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

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Abstract

Continuous Improvement (CI) has become a strategic option for many Cape Town manufacturing organisations that want to compete successfully in the global economy. This study investigated the role of Management Support and Shared Understanding (Interpretation) of the CI initiative on successful CI implementation, from an employee perspective. The 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 practices as well as the evaluation of company documents were used to gather data. The results of this study suggest that successful implementation of CI process may provide some benefits to industry in which it operates. 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. 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. This study established a framework to assess employees’ responses with regard to the implementation of Continuous Improvement. The framework incorporated factors such as Team Dynamics and Workplace Factors and what role these factors played in the shared understanding of Continuous Improvement. While the findings of this research cannot be generalised, they provide useful heuristics of the use CI for improving efficiency in organisations.

Keywords: Continuous Improvement, Employee Responses, Management Support, Workplace Factors
Introduction

It is 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 Acquaah, 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. 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 aimed to improve the work situation and productivity (Bicheno, 2004). Through insufficient information to shop floor employees, CI could lead to loss of control on the shop floor and speed of productivity which adds stress to shop floor workers (Forza, 1996; Hines and Rich, 2004).

Problem Statement and Research Questions

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 insufficient and clear communication about the workplace improvement initiative. There is a need, therefore, to assess employees’ responses with regard to the implementation of a new workplace improvement programme. The research questions addressed by this study, therefore, are as follows:

- How was 20 Keys for Continuous Improvement implemented at the manufacturing organisation?
- 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?

Literature Review

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. The literature review has been divided into the various subheadings below for ease of reading.

**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 Grutter, 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.

**The process of doing Continuous Improvement**

The process to conduct Continuous Improvement is the core to Continuous Improvement – 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). Some of the following steps for doing a CI project have been compiled from a few sources on how to do it. Lee & Chuah, 2001, Moses & Stahelski, 1999, Grunberg, 2004, Jones & Holloman, 2000, Grutter & 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.

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.

**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 (Grutter, 2007). Several ways of dealing with this issue occurs. In some firms, 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).

**Factors influencing the successful implementation of Continuous Improvement**

Vermaaks’ study in 2008 highlighted factors influencing the successful implementation of CI in South African manufacturing organisations. Some of his claims were:

1. A CI mind-set and attitude amongst all levels of employees in the organisation is critical for successful implementation of CI.
2. For CI to be successfully implemented, basic stability in manpower, machine, methods and materials must first be achieved.
3. 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).

**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. 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.
Figure 1 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.

Understanding the Continuous Improvement initiative: The Employee version

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 (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 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.

**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 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 described 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.

**Team Dynamics**

The Webster’s New World Dictionary (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, L. V., Ernst, L. K. and Smith, M. A., 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.

Teamwork and Continuous Improvement - key elements in long-term sustainability

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 & Shaw, 1999). The preoccupation 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.

Workplace Factors – The Karasek Model

In 1979 Karasek designed a model (Figure 2), 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.

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.

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. Based on the above literature the following conceptual framework was developed.
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.

Methodology

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. Face-to-face in-depth interviews will be conducted with managers and shop floor employees in order to extract qualitative data.

Unstructured interviews will be 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 Terziovski, 1999; Voss, Tsikriktsis and Frohlich, 2002). Observations of shop floor work practices as well as the evaluation of company documents will be used to gather data. The interviews consist 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 will be 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.

Questionnaire Design

The researchers took the pilot questionnaire and tested the interview questions at the researchers 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, which utilises 20 Keys for CI, was due to the following. The questionnaire was tested for reliability and validity. The questionnaire was also tested for efficacy of judgement respondent approach 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 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 educational qualification and job title. 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 comprises of 2 sections; Section A required a list of biographical data and Section B consisted 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.

Data collection process and sampling

Judgement or purposeful samples was utilised so that the most productive sample could be selected to answer the research question. The unit of analysis was shop floor employees who had sufficient training with regard to 20 Keys for CI. It should be noted that the only limitation to this study was that only one case study was used.

Data Analysis

Although the method of data collection was qualitative and quantitative the interpretation is based primarily on a qualitative approach. 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 analyzing qualitative data, the notes transcribed were integrated and categorized under appropriate themes, the response categories then group, and subjected to appropriate data analysis. By using multiple methods such as interviews and questionnaires, the researchers establishes convergent validity and a sense of reliability of the data (Sekaran, 2003). The researchers 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 1 below.

<table>
<thead>
<tr>
<th>Question 7:</th>
<th>Categories – sorted according to themes’ relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Keys provides me with the necessary tools and techniques to engage in structured problem solving techniques.</td>
<td>• We can gather information and get down to the root cause of a problem.</td>
</tr>
<tr>
<td></td>
<td>• Using the 5 Why’s I can get to the root cause and analyse problems.</td>
</tr>
<tr>
<td></td>
<td>• Small group activity to solve the problem by using the 5 Why’s or the Fishbone diagram.</td>
</tr>
</tbody>
</table>

Table 1 – Example of key themes extracted from the individual interview transcripts

Findings and Discussions

This study has used the conceptual model 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. 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.

**Shared Understanding of 20 Keys for Continuous Improvement**

For each finding the researchers will include a short description of the graph as well as include quotes from the interviews. The researchers will extract 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 researchers will note a positive or negative response relating to particular research question.

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

**Question 6:**

<table>
<thead>
<tr>
<th>Category – A Continuous Improvement mind-set &amp; attitude amongst all employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>I use 20 Keys in my daily work tasks and it forms an important part of Continuous Improvement of work activities in my department.</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

**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:**

<table>
<thead>
<tr>
<th>Category – Applying the appropriate tools and</th>
</tr>
</thead>
<tbody>
<tr>
<td>I use 20 Keys in my daily work tasks and it forms an important part of Continuous Improvement of work activities in my department.</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>
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 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:** Category – 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 mini-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. |

Team Dynamics

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

**Question 9:** Category – 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
"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:**

<table>
<thead>
<tr>
<th>Category – Interpersonal attraction and Cohesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>In my department we work well together as a team and are continuously trying to improve our quality and throughput.</td>
</tr>
</tbody>
</table>

| 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:**

<table>
<thead>
<tr>
<th>Category – Social integration and Influence</th>
</tr>
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<tbody>
<tr>
<td>Team members do not understand what their duties are what role they play in the team.</td>
</tr>
</tbody>
</table>

| 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:**

<table>
<thead>
<tr>
<th>Category – Power and Control</th>
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<tbody>
<tr>
<td>The necessary disciplinary steps are taken against those team members who do not fulfil their duties.</td>
</tr>
</tbody>
</table>

| 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:**

<table>
<thead>
<tr>
<th>Category – Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a strong culture within my team and the way we do our daily tasks are understood and shared by all team members.</td>
</tr>
</tbody>
</table>

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

**Question 14:**

**Category – 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:**

**Category – 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:**

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

**Question 17:**
Category – 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.

**Workplace Factors**

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

**Question 18:**
Category – 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.

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

**Question 19:**
Category – 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:**
Category – Job Control

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

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.

Low – Follow procedure but use own knowledge. As an operator I am trained and follow a specific manual.
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.

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

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

Category – Social Support
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.

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

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

Category – Social Support
When production demand is high we all assist where help is needed. My team will help me when I have a machine breakdown.

Responses to 20 Keys for Continuous Improvement

Graph 5 - 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:  
Employee’s work has become easier due to 20 Keys.

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

<table>
<thead>
<tr>
<th>Question 24:</th>
<th>Category – Company cost and profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Keys helps the company to bring down cost and in turn increase profits.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Question 25:</th>
<th>Category – Defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defects have been increasing since the implementation of 20 Keys.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Question 26:</th>
<th>Category – Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity has decreased since the implementation of 20 Keys.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Question 27:</th>
<th>Category – Standard of Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard of quality has increased since the implementation of 20 Keys.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Question 28:</th>
<th>Category – Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through the development of 20 Keys I am motivated to make suggestions in my workplace</td>
<td>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</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Question 29:</th>
<th>Category – High Performance Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Keys guides me to achieve high performance in my work.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Question 30:</th>
<th>Category – Company's Competitiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall, 20 Keys is helping the company to be more competitive.</td>
<td>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.</td>
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</table>

**Conclusions**

It was noted that at the organisation 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. 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. 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 behavioural routines in the culture to deal with improvements, employees are doing what they are doing, but much better.

The organisation is now developing high involvement routines for innovation which allows them to do completely new things. 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.
Finally, recommendations for the Organisation may be that with strong knowledge about CI Management, managers can engage the shop floor personal, 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.

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

References


