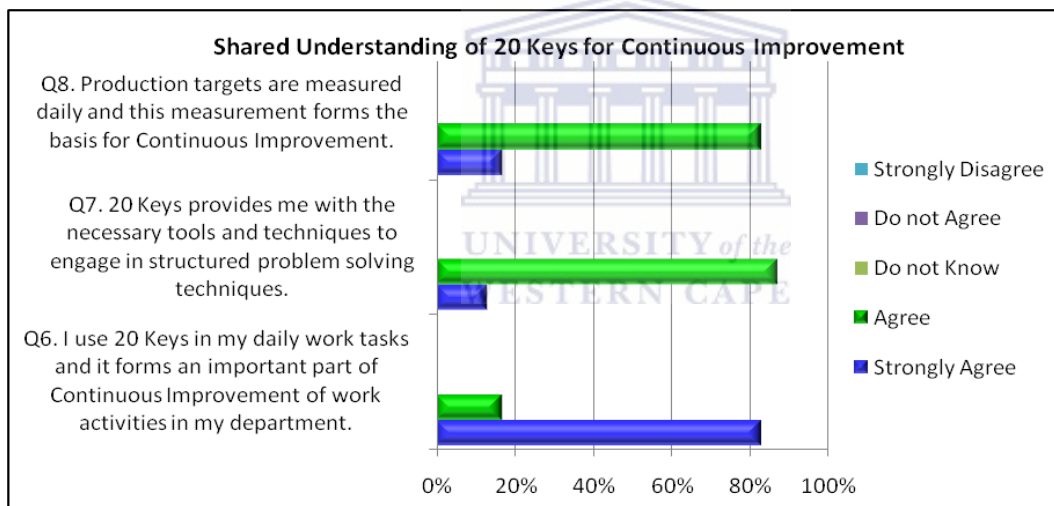
Graph 5 - Job Title Frequency

5.3 Shared understanding of 20 Keys for continuous improvement

Paragraph 5.3 to 5.7 was analysed as follows;

For each finding the researcher included a short description of the graph as well as included quotes from the interviews.

The researcher extracted key themes from the individual interview transcripts, according to the research questions. These themes were categorised in a coherent way, and placed in a tabular format. Based on the themes extracted the researcher noted a positive or negative response relating to particular research question.



Graph 6 - Shared Understanding of 20 Keys for Continuous Improvement

From the 30 respondents with regard to Question 6, 83% strongly agree and 17% agree.

Question 6:	Theme – A Continuous Improvement mindset & attitude amongst all employees
I use 20 Keys in my daily work tasks and it forms an important part of Continuous Improvement of work activities in my department.	A way of doing things – Key 1 Cleaning, Key 3 Small group activity. Eliminating wasteful activities – not having to look for things. Being pro-active and making your work easier. Creating workplace discipline by having clear goals set for the team.

Question 6 - General worker: *“our motto is to clean as you go”*

From the 30 respondents with regard to Question 7, 87% agree and 13% strongly agree.

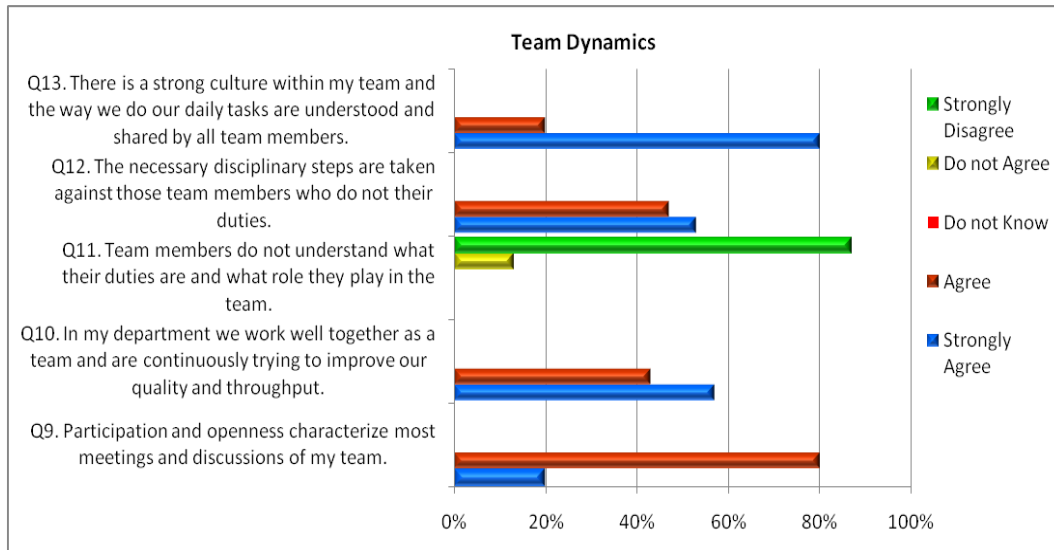
Question 7:	Theme – Applying the appropriate tools and techniques for Continuous Improvement
20 Keys provides me with the necessary tools and techniques to engage in structured problem solving techniques.	Gather information and get down to the root cause of a problem. Using the 5 Why's I can get to the root cause and analyse problems. Small group activity to solve the problem by using the 5 Why's or the Fishbone diagram.

Question 7 - Operator: *“We use Key 3 (Small Group Activities) to solve line problems eg. The F-Line (Steri Stumpie) had problems with the counter sensors and we had to continuously stop the line to wash down the sensors. This resulted in dumping of the product and machine downtime. We had a Key 3 session with the technician and shift controller and came up with an automatic spray washer which cleans the sensors automatically and this removed the problem completely.”*

From the 30 respondents with regard to Question 8, 17% strongly agree and 83% agree.

Question 8:	Theme – Evaluating results and initiating improvement
Production targets are measured daily and this measurement forms the basis for Continuous Improvement.	Targets/Goal achievement is discussed in our min-business meetings. The team gives input on how to improve or how to maintain good results. Determines if the team needs to upgrade machine technology. Determines if additional training is needed for the team.

5.4 Team dynamics



Graph 7 - Team Dynamics

From the 30 respondents with regard to Question 9, 20% strongly agree and 80% agree.

Question 9:	Theme – Communication processes and Interaction patterns
Participation and openness characterize most meetings and discussions of my team.	The whole team gives input in the mini-business meetings before shift regarding targets achieved or not. Production issues need to be resolved as operators are accountable for their machine. Resolve conflict before the team starts production. Planning the day so that the team is clear on what is required.

Question 9 - Operator: *“In our team there is freedom to talk and highlight frustrations or problems about the previous day’s production, which gives rise to suggestions which the team can use to solve the problem. If there is any conflict in the team it must be resolved before the start of production. Sometimes the problem is not solved completely but at least we are trying different things to solve the problem.”*

“We had problems regarding the contract staff who did not want to assist the team with a bottleneck we had in the line due to technical fault. In our meeting we made it clear that we were not happy and we all should be prepared to support the team wherever as we all work as a

collective. They agreed and understood as the next day they assisted packing when they were short staffed.”

From the 30 respondents with regard to Question 10, 57% strongly agree and 43% agree.

Question 10:	Theme – Interpersonal attraction and Cohesion
In my department we work well together as a team and are continuously trying to improve our quality and throughput.	As a team we try to solve our own production issues together. We try not to produce too much waste by maintaining efficiency. If the line is battling upstream or downstream, the rest of the team assist. Resolve conflict before the team starts production. Respect for each other.

Question 10 - Operator: *“We like a family and work to help one another. We have off days, but we also have good days which are enjoyed by the whole team.”*

From the 30 respondents with regard to Question 11, 87% strongly disagree and 13% do not agree.

Question 11:	Theme – Social integration and Influence
Team members do not understand what their duties are what role they play in the team.	Each team is clear what their job description is. Planning for the day is discussed and accepted during mini-business meeting. Each team member understands the target for their machines. 1 page standards for works procedures is understood by all team members.

From the 30 respondents with regard to Question 12, 53% strongly agree and 47% agree.

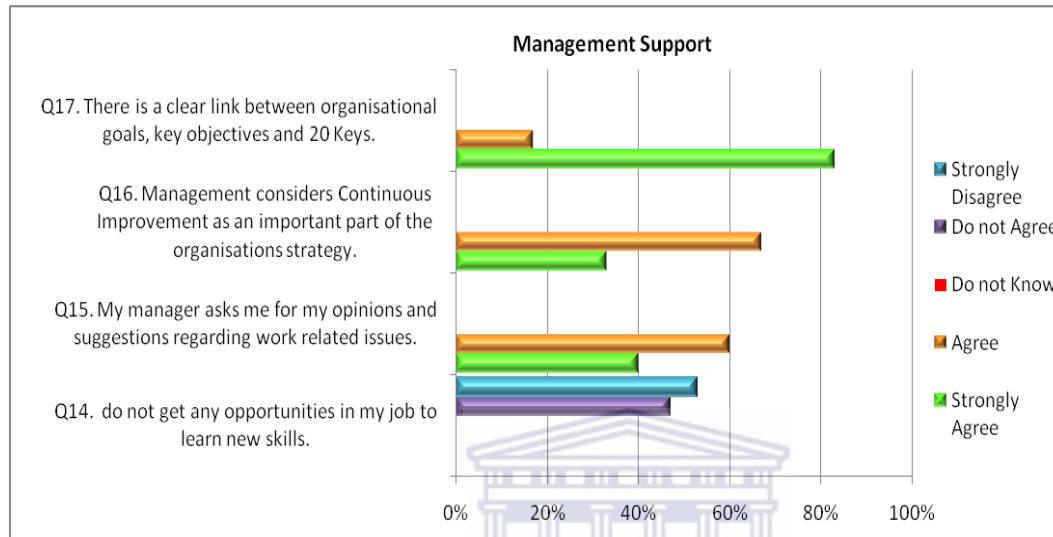
Question 12:	Theme – Power and Control
The necessary disciplinary steps are taken against those team members who do not fulfil their duties.	The team member is counselled regarding poor work behaviour and monitored for improvement. Laziness will not be tolerated in the team. Corrective action is taking in the form of disciplinary procedure. Job description.

From the 30 respondents with regard to Question 13, 80% strongly agree and 20% agree.

Question 13:	Theme – Culture
There is a strong culture within my team and the way we do our daily tasks are understood and shared by all team members.	Finding a method that the team is comfortable with and working together to resolve production issues. Each team complete his task which helps the success of the team.

Question 13 - Operator: *“We enjoy striving to reach our targets for the day and if there is no packer I must go work there, it’s not a problem. That’s the spirit of working together.”*

5.5 Management support



Graph 8 - Management Support

From the 30 respondents with regard to Question 14, 53% strongly disagree and 47% do not agree.

Question 14:	Theme – Empowering people to improve
I do not get any opportunities in my job to learn new skills.	General worker has opportunity for on the job training working as an operator. Operator goes for additional training to operate next machine. Fill in when operator is off sick. Become multi-skilled by knowing how the all the machines operate. The company has various training initiatives as per the needs of the team.

From the 30 respondents with regard to Question 15, 40% strongly agree and 60% agree.

Question 15:	Theme – Providing a climate for successful Continuous improvement implementation
My manager asks me for my opinions and suggestions regarding work related issues.	My input is considered in the mini-business meeting. You have a responsibility to report problems so that it can be fixed. Demarcations in my area are discussed with me so that I can give input.

Question 15 - Filler: *“We had a number of spoilt products due to the packaging not sealing properly on the bottom flap. I suggested that each line should have a glue gun which could repair spoilt packaging instead of having to rework the product. This decreased lost time in reworking the product as well as giving the technician time to fix the problem.”*

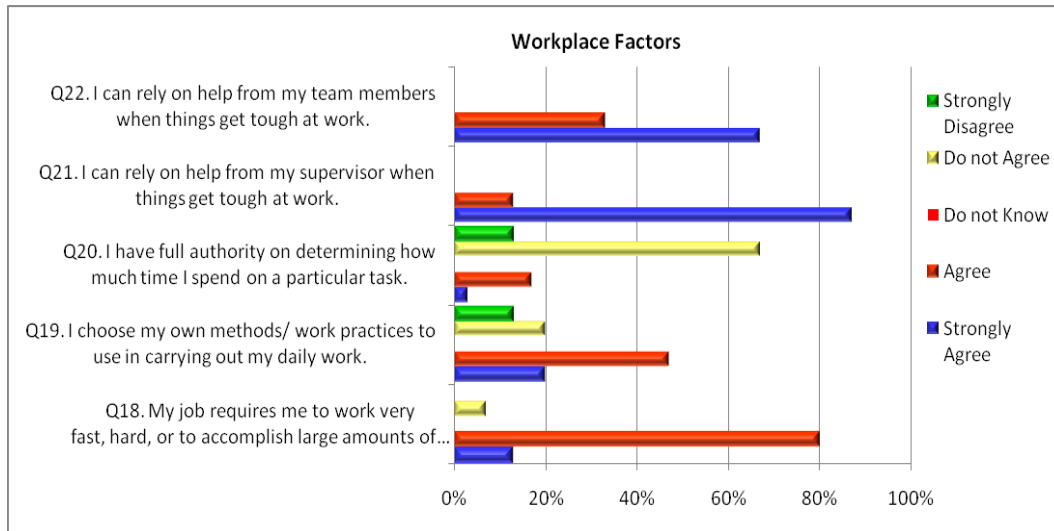
From the 30 respondents with regard to Question 16, 33% strongly agree and 67% agree.

Question 16:	Theme – Continuous Improvement a strategic driver of the organisation’s business strategy
Management considers Continuous Improvement as an important part of the organisations strategy.	New technology is implemented to assist the teams to reach their targets. Involve team members in discussing the needs for training. Bring in consultants to assist and conduct the necessary training. Ensuring that the supervisors are equipped to handle the demand by sending them for training. Broken machinery is repaired immediately or replaced. Becoming innovative by making learning fun as well.

From the 30 respondents with regard to Question 17, 83% strongly agree and 17% agree.

Question 17:	Theme – Improve competitiveness, profitability and long term sustainable business success
There is a clear link between organisational goals, key objectives and 20 Keys.	Policies and goals are translated and deployed to the lowest levels. There is an integration of top-down decision making with bottom-up participate management.

5.6 Workplace factors



Graph 9 - Workplace Factors

From the 30 respondents with regard to Question 18, 80% agree, 13% strongly agree and 7% do not agree.

Question 18:	Theme – Job Demand
My job requires me to work very fast, hard, or to accomplish large amounts of work.	High – Working at a fast pace to reach targets. Prioritise important work and maintain loading efficiency. To be vigilant by working fast and being focussed. Have to complete orders by meeting deadlines. By working together we are able to meet our targets.

From the 30 respondents with regard to Question 19, 47% agree, 20% strongly agree, 20% do not agree and 13% strongly disagree.

Question 19:	Theme – Job Control
I choose my own methods/ work practices to use in carrying out my daily work.	High – Mini-strategy to finish what is important. Do prep work so that it benefits you. There is a set way but I use my own method to get it done quicker. Low – Follow procedure but use own knowledge. As an operator I am trained and follow a specific manual. Follow SOP's to ensure consistency as well maintain efficiency. Follow a set structure in order to achieve targets.

From the 30 respondents with regard to Question 20, 67% do not agree, 17% agree, 13% strongly disagree and 3% strongly agree.

Question 20:	Theme – Job Control
I have full authority on determining how much time I spend on a particular task.	<p>High – Mini-strategy to finish what is important. Do prep work so that it benefits you. There is a set time but I use my own method to get it done quicker.</p> <p>Low – Follow procedure but use own knowledge. As an operator I am trained and follow a specific manual. Follow SOP's to ensure consistency as well maintain efficiency. Follow a set structure in order to achieve targets. Most tasks have a set time to complete.</p>

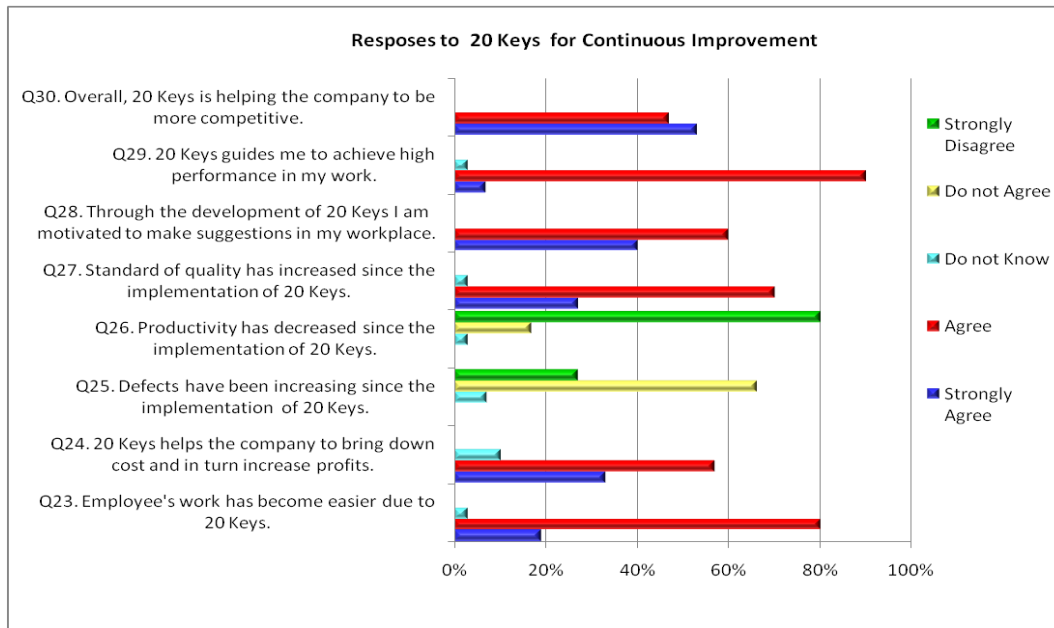
From the 30 respondents with regard to Question 21, 87% strongly agree and 13% agree.

Question 21:	Theme – Social Support
I can rely on help from my supervisor when things get tough at work.	<p>High – My supervisor will help when I am struggling. My supervisor supports me by giving me the information I need to improve my work. I get guidance from my manager with production issues. My supervisor relieves me when I have to go to training.</p>

From the 30 respondents with regard to Question 22, 67% strongly agree and 33% agree

Question 22:	Theme – Social Support
I can rely on help from my team members when things get tough at work.	When production demand is high we all assist where help is needed. My team will help me when I have a machine breakdown.

5.7 Responses to 20 Keys for continuous improvement



Graph 10 - Responses to 20 Keys for Continuous Improvement

From the 30 respondents with regard to Question 23, 80% agree, 19% strongly agree and 3% do not know.

Question 23:	Theme – Work experience due to 20 Keys
Employee's work has become easier due to 20 Keys.	With SOP's it is easier to follow. Communication between departments is much better. Work practises are much better organised. Equipment and stock is much easier to find. There is a place for everything and everything is in its place. Can focus on completing daily task without disruptions. We can strive to do things better, faster and easier. Areas are clearly demarcated for stacking and packing.

From the 30 respondents with regard to Question 24, 57% agree, 33% strongly agree and 10% do not know.

Question 24:	Theme – Company cost and profit
20 Keys helps the company to bring down cost and in turn increase profits.	By measuring production daily the team is able understand how costs affect their productivity. Monitoring stock and not ordering unnecessary. Reworking product and not dumping. If there is a breakdown or a line is not working we send the contract workers home. Balancing our output with our input – minimise waste. Not mixing waste by keeping higher priced waste cartons separate. Staff are utilised more effectively.

From the 30 respondents with regard to Question 25, 66% do not agree, 27% strongly disagree and 7% do not know.

Question 25:	Theme – Defects
Defects have been increasing since the implementation of 20 Keys.	With new technology and equipment there are far less defects or reworked product. Improved communication between operator and technician leading problems sorted out quickly. Defects can still occur but measures are in place to deal with it. Distribution eliminated defects by creating an easy to follow procedure for daily operation. Shifts share solutions to problems so as to minimise recurring defects. With Key 11 quality has become every ones responsibility.

From the 30 respondents with regard to Question 26, 80% strongly disagree, 17% do not agree and 3% do not know.

Question 26:	Theme – Productivity
Productivity has decreased since the implementation of 20 Keys.	With all the innovation we are able to increase the production on the F-Line. By gauging what is needed for the day we plan the day and try to push for an extra inch. We prep more and more so there is no time wasted which speeds up production. By having a structured shift meeting we focus on the days task and have a clear idea on how to achieve it.

From the 30 respondents with regard to Question 27, 70% agree, 27% strongly agree and 3% do not know.

Question 27:	Theme – Standard of Quality
Standard of quality has increased since the implementation of 20 Keys.	With new technology and equipment there are far less defects or reworked product. Improved communication between operator and technician leading problems sorted out quickly. Defects can still occur but measures are in place to deal with it. Distribution eliminated defects by creating an easy to follow procedure for daily operation. Shifts share solutions to problems so as to minimise recurring defects. With Key 11 quality has become every ones responsibility.

From the 30 respondents with regard to Question 28, 60% agree and 40% strongly agree.

Question 28:	Theme – Innovation
Through the development of 20 Keys I am motivated to make suggestions in my workplace	My input is considered in the mini-business meeting. You have a responsibility to report problems so that it can be fixed. Demarcations in my area are discussed with me so that I can give input. Management takes my suggestions seriously and puts it into practises as an improvement. 20 Keys encourages me to highlight the problems I have during work and find possible solutions.

From the 30 respondents with regard to Question 29, 90% agree, 7% strongly agree and 3% do not know.

Question 29:	Theme – High Performance Work
20 Keys guides me to achieve high performance in my work.	With all the innovation we are able to increase the production on the F-Line. By gauging what is needed for the day we plan the day and try to push for an extra inch. We prep more and more so there is no time wasted which speeds up production. By having a structured shift meeting we focus on the days task and have a clear idea on how to achieve it. Due to our quality standard and training regarding testing we are able to inspect more thoroughly.

From the 30 respondents with regard to Question 30, 53% strongly agree and 47% agree.

Question 30:	Theme – Company's Competitiveness
Overall, 20 Keys is helping the company to be more competitive.	The company seeing many productivity improvements in the plants. Process milk per man hour and Pre pack Kg production per man hour has improved which helps to meet deadlines and in turn keep our customers happy. Customers remain loyal due to our ability to supply on demand. With the emphasis on health and well being consumers are looking for healthy products which we offer with our exceptional quality.

Chapter 6: Conclusions and recommendations

6.1 Meeting the objectives

The main objective of this study was to assess employees' responses with regard to the implementation of a new workplace improvement programme namely 20 Keys for CI. The purpose of this research was to focus on the understanding that could be gained about employees' responses to organisational change using qualitative research. This study highlighted the factors which are necessary for the successful implementation of CI on the shop floor.

To achieve this, the following objectives were addressed:

- Do shop floor employees have a shared understanding of the characteristics and purpose of the 20 Keys for Continuous Improvement?
- How does Team Dynamics play a role in how employees have a shared understanding of the characteristics and purpose of the 20 Keys for CI?
- How does Workplace Factors play a role in how shop floor employees respond to 20 Keys for CI at the manufacturing organisation?
- How did shop floor employees respond to 20 Keys for CI at the manufacturing organisation?
- And lastly, did management support the employees in the CI initiative?

6.2 Shop floor employees shared understanding of the characteristics and purpose of the 20 Keys for continuous improvement

Through the development of all 20 Keys and the active involvement of all employees the goal is make work better, faster and cheaper. With the challenge of utilising 20 Keys to make work better, faster and cheaper the idea is that employees are energised, unlocking their true potential

for Continuous Improvement. In order for organisations to continually improve many organisations have adopted a Lean thinking approach as a vehicle for competitive advantage. Lean thinking involves eliminating wasteful activities and creating an environment for continuous improvement

According to Vermaak (2008), the following behaviours are critical in the implementation as well as the long term sustainability of CI.

Based on the interviews the following behaviours were noted as positive:

- Employee participation in CI activities;
- CI activities are part of main business activities;
- Employees use appropriate tools and techniques to support CI;
- Employees use measurement to shape the improvement process;
- Employees use structured problem solving processes; and
- Increased levels of experimentation and innovation.

According the employees interviewed CI is a way of doing things – Key 1 Cleaning, Key 3 Small group activity, etc. Eliminating wasteful activities and not having to look for things. Being pro-active and making your work easier. Creating workplace discipline by having clear goals set for the team. Through sufficient training employees are able to use appropriate tools and techniques to support CI and in turn utilise structured problem solving processes in order to eliminate daily production disruptions. The employees are able to gather the necessary information and get down to the root cause of a problem. By using the “5 Why's” they are able to

get to the root cause and in turn analyse the problem. Small group activities take place to solve the problem by using the 5 Why's or the Fishbone diagram. Targets/Goal achievement is discussed in the teams' mini-business meetings. The team gives input on how to improve or how to maintain good results. The outcome of these discussions determines if the team needs to upgrade machine technology or if additional training is needed for the team.

The literature review showed that numerous benefits can be derived from the implementation of CI (Vermaak, 2008). These benefits were affirmed by the employees at Parmalat by their active participation in 20 Keys for CI. The employees demonstrated a shared belief and understanding of the aims and objectives of the CI initiative. By having the belief and clear understanding of 20 Keys for CI, the research affirms that employees will have positive responses to Continuous Improvement (Juergensen, 2000, as cited in Bhuiyan and Baghel, 2005). The way people think about what they do, their attitude towards the job, their goals and the decisions they make, and the effect these actions have on the daily work tasks must be consistent with CI principles (Drew et al, 2004).

Liker (2004) purports that even though the goal of embracing CI fully can only be reached if the employees are well aligned with the new philosophy; therefore it is important for an organization to understand and apply all the appropriate tools and techniques, which affects the whole business model as a key and not solely CI production. Gagnon and Michael's (2003) work suggests, production employees who are not well aligned with a CI philosophy will exhibit lower levels of desired attitudes and behaviours. CI thinking requires a great level of employees' involvement and change in attitude and behaviours (Gagnon & Michael, 2003); therefore strategic employees' alignment plays an important role in the quest to embrace CI fully. It is equally important to ensure employees alignment, which is achieved by having open, honest

communication, and delegation of authority. Vermaak (2008) suggests that these factors are necessary for a successful CI implementation due to the employees of the organization being the main appreciating assets of an organization after products or services.

6.3 The role that team dynamics plays in how employees have a shared understanding of the characteristics and purpose of the 20 Keys for continuous improvement

According to Toseland et al (2004), failure to recognise the power of team dynamics will minimise the ability of the team to achieve its goals and identify the team as merely a group of individuals. As individuals work in teams to achieve tasks that require collective action, Team Dynamics plays a role in how 20 Keys is understood within the team environment and it should be a variable to be considered when researching how employees understand 20 Keys for CI. To be able to implement and sustain Continuous Improvement an organisation needs the synergy of people working together. According to Toseland et al (2004), Team Dynamics can be conceptualized as falling within the following five domains.

Based on the interviews the following behaviours were noted as positive:

- Communication processes and interaction patterns;
- Interpersonal attraction and cohesion;
- Social integration and influence;
- Power and control; and
- Culture.

The employees interviewed reported that the whole team gave input in the mini-business meetings before the shift started regarding targets achieved or not. In the same meeting production issues need to be resolved as operators are accountable for their machines. The team has a good sense of communication and is able to express what their frustrations are in an open forum without fear of retribution or rejection from the team. The team also resolves any conflict before the team starts the production shift. The team also does the necessary planning for the day so that the team is clear on what is required.

The researcher noted that at Parmalat teamwork is a culture; calling a group of people a team or working together as a group in the organisation structure does not mean that there is teamwork. If one accepts that it is about a culture, then one must understand that it develops over time. Liker (2004) reports that at Toyota there is a culture of discipline of following the set standard of daily work procedures that employees tend to adhere to which is a key factor in Toyota's success. The researcher also noted that fairly new employees were able to easily identify that culture and fit in. From all the above it is clear that organisational culture plays an important role in the functioning of the organisation. Organisational culture exerts many effects on individuals and organisational processes, some dramatic and others more subtle. Culture generates strong pressures on people to go along and to think and act in ways consistent to the existing culture. It is this strong element of culture that can assist in making the implementation of the 20 Keys successful at Parmalat. By introducing it in a subtle way, rather strengthening the culture of the company instead of rocking it, success would be achieved sooner rather than later.

The respondents reported in the interviews that as a team they would try to solve their own production issues together. They would also try not to produce too much waste by maintaining efficiency and if the line is battling upstream or downstream, the rest of the team assist. What

they agreed on as a collective was that they would resolve conflict before the team starts production and have respect for each other. This leads to a strong bond between members of the team leading to cohesion between individuals.

The purpose of establishing strong interpersonal attraction and cohesion may be to increase functional flexibility among team members, to pursue quality assurance, to establish the self-management of workers through the team (Toseland et al, 2004). The teams may organise their own work; solve their own production problems; deal with their own personnel issues. Goal alignment helps teams to understand their purpose and goals as part of the bigger picture. The achievement of goals is only possible through effective teamwork (Katzenbach and Smith, 1993).

From the interviews the respondents reported that each team as well as each individual is clear on what their job description is. Planning for the day is discussed and accepted during mini-business meeting and each team member understands the target for their machines. There are 1 page standards for works procedures which are understood by all team members. The organisation is clear on what is expected from individuals and if employees transgress the employee is counselled regarding poor work behaviour and monitored for improvement. Laziness will not be tolerated in the team. Corrective action is taking in the form of disciplinary procedure. There were no dominant team members other than those in supervisory positions and from the interviews the researcher felt a sense of servant leadership being practiced at Parmalat (Toseland and Rivas, 2001). Servant leaders devote themselves to serving the needs of organization members, focus on meeting the needs of those they lead, develop employees to bring out the best in them, coach others and encourage their self expression, facilitate personal

growth in all who work with them and listen well to build a sense of community and joint ownership (Simola, Barling and Turner, 2010).

6.4 The role that workplace factors play in how employees have a shared understanding of the characteristics and purpose of the 20 Keys for continuous improvement

According to Karasek and Theorell (1990), high stress jobs are associated with high job demands, low job control and low social support. Jobs with high demand and high job control produce well-being; learning and personal growth.

Based on the interviews the following factors were noted in the workplace:

- High Job Demand
- Low Job Control
- High Job Social support



The employees at Parmalat work at a fast pace to reach targets. They prioritise important work and maintain loading efficiency. The employees have to be vigilant by working fast and being focussed as they have to complete orders by meeting deadlines. At Parmalat the research highlighted that the demands of the work situation were high due to the 24/7 production operation and target for complete orders. This demand can also be enhanced by the structured nature of a CI, where SOPs (Standard Operating Procedures), foolproof process designs, level production rates and visual signals reduce role ambiguity and its negative impact on employee well-being.

Conti, Angelis, Cooper, Faragher and Gill (2006) conducted a large scale research study which suggested that high performance work practices such as CI are not inherently stressful or pro-company. Findings based on the responses of 1,391 workers at twenty one sites in four United Kingdom industries suggest that workers' stress levels are significantly related to management decisions in designing and operating the CI systems. Management can mitigate workers' stress with better alignment of its day to day operations.

The operators in completing their daily task followed a set procedure but also used their own knowledge regarding completing orders more efficiently. As operators they are trained accordingly and follow a specific manual. The operators follow SOP's to ensure consistency as well maintain efficiency. They follow a set structure in order to achieve targets and most tasks have a set time to complete. At the organisation the range of decision-making freedom (discretion/control) was low although there were policies and procedures in place which assisted employees in facing those demands.

A typical CI plant provides low levels of job control (Conti et al, 2006). Standard products are built, often using poke-yoke foolproof process designs. Workers follow standard operating procedures (SOPs) in performing their job tasks, with automatic pull signals triggering for the next batch to be processed. While the Karasek model links this low control to high stress, low CI control can actually improve both product and quality of work. Forza (1996) found more extensive continuous improvement participation in CI than in traditional plants. Solving production problems and devising process improvements can increase job control. Using the workers' intelligence, experience and creativity can also combat work overload, caused by under utilisation of skills.

On the other hand machine breakdowns also led to low job control. Disruptions of work flow also have a negative impact on employee well being. CI production emphasises continuous material flow, and on the shop floor, workers strive to achieve a steady rhythm of repetitive tasks. Flow interruptions that disrupt this rhythm can be frustrating. In the early days of the Toyota Production System, frequent interruptions discouraged workers and harmed morale, until consistent flow was achieved (Womack et al., 1990). The frustration of interruptions raises questions of managerial support and competence.

Importantly, the researcher found that the increased work demand and stress to which employees referred were not necessarily reflected in their responses to other questions. The employees' work became more regular due to the implementation of the CI, and employees believe that the CI assisted their work in the correct way at Parmalat.

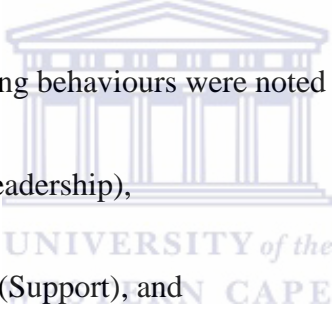
From the interviews it was reported that the organisation had a High Job Social support where supervisors would help employees when they were struggling. The supervisors would also support the employees by giving them the information they needed to improve their work. Employees would get guidance from their manager with production issues and the supervisors were also willing to relieve employees when they have to go to training. Employees noted that when production demand was high the whole team would assist where help is needed. The team would also help each other when there was a machine breakdown. Conti et al (2006) viewed the variety of CI activities as opportunities for employees to use skills and experience well beyond the needs of production. Workers exercise discretion making inspections by evaluating their work and that of the operator supplying them product. Participation in CI programs offers workers the opportunity to creatively solve production problems and devise product and process improvements. The expanded job scope can enhance employee well being.

The Karasek job control theory may be flawed when applied to CI practices and implementation, since reduced CI control can provide employees with high utility benefits, and accompanying lower stress.

6.5 Management supporting the employees in the continuous improvement initiative

Bessant and Francis (1999) discuss management responsibilities, which are important for stimulating CI development. These responsibilities include: Allocating resources such as money, time and space; recognizing the importance of CI; becoming involved in CI development and implementation and leading by example; encouraging learning; and tolerating mistakes.

Based on the interviews the following behaviours were noted as positive:

- 
- Leading the CI initiative (Leadership),
 - Supporting the CI initiative (Support), and
 - Providing a climate for the CI initiative

Management at Parmalat does play an active role in creating a sense of interest and excitement in 20 Keys to extent that that management provides a climate for successful CI implementation (Kasul and Motwani, 1996 and Boyer and Sovilla, 2003). Providing workers support, coaching and training, and empowering them by giving them autonomy, improves the quality of work life for the employees (Bicheno, 2004).

Management at Parmalat considers Continuous Improvement as an important part of the organisations strategy. New technology has been implemented to assist the teams to reach their targets. Team members are involved in discussing the needs for training. The organisation would

bring in consultants to assist and conduct the necessary training. Management ensures that the supervisors are equipped to handle the demand by sending them for training. Broken machinery is repaired immediately or replaced. Policies and goals are translated and deployed to the lowest levels. There is an integration of top-down decision making with bottom-up participate management. CI is about becoming innovative by making learning fun as well.

Management theory usually predicts that employees will resist change in their work environment, but from the research the employees at Parmalat have more opportunities to participate in management through CI implementation, such as training and employee involvement meetings (Emiliani, 1998). The research conducted in this report aimed to identify the following research problem on why CI process management is focusing on people as a key driver to obtain the optimum participation of employees in eliminating wastages and how they could enhance problem solving capability across the organisation. Through being involved, employees are able to generate new ideas and enhance their problem-solving skills, and the level of responsibility of all workers has increased (Shah and Ward, 2007).

Continuous improvement (CI) is of considerable strategic importance, but the management of CI is often poorly understood. The problem occurs in part because of confusion surrounding the term itself since CI refers not only to the outcomes but also to the process through which these can be achieved. Managing this process effectively depends upon seeing CI not as a short term activity but as the evolution and aggregation of a set of key behavioral routines within the organisation (Bicheno, 2004).

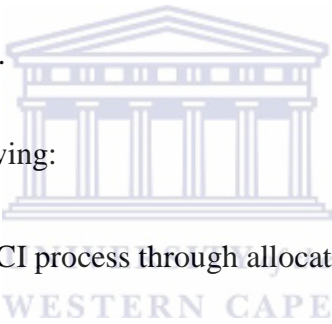
Within the organisation problem solving is not confined to bringing processes back under control through minor adjustments and improvements, but there is also considerable experimental activity in support of developing completely new products and processes. It could be argued that,

having embedded CI behavioral routines in the culture to deal with improvements. That is employees doing what they are doing but doing it much better. The organisation is now developing high involvement routines for innovation which allows them to do completely new things.

Management is in fact leading the way by having the necessary ability to lead, direct and support the creation and sustaining of CI behaviours (Kasul and Motwani, 1996 and Boyer and Sovilla, 2003).

Vermaak (2008) suggested that management has an important role in CI development which is essential for a successful CI implementation and employees have confidence in what management is trying to implement.

Bessant et al, 1994 added the following:

- 
- Managers must support the CI process through allocation of time, money, space and other resources,
 - Managers must recognise in formal (but not necessarily financial) ways the contribution of employees to CI,
 - Managers must lead by example, becoming actively involved in design and implementation of CI,
 - And lastly managers must support experimentation by not punishing mistakes but by encouraging learning from them.

The employees should not be forced to participate in the CI initiative, but instead they should be made aware of the procedures as part of CI and, importantly their views and suggestions should

also be included. By allowing employees to play a role in the CI process and making them aware of the crucial role they play in the process, employees feel that they have been awarded a sense of respect. Making the employees' aware, including their views and thereby respecting them will surely make them contribute optimally to the CI (Shah and Ward, 2007).

Womack et al. (1990) studied shop floor work teams at General Motors (GM) and Ford, and observed more effective teamwork and higher morale at Ford than GM. They concluded that workers in the Ford plants had great confidence in the management operating CI, while at GM plants, by contrast, they found that workers had very little confidence that management knew how to manage CI production. Their results indicated that CI is not inherently stressful and worker well being is not deterministic. It depends heavily on management choices in designing and operating CI systems.

Successful implementation of CI system begins with listening to people, convincing them that their concerns will be acknowledged, and asking for their help in solving operational problems. The role of leadership is listening to and empowering people. But it is also about bringing into play the latest techniques of process improvement and nurturing a culture where lean is the way to improve efficiency and effectiveness. Nevertheless, challenges lie ahead for the management to sustain this rate of improvement (Kasul and Motwani, 1996 and Boyer and Sovilla, 2003).

6.6 Shop floor employees response to 20 Keys for continuous improvement at Parmalat

Shah and Ward (2007) define CI as an integrated socio-technical system whose main objective is to eliminate waste by concurrently reducing or minimising supplier, customer, and internal variability. Several authors, such as Cua, McKone and Schroeder (2001), Bhasin and Burcher

(2006) and de Treville and Antonakis (2006), suggest that workforce focused initiatives such as process improvements are a vital CI element.

The introduction of CI production exposes employees to new technologies, changed working relationships, and higher expectations for productivity and quality levels. Workers can be concerned about job losses due to higher productivity. These uncertainties can lead to higher stress and lower worker commitment (Shapiro, 2001; Conti et al., 2006). As implementation increases initial employee uncertainty gives way to the effects of CI characteristics, evoking both negative and positive commitment responses. Increased CI implementation increases work intensification and reduces worker autonomy, tending to reduce employee stress.

Conversely, at higher CI levels, there is increased worker participation in activities such as improvement projects, quality inspections, periodic maintenance and visual signal management – contributing to employee well being.

In general, the findings show that most employees' responses to CI are positive.

This demonstrates that, if CI method is used correctly to address production problems, operational performance will improve. In other words, the implementation of the CI played a significant role in improving the company's performance (Vermaak, 2008).

The overall benefits to Parmalat due to the implementation of the CI were: a reduction in inventories, a shorter lead time, elimination of defects and rework, reduction of costs, improvement in product quality, and enhanced company competitiveness (Bicheno, 2004).

According to the comments made in the interview, a high number of employees believe that CI makes Parmalat's product quality better than that of their competitors (Juergensen, 2000 as cited

in Bhuiyan and Baghel, 2005). Some employees believe that a lot of improvements are due to the implementation of CI, such as time and cost cutting.

CI cannot exist in an organization where the culture is against it (Schein, 2010). Organizational culture sets the frame for improvement initiatives (Detert et al., 2000, Green, 2012). Different improvement initiatives require changing behaviour and values that are influenced by culture. There are often several cultures within an organization. Some of them may support CI, while others actively oppose it (Detert et al., 2000). The researcher also noted from the interviews that new employees quickly fell into a “Parmalat Continuous Improvement culture”, with full support from all levels of management (Angelis, Conti, Cooper and Gill, 2010).

The results of this study suggest that successful implementation of CI process can provide many benefits to any organisation, irrespective of the industry in which it operates. As Womack et al. (1990) and Womack, Jones and Roos (1996) said, CI practices and principles can be applied to all industries and services around the globe. That is, apart from the countless manufacturing companies, the concept of a CI has been implemented in many different industries as diverse as insurance, IT and healthcare.

In order to fully benefit from CI, in whatsoever a company must understand CI as a long-term philosophy about the right processes that will produce the right results and added value to the organization, by continuously developing people and partners through continuously solving problems (Liker, 2004).

6.7 Recommendations for Parmalat

The organisation could introduce a basic training module designed to introduce problem solving skills and then to practice these skills, first in theory projects and then on small scale workplace problems.

The organisation could add to the training module by the identification and training of shop floor problem solving teams specifically developed to solve complex operational constraints.

With strong knowledge about CI Management, managers can engage the shop floor personnel, leading and guiding them to identify problems and also develop solutions that are effective and efficient. But, when the employees fail to contribute to the lean process and also falls short in their performance, mainly due to lack of skill and knowledge about the process, they can be coached or mentored.

As part of the training programs, practices such as coaching and mentoring should also be incorporated to develop the employees and make perfectly suitable for the organisation's CI process. Coaching and mentoring can be used to effectively unlock the potential that already exists within any organisation. The organisation's most valuable resource is its people or put more concretely, the knowledge and passion that resides within the hearts and minds of its people introducing coaching and mentoring within any organisation, will reap the benefits to the organisation.

The organisation could introduce facilitator training for CI team coordinators.

Adding to the problem solving team the organisation could develop an idea management system which identified the ways in which employee suggestions could be recognised, evaluated and implemented with minimum delay.

And lastly the organisation should develop a reward system which offered simple ways of recognising and thanking employees for suggestions and reinforcing the behaviour, whilst also allowing for an equitable share of any major benefits which followed implementation of a particular idea.

6.8 Contributions of this study

This research contributed to the body of knowledge that existed with regard to the effect that CI has on shop floor employees and consequently how shop floor employees responded to workplace improvement initiatives.

Operational managers can use the responses of employees as a starting point to determine what additional training needs to be performed or what additional resources need to be made available. The research highlighted shop floor employee responses to the workplace improvement initiative and to what extent there was a shared understanding with regard to CI. It will be of benefit to the organisation studied, and the academic communities.

This study added to the body of knowledge with regard to the implementation of a new workplace improvement programme how employees' might respond. The purpose of this research was to focus on the understanding that could be gained about employees' responses to organisational change using qualitative research. This study highlighted the factors which are necessary for the successful implementation of CI on the shop floor.

The findings of this study, and its subsequent recommendations could be of benefit to the organisation that was investigated, and could form the basis for future studies on how employees respond to CI.

This study contributed to the development of a framework which identifies important variables to consider when assessing how employees could respond to CI.

6.9 Recommendations for future research

Possible research to determine the extent to which an individual is driven by an interest or enjoyment in the task itself by participating in Continuous Improvement.

Is Continuous Improvement driven by intrinsic or extrinsic motivation with the purposes of achieving individual or organisational goals?

Another avenue of research could be to investigate if an individual's level of education is directly linked to high levels of innovation and improvements.

Another area to consider is the role of the Human Resource function in Continuous Improvement and what impact this new role will have on Human Resources practices and policies.



Bibliography

“20 Key Programme”, The 20 Keys and other improvement initiatives, PFORP Development Institute, Japan, 2000.

“20 Key Programme”, Facilitators Manual, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 1, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 2, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 3, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 4, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 5, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 6, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 7, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 8, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 9, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 10, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 11, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 12, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 13, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 14, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 15, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 16, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 17, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 18, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 19, PFORP Development Institute, Japan, 2000

“20 Key Programme”, Manual Key 20, PFORP Development Institute, Japan, 2000

Agnes, M. E. 2003. *Webster's New World Dictionary*. Pocket Books.

Angelis, J., Conti, R., Cooper, C., Gill, C. 2010. Building a high-commitment lean culture. *Journal of Manufacturing Technology Management*. 22 (5):569-586.

Amoako-Gyampah, K. and Acquaah, M. 2007. Manufacturing strategy, competitive strategy and firm performance: An empirical study in a developing economy environment. *International Journal of Production Economics*. 111(2):575-592.

Benjaafar, S., Heragu, S. and Irani, S. 2002. Next Generation Factory Layouts: Research Challenges and Recent Progress. *Institute for Operations Research and the Management Sciences*. 32(6):58-76.

Berens, L. V., Ernst, L. K. and Smith, M. A. 2004. *Quick Guide to the 16 Personality Types and Teams*. Telos Publications.

Bessant, J. & Francis, D. 1999. Developing strategic continuous improvement capability. *International Journal of Operations & Production Management*. 19 (11), 1106-1119.

Bessant, J., Caffyn, S., Gilbert, J., Harding, R. and Webb, S. 1994. Rediscovering continuous improvement. *Technovation*. 14(1):17-29.

Bessant, J., Birkinshaw, J. and Delbridge, R. 2004. Innovation as unusual. *Business Strategy Review*. 15 (3): 32-35.

Bhasin, S. and Burcher, P. 2006. Lean viewed as a philosophy. *Journal of Manufacturing*

Technology Management. 17(1): 56-72.

Bhuiyan, N. and Baghel, A. 2005. An overview of continuous improvement: from past to present. *Management Decision*. 43(5):761-771.

Bicheno, J. 2004. *The New Lean Toolbox*. Buckingham: Picsie Books.

Boyer, M. and Sovilla, L. 2003. How to identify and remove the barriers for a successful lean implementation. *Journal of Ship Production*. 19(2):116-120.

Brunet, P. and New, S. 2003. Kaizen in Japan: An empirical study. *International Journal of Operations and Production Management*. 23(12):1426-1446.

Bryant, M. 2006. Talking about change: Understanding employee responses through qualitative research. *Management Decision*. 44(20): 246-258.

Chan, K.C. 1993. Intelligent corporate strategy: beyond world class status. *International Journal of Operations & Production Management*. 13(9):18-28.

Chelimsky, E. and Grosshans, W. 1990. *November: Case study evaluations*. United States general accounting office.

Cohen, S.G., Ledford, G.E., and Spreitzer, G.M. 1996. A predictive model of self managing work team effectiveness. *Human Relations*. 49(5):643-676.

Conti, R., Angelis, J., Cooper, C., Faragher, B., and Gill, C. 2006. The effects of lean production on worker job stress. *International Journal of Operations and Production Management*. 26(9): 1013-1038.

Cua, K., McKone, K. and Schroeder, R. 2001. Relationships between implementation of TQM, JIT, and TPM and manufacturing performance. *Journal of Operations Management*. 19(2): 675-694.

De Treville, S. and Antonakis, J. 2006. Could lean production design be intrinsically motivating? *Journal of Operations Management*. 24: 99-123.

Deming, W.E. 1986. *Out of the crisis*. MIT. Cambridge, MA.

Detert, J.R., Schroeder, R.G. and Mauriel, J.J. 2000. A framework for linking culture and improvement initiatives in organisations. *Academy of Management Review*. 25(4):850-863.

Diamantopoulos, A. and Schelgelmilch, B.B. 2005. *Taking the fear out of Data Analysis*. London: Thomson Learning.

Drew, J., McCallum, B. and Roggenhofer, S. 2004. *Journey to Lean: Making operational Change Stick*. New York: Palgrave Macmillan.

Earl, M.J. 1994. The new and the old of business process redesign. *The Journal of Strategic Information Systems*. 3(1):5-22.

Edwards, L. and Golub, S. S. 2003. *South Africa's international cost competitiveness and productivity: A sectoral analysis*. Report prepared for the South African National Treasury.

Eisenhardt, K. M. 1989. Building Theories from Case Study Research. *The Academy of Management Review*. 14(4): 532-550

Emiliani, M.L. 1998. Continuous Personal Improvement. *Journal of Workplace Learning*. 10(1): 29-38.

Forza, C. 1996. Work Organisation in Lean Production and Traditional Plants: What are the differences? *International Journal of Operations & Production Management*. 16(2):42-62.

Furuhashi, T. 1996. Jishuken workshop: Process improvement project steps. Chu-San- Ren. Association for Overseas Technical Scholarship.

Gagnon, M.A., and Michael, J.H. 2003. Employee Strategic Alignment at a Wood Manufacturer: An Exploratory Analysis Using Lean Manufacturing. *Forest Products Journal*. 53(10): 24-29.

Ghalayini, A.M. and Noble, J.S. 1996. The changing basis of performance measurement. *International Journal of Operations and Production Management*. 16(8):63- 80.

Green, T. J. 2012. TQM and organisational culture: How do they link? *Total Quality Management and Business Excellence*. 23 (2):141-157.

Grunberg, T. 2004. Performance improvement: Towards a method for finding and prioritizing potential performance improvement areas in manufacturing operations. *International Journal of Productivity and Performance Management*. 53(1): 52-71.

Grütter, A. W. 2007. A multi-case investigation into the effectiveness of shop floor improvement teams at South African manufacturers. Unpublished doctoral dissertation. Cape Town. University of the Western Cape.

Grütter, A.W. and Faull, N.H.B. 1997. Best practice workshop: Participant manual, Manufacturing Roundtable. University of Cape Town. Cape Town.

Gubrium, J. F. and Holstein, J. A. 2001. *Handbook of Interview Research: Context and Methodology*. Thousand Oaks, CA: Sage Publication.

Hayes, R.H. and Wheelwright, S.C. 1984. *Restoring Our Competitive Edge*. Collier Macmillan. New York: NY.

Henning, E.H., Van Rensburg, W. and Smith, B. 2010. *Finding your way in qualitative research*. Van Schaik Publishers: Pretoria.

Hines, P. and Rich, N. 2004. Learning to evolve: a review of contemporary lean thinking. *International Journal of Operations & Production Management*. 24(10): 998.

Ichniowski, C. and Shaw, K. 1999. The effects of human resource management systems on economic performance: An international comparison of U.S. and Japanese plants. *Management Science*. 45 (5): 704-721.

Jones, S. G. and Holloman, F. 2000. Continuous quality improvement project: Decreasing the potential for the development in the inpatient setting of drug resistance by improving nursing

practice for HAART administration. *Journal of the Association of Nurses in AIDS Care*.11(2):76-86.

Karasek, R. A. 1979. Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*. 24:285-311.

Karasek, R. A. and Theorell, T. 1990. *Healthy work: Stress, productivity, and the reconstruction of working life*. New York: Basic Books.

Kasul, R. and Motwani, J. 1996. Performance measurement in world-class operation: a strategic model. *Benchmarking for Quality management and Technology*. 2(2):20-36.

Katzenbach, J. R. and Smith, D. K. 1993. *The wisdom of teams: Creating the high performance organization*. Boston, Mass: Harvard Business School Press.

Kobayashi, I. 1995. *20 keys to workplace improvement*. Revised Edition. Portland: Productivity Press.

Kobayashi, I. 1998. *20 Keys to Workplace Improvement*. revised edition. Productivity Press, Cambridge. MA.

Lankford, S. V. 1994. Attitude and perceptions towards tourism and rural regional development. *Journal of Travel Research*, 3: 35-43.

Lee, K. T. and Chuah, K. B. 2001. A super methodology for business process improvement. *International Journal of Operations & Production Management*. 21(5/6):687-706.

Leedy, P.D. and Ormrod, J.E. 2005. *Practical Research, 8th edition*. New Jersey: Pearson Education International.

Liker, J. K. 2004. *The Toyota Way*. New York: McGraw-Hill.

Likert, R. 1967. *The method of construction an attitude scale*. In: Fishbein, M. (Ed) Readings in attitude theory and measurement. New York: Wiley.

MacDuffie, J. P. 2000. *The road to root cause*. In Cole RE, & Scott WR (Eds). The quality movement and organization theory, Sage, Thousand Oaks: 175-200.

Merriam, S.B. 1998. *Qualitative research and case study applications in education*. Jossey-Bass: San Francisco.

Mhlongo, X. P. 2006. An investigation of the factors that account for the effective implementation of team-based work organisations: Case studies of firms in metal fabrication sector in the Western Cape. Unpublished thesis. Cape Town. University of the Western Cape.

Mohrman, S. A. and Novelli, L. Jnr. 1985. Beyond testimonials: Learning from a quality circles programme. *Journal of Occupational Behaviour*. 6:93-110.

Monden, Y. 1983. *Toyota production system: Practical approach to production management*. Industrial Engineering and Management Press.

Moses, T. P. and Stahelski A. J. 1999. A productivity evaluation of teamwork at an aluminium manufacturing plant. *Group & Organization Management*. 24 (3):391-412.

National Productivity Institute, 2003, *Workplace Challenge 1995-2002*, Department of Trade and Industry, Pretoria.

Parmalat SA. 2013. (Online). www.Parmalat SA.co.za, accessed September 18.

Pulse, 2010. Parmalat company magazine, Issue no: 48.

Samson, D. and Terziovski, M. 1999. The relationship between total quality management practices and operational performance. *Journal of Operations Management*. 17(5):393-409.

Schein, E. 2010. *Organizational Culture and Leadership*. Jossey-Bass. San Francisco.

Schonberger, R.J. 1986. *World Class Manufacturing: The Lessons of Simplicity Applied*. Free Press: New York.

Sekaran, U. 2003. *Research Methods for Business. A Skill Building Approach* (4th end). New York: John Wiley, 292-297.

Shah, R. and Ward, P. 2007. Defining and developing measures in lean production. *Journal of Operations Management*. 25: 785-815.

Shapiro, G. 2001. Exploring the impact of changes in work organization on employees. *AI and Society*. 15: 4-21.

Sim, K.L., and Rodgers, J.W. 2009. Implementing lean production systems: barriers to change. *Management Research News*. 32(1): 37-49.

Simola, S.K., Barling, J. and Turner, N. 2010. Transformational leadership and leader moral orientation: Contrasting an ethic of justice and an ethic of care. *The Leadership Quarterly* 21:179–188.

Sirkin, H. L., Keenan, P. and Jackson, A. 2005. The hard side of change management. *Harvard business review*. 83(10):37-47.

Slater, S.F. and Narver, J.C. 1994. Does Competitive Environment Moderate the Market Orientation-Performance Relationship? *Journal of Marketing*. 58(1):46-55.

Stalk, G., Evans, P., Schulman, L.E., 1992. Competing on capabilities: the new rules of corporate strategy. *Harvard Business Review* 70 (2): 57–69.

Stuart, I., McCutcheon, D., Handfield, R., McLachlin, R. and Samson, D. 2002. Effective case research in operations management: A process perspective. *Journal of Operations Management*. 20:419-433.

Suzaki, K. 1993. *The new shop floor management: Empowering people for continuous Improvement*. Free Press, New York.

Toseland, R. W. and Rivas, R. F. 2001. An introduction to group work practice (4th ed.). Boston: Allyn and Bacon.

Toseland, R. W., Jones, L. V. and Gellis, Z. D. 2004. Group Dynamics. Handbook of Social Work with Groups. Guilford Publications.

Trochim, W. M. K. (2005). Research methods: The concise knowledge base (First Edition).
Mason, OH: Thomson Custom Solutions.

Tu, Q., Vonderembse, M.A. and Ragu-Nathan, T.S. 2001. The impact of time-based manufacturing practices on mass customisation and value to customer. *Journal of Operations Management*. 19(2):201-217.

Vermaak, D. T. 2008. Critical success factors for the implementation of Lean Thinking in South African Manufacturing Organisations. Unpublished doctoral dissertation. University of Johannesburg.

Voss, C., Tsikriktsis, N. and Frohlich, M. 2002. Case Research in Operations Management. *International Journal of Operations and Production Management*. 22(2):195-219.

Wellins, R. S., Byham, W.C. and Wilson, J.M. 1991. *Empowered teams: Creating self-directed work groups that improve quality, productivity and participation*. Jossey- Bass. San Francisco.

Wickens, P.D. 1999. *Energise your enterprise*. London: MacMillan Press.

Williams, K., Harlam, C., Williams, J., Cutler, T., Adcroft, A. and Johal, S. 1992. Against lean production. *Economy and Society*. 21(3):321-54.

Womack, J.P., Jones, D.T., and Roos, D. 1990. *The Machine that Changed the World*. New York: Rawson Associates.

Womack, J. P. and Jones, D. T. 1996. *Lean thinking: Banish waste and create wealth in your corporation*. Simon and Schuster.

Womack, J. and Jones, D. 2003. *Lean thinking: Banish Waste and create wealth in your Corporation*. 2nd Edition. Free Press.

Worley, J. M., and Doolen, T. L. 2006. The role of communication and management support in a lean manufacturing implementation. *Management Decision*. 44(2):228-245.

Yin, R. K. 1994. *Case study research: Design and methods*. 2nd Edition. Newbury Park, CA: Sage Publications.

Yin, R. K. 2003. *Case Study Research: Design and Methods*. 3rd Edition. SAGE Publications Ltd.

Zairi, M. 1999. The Learning Organisation: results of a benchmarking study. *The Learning Organisation*. 6(2):76-81

Zbaracki, M. 1998. The rhetoric and reality of total quality management. *Administrative Science Quarterly*. 43: 602-636.



Appendices

APPENDIX 1 – Interview Information Sheet

FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

SCHOOL OF BUSINESS & FINANCE

Information Sheet: Interviews

My name is Charl De Morny. I am doing a Masters degree at the University of the Western Cape in the School of Business and Finance. For this degree I must conduct a study that is entitled ‘The role of Management Support and Shared Understanding of 20 Keys for Continuous Improvement: An employee perspective.’

My contact number is 082 8265 604. My supervisor is Professor Visvanathan Naicker at the Graduate School of Business Leadership, University of South Africa. He can be contacted at 011 652 0223 or naickv@unisa.ac.za if you need to confirm my study.

To get the information I need for this study I will be speaking to various shop floor employees actively involved in Continuous Improvement and who have had sufficient training with regard to Continuous Improvement concepts. This study aims to assess employees’ responses with regard to the implementation of a new workplace improvement programme. The purpose of this research will be to focus on the understanding that could be gained about employees’ responses to organisational change using qualitative research.

To reach this understanding I would like to interview you about your understanding and experiences. The interview will take approximately 45 minutes to complete. This information sheet is for you to keep so that you can be aware of the purpose of the interview. With your signature below you show you understand the purpose of the interview.

Yours faithfully

Charl De Morny

Signature of Participant:

Date:

APPENDIX 2 – Interview Consent Form

FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

SCHOOL OF BUSINESS & FINANCE

Consent Form: Interviews

My name is Charl De Morny. I am doing a Masters degree at the University of the Western Cape in the School of Business and Finance. For this degree I must conduct a study that is entitled ‘The role of Management Support and Shared Understanding of 20 Keys for Continuous Improvement: An employee perspective.’

My contact number is 082 8265 604. My supervisor is Professor Visvanathan Naicker at the Graduate School of Business Leadership, University of South Africa. He can be contacted at 011 652 0223 or naickv@unisa.ac.za.

I _____ (Full name of participant) hereby confirm that I understand that the interview is for a research project and that the information I give will be used towards a Master’s degree and other academic publications.

I consent to participating in the research project. I understand that I am at liberty to withdraw from the project at any time, should I so desire.

I also understand that my identity will be kept secret unless I give my express consent in writing. I also understand that all potentially harmful information I give will be kept confidential unless I consent expressly to it being used in public.

I understand that the findings of the research will be available to me upon request.

Signature of Participant:

Date:



APPENDIX 3 – Interview Questionnaire

UNIVERSITY OF THE WESTERN CAPE

School of Business and Finance
Private Bag X17, Bellville, 7535
South Africa

Tel: +27 (0) 21 959 3769

Fax: +27 (0) 21 959 9294

Website: www.uwc.ac.za

Interview Questionnaire

Dear Respondent

Survey of the Role of Management Support and Shared Understanding of 20 Keys for Continuous Improvement.

The purpose of this survey is to focus on how employees respond to 20 Keys for Continuous Improvement. This survey seeks to get your views and thoughts on how Management supports you on your Continuous Improvement journey at your workplace, which involves the introduction of training, incentive schemes, and work teams and so on.

The results will be used for research and further improvement purposes. The value of this survey depends on you being absolutely honest when answering the questions. Please note that there are no correct or incorrect answers. All information will be treated as highly confidential.

SECTION A. PERSONAL PROFILE

Please tick (✓) the appropriate item in the box.

1. Gender

1.	Male	
2.	Female	

2. Age

1.	18 - 20	
2.	21 - 30	
3.	31 - 40	
4.	41 - 50	
5.	51 - 60	
6.	60+	

3. Qualifications

1.	Less than Grade 9	
2.	More than Grade 9 or Trade	
3.	University / College eg. BSc/ BTech/ Diploma	
4.	Postgraduate eg. MTech/ MA/ MSc/ PhD	

4. Years of work at Company

1.	Less than 1 year	
2.	1 - 4	
3.	5 - 8	
4.	9 - 12	
5.	More than 12 years	

5. Job Title

1.	General Worker	
2.	Operator	
3.	Technician/ Specialist	
4.	Supervisor	
5.	Manager	

SECTION B. SHARED UNDERSTANDING OF 20 KEYS FOR CONTINUOUS IMPROVEMENT

Please circle your answer in the box (indicated by numbers) and give brief comments under each of the questions in order to support your response.

1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree

6. I use 20 Keys in my daily work tasks and it forms an important part of Continuous Improvement of work activities in my department.

1	2	3	4	5
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Comment / example:

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7. 20 Keys provides me with the necessary tools and techniques to engage in structured problem solving techniques.

1	2	3	4	5
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Comment / example:

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8. Production targets are measured daily and this measurement forms the basis for Continuous Improvement.

1	2	3	4	5
---	---	---	---	---

Comments / example:

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SECTION C. TEAM DYNAMICS

1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree

9. Participation and openness characterize most meetings and discussions of my team.

1	2	3	4	5
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Comments / example:

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10. In my department we work well together as a team and are continuously trying to improve our quality and throughput.

1	2	3	4	5
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Comments / example:

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11. Team members do not understand what their duties are and what role they play in the team.

1	2	3	4	5
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Comments / example:

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12. The necessary disciplinary steps are taken against those team members who do not fulfill their duties.

1	2	3	4	5
---	---	---	---	---

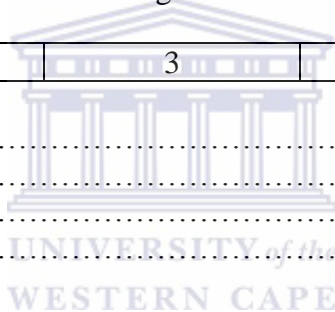
Comments / example:

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13. There is a strong culture within my team and the way we do our daily tasks are understood and shared by all team members.

1	2	3	4	5
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Comments / example:

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SECTION D. MANAGEMENT SUPPORT

1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree

14. I do not get any opportunities in my job to learn new skills.

1	2	3	4	5
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Comments / example:

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15. My manager asks me for my opinions and suggestions regarding work related issues.

1	2	3	4	5
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Comments / example:

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16. Management considers Continuous Improvement as an important part of the organisations strategy.

1	2	3	4	5
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Comments / example:

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17. There is a clear link between organisational goals, key objectives and 20 Keys.

1	2	3	4	5
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Comments / example:

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SECTION E. WORKPLACE FACTORS

1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree

18. My job requires me to work very fast, hard, or to accomplish large amounts of work.

1	2	3	4	5
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Comments / example:

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19. I choose my own methods/ work practices to use in carrying out my daily work.

1	2	3	4	5
---	---	---	---	---

Comments / example:

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20. I have full authority on determining how much time I spend on a particular task.

1	2	3	4	5
---	---	---	---	---

Comments / example:

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21. I can rely on help from my supervisor when things get tough at work.

1	2	3	4	5
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Comments / example:

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22. I can rely on help from my team members when things get tough at work.

1	2	3	4	5
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Comments/ example:

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SECTION F. RESPONSES TO 20 KEYS FOR CONTINUOUS IMPROVEMENT

1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree

23. Employee's work has become easier due to 20 Keys.

1	2	3	4	5
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Comments / example:

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24. 20 Keys helps the company to bring down cost and in turn increase profits.

1	2	3	4	5
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Comments / example:

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25. Defects have been increasing since the implementation of 20 Keys.

1	2	3	4	5
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Comments / example:

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26. Productivity has decreased since the implementation of 20 Keys.

1	2	3	4	5
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Comments / example:

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27. Standard of quality has increased since the implementation of 20 Keys.

1	2	3	4	5
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Comments / example:

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28. Through the development of 20 Keys I am motivated to make suggestions in my workplace.

1	2	3	4	5
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Comments / example:

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29. 20 Keys guides me to achieve high performance in my work.

1	2	3	4	5
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Comments / example:

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30. Overall, 20 Keys is helping the company to be more competitive.

1	2	3	4	5
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Comments / example:

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Thank you for your participation and cooperation in completing this survey.
Charl De Morny



APPENDIX 4 – Results Interview Questionnaire

SECTION A. PERSONAL PROFILE

Please tick (✓) the appropriate item in the box.

1. Gender

1.	Male	24	80%
2.	Female	6	20%

2. Age

1.	18 - 20		
2.	21 - 30	22	73%
3.	31 - 40	6	20%
4.	41 - 50	2	7%
5.	51 - 60	0	
6.	60+	0	

3. Qualifications

1.	Less than Grade 9	0	
2.	More than Grade 9 or Trade	26	87%
3.	University / College eg. BSc/ BTech/ Diploma	4	13%
4.	Postgraduate eg. MTech/ MA/ MSc/ PhD	0	

4. Years of work at Company

1.	Less than 1 year	4	13%
2.	1 - 4	8	27%
3.	5 - 8	15	50%
4.	9 - 12	1	3%
5.	More than 12 years	2	7%

5. Job Title

1.	General Worker	4	13%
2.	Operator	21	70%
3.	Technician/ Specialist	1	3%
4.	Supervisor	3	10%
5.	Manager	1	3%

SECTION B. SHARED UNDERSTANDING OF 20 KEYS FOR CONTINUOUS IMPROVEMENT

1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree

6. I use 20 Keys in my daily work tasks and it forms an important part of Continuous Improvement of work activities in my department.

1	2	3	4	5
25 (83%)	5 (17%)	0	0	0

7. 20 Keys provides me with the necessary tools and techniques to engage in structured problem solving techniques.

1	2	3	4	5
4 (13%)	26 (87%)	0	0	0

8. Production targets are measured daily and this measurement forms the basis for Continuous Improvement.

1	2	3	4	5
5 (17%)	25 (83%)	0	0	0

SECTION C. TEAM DYNAMICS

1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree

9. Participation and openness characterize most meetings and discussions of my team.

1	2	3	4	5
6 (20%)	24 (80%)	0	0	0

10. In my department we work well together as a team and are continuously trying to improve our quality and throughput.

1	2	3	4	5
17 (57%)	13 (43%)	0	0	0

11. Team members do not understand what their duties are and what role they play in the team.

1	2	3	4	5
0	0	0	4 (13%)	26 (87%)

12. The necessary disciplinary steps are taken against those team members who do not fulfill their duties.

1	2	3	4	5
16 (53%)	14 (47%)	0	0	0

13. There is a strong culture within my team and the way we do our daily tasks are understood and shared by all team members.

1	2	3	4	5
24 (80%)	6 (20%)	0	0	0

SECTION D. MANAGEMENT SUPPORT

1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree

14. I do not get any opportunities in my job to learn new skills.

1	2	3	4	5
0	0	0	14 (47%)	16 (53%)

15. My manager asks me for my opinions and suggestions regarding work related issues.

1	2	3	4	5
12 (40%)	18 (60%)	0	0	0

16. Management considers Continuous Improvement as an important part of the organisations strategy.

1	2	3	4	5
10 (33%)	20 (67%)	0	0	0

17. There is a clear link between organisational goals, key objectives and 20 Keys.

1	2	3	4	5
25 (83%)	5 (17%)	0	0	0

SECTION E. WORKPLACE FACTORS**1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree****18. My job requires me to work very fast, hard, or to accomplish large amounts of work.**

1	2	3	4	5
4 (13%)	24 (80%)	0	2 (7%)	0

19. I choose my own methods/ work practices to use in carrying out my daily work.

1	2	3	4	5
6 (20%)	14 (47%)	0	6 (20%)	4 (13%)

20. I have full authority on determining how much time I spend on a particular task.

1	2	3	4	5
1 (3%)	5 (17%)	0	20 (67%)	4 (13%)

21. I can rely on help from my supervisor when things get tough at work.

1	2	3	4	5
26 (87%)	4 (13%)	0	0	0

22. I can rely on help from my team members when things get tough at work.

1	2	3	4	5
20 (67%)	10 (33%)	0	0	0

SECTION F. RESPONSES TO 20 KEYS FOR CONTINUOUS IMPROVEMENT**1 - Strongly agree, 2 - Agree, 3 - Do not know, 4 - Do not agree, and 5 - Strongly disagree****23. Employee's work has become easier due to 20 Keys.**

1	2	3	4	5
8 (27%)	19 (63%)	3 (10%)	0	0

24. 20 Keys helps the company to bring down cost and in turn increase profits.

1	2	3	4	5
10 (33%)	17 (57%)	3 (10%)	0	0

25. Defects have been increasing since the implementation of 20 Keys.

1	2	3	4	5
0	0	2 (7%)	20 (66%)	8 (27%)

26. Productivity has decreased since the implementation of 20 Keys.

1	2	3	4	5
0	0	1 (3%)	5 (17%)	24 (80%)

27. Standard of quality has increased since the implementation of 20 Keys.

1	2	3	4	5
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8 (27%)	21 (70%)	1 (3%)	0	0
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28. Through the development of 20 Keys I am motivated to make suggestions in my workplace.

1	2	3	4	5
12 (40%)	18 (60%)	0	0	0

29. 20 Keys guides me to achieve high performance in my work.

1	2	3	4	5
2 (7%)	27 (90%)	1 (3%)	0	0

30. Overall, 20 Keys is helping the company to be more competitive.

1	2	3	4	5
16 (53%)	14 (47%)	0	0	0

