CHAPTER 4

IMPLEMENTING TOTAL QUALITY MANAGEMENT

4.1   Quality culture

Kanji (1998, p.261) says, "Total Quality Management is the culture of an organisation committed to customer satisfaction through continuous improvement." Although the corporate cultures differ from industry to industry, there are universal principles that should be implemented to gain market share, reduce cost and increase profits. For the successful implementation of TQM it is essential to create a Quality Culture within the company. To do this the existing company culture needs to be examined to determine the relevance of the current objectives towards which it is directed.

Culture represents the way in which people in a business unit behave in order to communicate with each other and other people in that society. It reveals behavioural patterns, customs, practices and beliefs they share and encompasses the totality of the norms and values that control their behaviour.

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A corporate culture is established over a long period and can be hard to recognise for the people working within it. In most cases the establishment of TQM will require an adjustment of the corporate culture of a company. In the South African construction industry this is especially true as most construction company cultures have become fixated on the need for completing contracts on time and within budget, thus neglecting quality which, as has been proven, has the effect of delaying completion and reducing profits in any case.

The tempo at which an organisation should attempt to change its culture is described as, "as fast as is practical, but not as slow as the organisation may find comfortable." This means that certain feathers will and have to be ruffled in order to change a company's culture. The culture of the company should ultimately support its business strategy. The ultimate aim of cultural change should be to create a culture that will be the force behind the actions taken to achieve the vision and goals of the critical business success factors (CBSF). The objective of changing the corporate culture should be to create commitment to the company, to the quality improvement process and to the accomplishment of the CBSFs. (Hradesky, 1995, p.129)

In broad term the creation of cultural change means the following:

- Identify values to retain

- Identify values to adopt or adapt

- Define the values

- Convert the values to behaviours

- Develop implementation plans for these values

- Execute the value implementation plans

- Measure the implementation

- Follow up to ensure achievement and sustainability.

It also means creating open and effective communication through an empowerment process.

There are certain necessities for implementing Total Quality Management. These are:

1. The creation of commitment to the company's articulated goals

2. The creation of cultural change

3. Empowerment

4.1.1 Creating commitment

The first requirement for cultural change is the total commitment of every person in the organisation to the company and its survival. Part of this

commitment must be commitment towards reaching the company goals, CBSFs and cultural change. Commitment must not be confused with interest. Interest is involvement when it is convenient, whereas commitment is a tenacious pursuit of goals regardless of obstacles and without excuses. The commitment boils down to devotion to excellence. It is further evident in a triumph of integrity over scepticism. (Hradesky, 1995, p.131)

Commitment requires accountability for failure or success. Mistakes should however not be seen as only negative in value. Lessons are learned through mistakes and contribute toward experience. The idea is to confront and overcome obstacles while learning how to attain objectives.

Some obstacles to achieving commitment are:

- Conflicting goals e.g. extensive capital projects while the company is having cash-flow problems

- Procrastination e.g. a lack of sense of urgency

- Lack of focus identified by a lack of priority setting and a tendency to always be putting out fires

- Inflexibility and resistance to change often caused by fear or misunderstanding of change

- Allowing excuses to be made

- Self-defeatism with the idea that one person cannot influence change

- Lack of enthusiasm which usually occurs if top management does not lead by example

- Perceived or real lack of time to devote to goals

- Misinterpreting commitment as interest and waiting to act until it is convenient.

Commitment starts with the highest manager in the company be he the managing director, the chief executive officer or the owner. His role of leading managers who lead the workforce who work with the clients is turned upside down. He is now expected to support the managers, who support the workforce, who support the customers. All focus must be directed toward the customers. It is often stated that the single biggest reason for failure of TQM implementation is a lack of commitment by the top manager and other senior staff.

Characteristics of an uncommitted leader are:

- Personally solves daily problems and makes instant decisions

- Does not meet immediate subordinates individually or in groups

- Is critical and unreceptive to ideas regarding TQM

- Does not provide adequate resources for TQM

- Takes people out of team meetings

- Ignores continuous systematic problems

- Does not spend any time on TQM

- Does not reward or recognise TQM accomplishments

As with all business factors, commitment should also be measured. Although it is not possible to measure the level of commitment of an employee, it is possible to measure the results of commitment. Some questions that can be asked to establish a company's commitment to TQM are listed below.

Does the company track and report:

- Achievement of Critical Business Success Factors?

- Number of TQM projects completed?

- The results (in rands, hours, etc) of TQM projects?

- Number of quality-related standard operating procedures?

- Percentage of employees on TQM teams?

- Number of TQM projects initiated after suggestion by employees?

- Hours of TQM training per employee?

- Number of rewards given?

Management activities supporting commitment can be broken into four areas i.e. Permitting, Supporting, Managing and Leading by example.

Permitting   All managers must permit the people under their

authority to attend TQM training. They must be willing to

release them from activities even though they may think

the work more important than the training. This will

indicate the manager's true commitment.

Supporting   Management should support the TQM implementation

process by allowing their personnel to serve on

committees and by taking part in or attending launches,

discussions, etc.

Managing   This involves chairing committees, mentoring, providing

resources. People must be held accountable and their

activities measured. A recognition and reward system

must be put in place and managers must provide

constant feedback to employees.

Leading by example Executives must develop a vision, mission and value

statement and clearly communicate these to all

personnel. The manager must ensure that TQM is used

in all significant issues to achieve organisational goals.

By being an effective role model the manager can

influence others to conform to the new values and behavioural model.

In order to stay committed one must be aware of possible obstacles to meeting objectives. Through planning these obstacles can then be avoided or overcome with less effort. It is a fact that reaction to a problem requires more work than taking steps to avoid the obstacle becoming a problem. The need to fulfilling one's commitments must be a personal issue through which the employee beliefs that he is making a positive contribution to the company as well as to his own career.

Once a person is committed it will become apparent through a demonstration of constructive dissatisfaction with the status quo, the developing of an inspiring vision of the future of the company and a concentration on the CBSFs of the company.

Once employees start acting in a way that supports their belief in the concept that they have developed personal commitments to continuous improvement, then it can be said that commitment to TQM has become tangible. This will manifest through timeliness for meetings and completion of tasks and intolerance for poor performance by all concerned.

Managers that are committed will be deeply involved in spurring on actions required for the implementation of TQM. They will constantly motivate employees to strive for the company goals and will celebrate successes. They will also constantly remind people of the company vision through their actions and interactions with others.

In order to improve the chances of achieving commitment, it is necessary to plan for small successes. Short-term goals must be set and their achievement become non-negotiable. All measurable improvements must be celebrated and publicised at every opportunity. An atmosphere must be established in which collaboration is encouraged and the general feeling of the employees are constantly monitored.

Commitment boils down to people being willing to change their behaviour in such a way as is required to achieve the company's goals rather than their own, immediate ones. This must become group behaviour promoted by all in the company, in other words, a cultural change is required.

4.1.2 Creating cultural change

Every organisation has a culture. The culture is influenced by amongst others the following:

- The business environment which relates to the relationship between the business and its market. This is in turn influenced by the type of

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product sold, the competitors, the economic state, technologies and government relations.

- Values which represent the basic beliefs and concepts of an organisation. Values determine what the employees will regard as "successful" and thus determine the standards of achievement expected by employees and management within the company. (Hradesky,1995, p.142)

Company culture can be either *strong* or *weak*. When a company's values are openly stated and no tolerance allowed for deviations from the company standards, then that company is said to have a strong culture. When the company values are related to subculture issues and not openly defended or even shown in print, then it is considered a weak culture. A strong culture is a system of informal rules that identify how employees should behave generally. This will guide them in situations where time would otherwise be wasted in trying to find out what to do.

An important part of the company culture is The Cultural Network. This network is the primary, yet informal, means of communication within the organisation. This network is the broadcaster of corporate values and is the most important tool in getting things done. If the network is used correctly, the company will be successful in manipulating the corporate culture.

4.1.2.1   The process of cultural change

There are five preconditions before cultural change can take place. These preconditions are:

1. There must be a good reason to change the culture, for instance economic survival. Management must predict the results of keeping to the current track i.e. losses resulting in economic failure of the company.

2. There must be a plan that indicates the necessary changes. This would include actions to be taken, responsibilities, target dates and desired results of change. This plan must be well communicated to all in the company and have the committed support of management.

3. Regular measurements of the values being promoted must be taken. If deviations are identified from the desired targets, correction plans must be implemented.

4. Expectations must be made clear to all employees and training supplied to teach them the desired values, behaviours and skills.

5. Recognition, rewards, incentives and promotions to encourage the correct behaviour must take place and must be seen to take place.

Undesired behaviour must be dealt with swiftly and strictly to indicate management's commitment to the plan.

(Hradesky, 1995, p.143)

4.1.2.1.1   Defining the Current Culture

The first step in changing the culture is to define the difference between the present culture and the desired culture. The perceptions of the current culture are important, as people will emulate behaviour that they perceive to be desired and rewarded in this culture. A situation may exist where the perceived desired behaviour is in fact not desirable but has become so embedded in the company that no ones dares to challenge it. An example of this in the construction industry is where foremen have become used to working on Saturdays regardless of the need thereof, thinking that this makes them look diligent when in fact, this is causing overtime costs that have a negative effect on the profit margin of the contract.

4.1.2.1.2   Defining the desired culture

This is the next step towards changing the company culture. Identifying a company whose quality standards are known and respected is the best method of doing this. The company does not have to be in the construction industry. It can be a company that produces merchandise

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that is generally accepted to be of high standards and that your company employees would buy for themselves if they were given the choice. Examples of these type of companies can be found in the German automotive industry e.g. BMW and Mercedes-Benz.

Next a plan must be drawn up that will close the gap between the current culture and the desired goal. The most important changes required for the implementation of TQM are listed below.

From	To
Bottom-line emphasis	Quality first, but equally important as delivery date and cost
Short-term objectives	Long-term and short-term goals
Product delivery	Customer satisfaction, on-time completion
Focus on product	Focus on process and input variables, a correct process ensures a correct product
Quality-delegated responsibility	Management-led improvement processes
Inspection orientation	Prevention orientation
Minimum-price suppliers	Focus on lowest cost, not lowest price, through partnering with suppliers
Compartmentalised activities	Co-operative team efforts
Management by edict	Employee participation, focus on common goals

Table 1

Changes required for the implementation of TQM

The key to the success of this process is management commitment. The focus must also change from quarterly or monthly profits to a plan for achieving profits over the long term. If this plan is followed, monthly profits should be better than expected. There is a trend in certain construction companies to generate as much turnover as possible in order to boost quarterly figures. This often results in poor quality buildings that inevitably causes increased costs when problems have to be fixed. The consequence is higher turnover at lower margins that will have a negative impact on the company in the long run. TQM is again proved as a method of maximising profitability. Emphasis must be placed on building defect-free buildings and sustaining a competitive edge through timely delivery of buildings.

Focus on product emphasis results in reaction to problems rather than prevention. The company culture must change to the degree where employees try to influence and change the construction process. Inspection orientation is also not the answer, as no degree of inspection will identify all defects. Inspection also becomes too expensive at some point. The company culture must be such that defects are prevented, rather than fixed.

Using the cheapest supplier or sub-contractor has often been proven as costly mistakes in the long run. There should rather be looked at

developing relationships with suppliers and sub-contractors that can provide quality products at the right times and at reasonable costs. Price can often be negotiated to fit into the budget, but once time is lost or quality neglected, these cannot be corrected without incurring extra costs. Co-operation between different departments within the organisation must further be encouraged. This will lead to fewer arguments about supplying resources at the right times or of the right quality.

Management orders on how things are to be done, without a willingness to accept criticism or suggestions of alternatives, can lead to various problems. The most obvious being that improved methods of doing something may never be identified or employees may follow the orders even though they know it may not be suitable or correct, just to prove a point.

Cultural change must be a continuous process, the same as the quality improvement process. It cannot have a completion date, only dates for reaching certain milestones.

It is often seen that certain teams within a construction company "complete" their projects on time, regardless of the quality thereof, and are, more often than not, praised for "getting the job done". It is usually later found that large costs are incurred to fix quality problems while the personnel responsible for the project have moved onto a new project.

Sometimes temporary staff has to be employed to deal with these problems after the original team has already received rewards, like bonuses, for the project. A cultural change will stop the poor quality from being produced in the first place and TQM will hold the original team responsible and accountable for the project until it is successfully completed.

4.1.2.1.3   Closing the culture gap

Closing the gap between the current culture and the desired culture requires the launching of project teams to influence the performance of the CBSFs, the implementation of desired values and the alignment of the organisation by developing and measuring internal customer satisfaction. Internal customer satisfaction is based on the concept that the various departments within an organisation are customers of each other. A production department can be seen as an internal customer of the buying department for example.

In the construction industry, the different projects can be seen as internal customers of various departments i.e. the buying, plant and labour-relations departments. If these departments strive to please the internal customer in the same way as the project team is striving towards meeting the external customer's goals, then a huge step would be taken towards TQM.

The idea of internal customer satisfaction can be extended to include the various sub-contractors on a project. Instead of only doing their work to be in accordance with their agreement with the main contractor, the various sub-contractors must be encouraged to see the sub-contractors who will be performing follow-on trades after them, as internal customers. In this fashion, the plasterer will aim to give the tiler a quality wall to tile on.

In order to reinforce the idea of internal customer satisfaction, agreements can be drawn up which are signed by the parties wherein they agree on what it is the internal customer requires. Failure to comply with these agreements must be addressed and where necessary, fines, rebukes or some other form of action must be taken.

 In order to implement the desired values one needs to identify what the current values and the desired values are. Certain existing values will be retained while new ones will have to be adopted. The company's definition of the identified values must then be defined. Implementation plans are drawn up for attaining each value and measurements developed for the implementation plan. People must now be encouraged to change their actions to align with the goal of achieving the value. It is important to recognise and reward individuals that show commitment through their actions.

The aim of measuring internal customer satisfaction is to align different departments to become customer-driven. In the typical building project the different trades with their labour and subcontractors can be seen as departments. These departments have internal customers i.e. the trade that follows after it and external customers i.e. the person that will in time occupy the building. These customers' satisfaction must become important to everyone involved within the specific trade.

Implementing each value starts with the identification of a starting point. Next, agreement must be reached on the changes required. A plan is then created after which the process is launched. Finally a calendar is created that indicates milestones that are to be achieved.

In order to close the gap between the current and desired culture, it is best to start with values that are to be retained and to build on them. The gap must then be tackled by addressing the values that need to change. This results in bringing into the future that which worked in the past while also implementing new values.

4.1.2.1.4   Resistance to cultural changes

People have a natural fear of change, as they believe it will result in them being taken out of their comfort zone. To overcome this, repeated

education and positive reinforcement is required. The employees'
perception of acceptable behaviour must be aligned with the vision,
mission and value statements of the company to achieve cultural change.

Time and ease of effecting change is proportional. Different types of
change require different amounts of time. Knowledge is easily obtainable
and needs very little time. Changing attitudes, individual behaviour and
group behaviour becomes increasingly difficult and time consuming.

The key elements that should be present to effect change are role
modelling by the leader, an urgent need to change and an understanding
of the consequences of failing to change. Individuals and teams must
become proactive for change to build momentum. This means that
problems must be anticipated and corrective measures taken before they
occur.

People must further become result-oriented. This means they must
measure their performance and strive for their goals. The process must
further be viewed as one in which everyone is involved and not just a
specific department or team.

The time needed to change, and the degree to which change is attained,
are determined by the effort expended, the size of the gap between the
desired and actual culture and the time taken to address the change.

Teams will eventually become self directed and drive TQM by themselves. TQM implementation can be a management training and development tool.

4.1.2.1.5   Techniques to foster change

Cultural change is fostered by implementing company values and rewarding behaviour that is in line with these values. Failure to measure change may scuttle the entire process. Many people are sceptical about how to measure values. Before the company can measure behavioural change it needs to identify what the desired behaviour is, identify how to recognise the desired behaviour and then determine how to instil this behaviour. The behaviour is then measured by looking at employee involvement, for instance. This would require counting the number of suggestions made, number of people submitting suggestions and number of suggestions implemented. Surveys can also be done to test people's knowledge of company goals, their opinion of management performance and determining the number of formal recognitions.

It must be kept in mind that behaviour is a result of attitude. Therefore it is important to change attitudes before trying to change behaviour. Changing behaviour will ultimately manifest in a change in performance, which is the main aim of cultural change.

Negative reinforcement should never be used to foster the desired behaviour as it can only stop unacceptable behaviour, which will lead to confusion regarding what acceptable behaviour is. (Hradesky,1995, p.154)

4.1.2.2   Management responsibilities to effect change

In order for the change in culture to happen, it must be ensured that the company's management does the following.

- They must assess the current culture that exists in the company. They must also be aware of why this culture exists and how deeply it is embedded in the attitudes of the personnel. The assessment must preferably be made by an external party who will be more objective. This is particularly true where most of the senior management has been with the company for many years, as is often the case in the construction industry. The assessment must include interviews with workers, analysis of employee's perceptions and an evaluation of participation, team spirit and motivation.

- The next task is to define what the desired future culture should be. This is done by determining which values would lead to the success of

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the company. Once these values are entrenched it would form a new culture.

- Training needs to be supplied. Implementation plans must be designed that will reinforce the training and thereby foster the new culture. Management must ensure that relevant training is given to all levels of personnel and not just the people directly responsible for a project e.g. the site agent and foremen. More often than not no training or motivation is given to the labourer who is actually doing the work and producing the quality. Motivating this person to do the job right the first time could win the battle for quality.

- Management must further act as role models. This is true for all levels of management from the managing director to the site foreman. It is a case of "Action speaking louder than words." It is of little use to lecture people on quality if your own behaviour suggests that you are more worried about completing a project on time.

- Management needs to define what they expect from the personnel. They must indicate how the expected behaviour can be achieved, define authority levels and assure that everyone has access to the required resources. This all can be phrased as empowerment.

- Management must provide programs to identify and reward successes in changing behaviour. These programs must reinforce the correct values. Rewarding a project team because the project is completed on time and in budget, while quality is poor, will be detrimental to the quality improvement process.

4.1.3 Empowerment

Empowerment has become a frequently used term in the modern South Africa. It has is some instances been made law by the government. It is therefore necessary to investigate how empowering the workforce can and should be used to improve quality.

Empowerment in quality terms means that every employee feels that he is responsible for quality and for solving problems that arise. This leads to a whole company of committed problem solvers who will greatly outperform their rivals who are still caught in the trap of a few people trying to control everything.

By empowering people they are given the authority to do whatever is necessary (within reason) to achieve the quality goals. This can be achieved by creating an environment where everyone feels free to suggest solutions and act on problems. To understand the immensity of such a change one only needs to imagine the reaction should a labourer,

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responsible for cleaning the building site, walk into a site office and make a suggestion to a project manager regarding a quality problem that he has identified. Only once one can imagine this actually occurring in a company can it be said that the workforce is empowered. Empowerment also means the willingness to take risks rather than trying to live with a problem.

If management takes the risk to relinquish some of its control to well trained employees, a more productive organisation will develop that makes faster decisions and copes better with problems. It must be understood that empowerment does not take away management's responsibility to make final decisions. Management is also still required to intervene where the correct processes are not being followed.

Empowerment ultimately means that workers are assured that their decisions will be supported and they will be rewarded for being innovative in dealing with obstacles. The worker must know what is within his authority to do.

4.1.3.1   Reasons for empowerment

By empowering people, the person who is closest to the quality problem, i.e. the person physically responsible for the work, is given the authority to decide how to resolve it.

Empowerment leads to higher productivity and personnel involvement. People will take responsibility for the quality of their work. It is an effective method of changing the culture of an organisation. Empowerment also improves communication, which in turn, leads to fewer misunderstandings regarding what quality is expected and how it is to be achieved, because people are not afraid to ask questions.

Empowerment forces the employee to use his knowledge and will identify where additional training may be required. It will also identify individuals with potential to be trained for higher levels of management. This way a carpenter may be identified for training as a foreman. This will, in turn, have a direct influence on his family life and eventually even on his community. Employees who feel they are being supported and trusted will enjoy their work, which in turn leads to commitment and a change in culture.

The empowering of personnel will change reactions into actions. Rather than blaming someone for a problem, the person responsible will make the necessary decisions to achieve solutions. This also means that the company has problem solvers on every level and will therefore become more efficient.

Once everyone is empowered they will start working together on previously unrivalled levels. The failure by construction companies in South Africa to empower their workforces right down to the lowest levels has been a major reason for their problems. Most companies are still entrenched in the situation where workers are told what to do, often not very clearly, and expected to comply no matter what. This is compounded by the fact that South Africa has eleven official languages which makes communication even more difficult. This leads to problems not being identified and solved immediately, and eventually causing delays and losses. If the worker was able to ask questions in order to understand what was expected from him, or to make suggestions on how a problem might be overcome, tasks would be performed better the first time and problems solved quicker.

Empowerment is achieved through motivation where people are encouraged to act in accordance with the vision and mission of the company. Currently the situation in construction companies more closely resembles domination that is the control by a superior authority. Domination is characterised by one way communication, from manager to employee, whereas motivation encourages two way communication. People should not be intimidated to blindly do as they are told, when they know of a better way of doing it.

4.1.3.2   Empowerment barriers

Some employees might feel insecure and suspicious when a company starts an empowerment process. They may feel that their responsibilities are being reduced and therefore their usefulness to the company is also reduced. There is also still an element of mistrust between the workforces and the management of many construction companies. Employees often believe that the company is making money at their expense because they are given added responsibility without additional remuneration, while management considers employees incapable of making correct or informed decisions.

The following must be remembered when empowering the workforce:

- Management must also be trained in empowerment

- Empowerment is a process, not an event

- Success will not be attained overnight

- Make expectations and guidelines clear

- Keep up measuring, monitoring and feedback.

- Do not empower people without the skills to do the job

- Empowerment is a new culture and mindset, not a tool or strategy

- Make sure people understand their responsibilities

    (Hradesky, 1995, p.162).

4.1.3.3   The empowerment process

The process of empowerment consists of three parts i.e. empowerment, process management and taking responsibility.

The act of empowerment involves giving people clear objectives to attain. This is augmented with guidelines on how these objectives can be reached and specifying the level of authority for decision-making. The necessary resources and relevant skills must also be supplied.

Process management begins with determining how to measure performance and then actually measuring it. Individuals and groups must then be held accountable for their performance. The progress of the process must regularly be reviewed and the results thereof made known. Finally, positive performance must be identified and rewarded while negative performances must be addressed.

In taking responsibility, the employee must acknowledge that he has been given the necessary information to willingly accept the empowerment. He must agree that he understands what is expected from him, and he must start acting in accordance with his responsibilities.

4.1.3.4   Results of empowerment

Empowerment is a very effective method of bringing about a change in the culture of an organisation. This change can have two distinct outcomes: either Threats or Opportunities. Threats can be divided into Denial- and Resistance phases. Opportunities can be divided into Exploration- and Commitment phases. Each person affected by the changing culture will to some degree go through each of these phases.

Denial means that when empowerment is started some people will react as if nothing has been changed or will continue to do their work as they did previously. People are blind to the problems facing the organisation during the denial phase. Emphasis during this phase is still on style and not results.

In time they will be forced to admit that change is taking place but may still resist changing their behaviour. This can lead to anxiety, frustration, anger and depression. Resistance can be detected by lack of progress in the change process and blame being passed around.

Once the process of change gets into full swing, people will start to discover what their new responsibilities are and what their future and that of the company is. They will begin to experiment with adopting new

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attitudes and will see results achieved by other people who have already embraced the empowerment. This phase can be chaotic, as there is a lot of energy but a lack of focus.

Finally everyone in the organisation will realise what benefits the empowerment can have and become committed to the ideals at which the new culture is aimed. People will begin to focus on a plan and start working together. Once everyone is totally committed the organisation should find that continuous improvement takes place because it is driven on all levels of management and by all employees. (Hradesky, 1995, p.171)

4.1.3.5   Management of phases of change

In order to ensure that change brought on by empowerment proceed through the various phases listed above, it is important for management to do the following:

- Denial Phase   Confront employees with information on how and why the change will happen. Also explain what they should do to adjust to the change.

- Resistance phase   Grievances must be listened to and support encouraged. Rather than telling people how to react, management should work with them to develop a plan to overcome their obstacles.

- Exploration   Management must provide training and help people focus on priorities. They must manage the positive energy that begins to develop. Short-term goals must be set during this phase.

- Commitment   Long-term goals should be set and attention given to team building. Recognising and rewarding people producing the required results should be kept up.

It is important that management recognise each phase of the change process as failure to deal with a particular phase can result in a stagnation of the entire process. One important point to remember is that team building should not be attempted too soon. Team building cannot start before people have finished complaining and had time to re-assess their situation, before they will begin to rebuild trust and start co-operating.

4.1.4 Summary of quality culture

In order to implement Total Quality Management, an organisation needs to create commitment towards the goals of the organisation. Once commitment is attained, the organisation needs to go through the process of cultural change. This process must be managed and measured in order for it to be completed successfully.

The ultimate purpose of changing the culture is to implement desirable values in the company. This is achieved through empowering the workforce to such an extent that they have clearly defined expectations, responsibilities, levels of authority, resources and skills. Empowerment requires a high degree of focus from management.

Once empowered the workforce will be quality driven, proactive, able to adapt and always striving for improvement.

4.2 The implementation process

Before one looks at the process of implementing a Total Quality Management system, one needs to look at some pitfalls that can scuttle the process before it has time to get off the ground.

Pitfall number one is a belief by the executives that commitment is interest or interest is commitment. They underestimate the effect of themselves being role models and how their behaviour can and will influence the implementation of TQM. A typical sign of this happening is the delegation of responsibilities by executives who should be doing the motivation, planning, etc. This robs the implementation process of vital leadership.

In order to avoid this situation, management or executives should be trained and made to understand what commitment means so they can buy into their role responsibilities. Commitment must be defined as making no excuses and accepting none either.

Pitfall number two is the use of internal personnel to do a self-assessment. This might lead to a subjective view of the current situation. A lack of knowledge and experience in this field may further skew the assessment. To avoid this it is recommended that the assessment be done by an external, professional firm that will allow objectivity and do an in-depth analysis of the company.

Pitfall number three is the failure to educate managers on the concepts of TQM. This will lead to misunderstandings between them and will fail to gain their commitment and bind them into a goal-oriented team.

The fourth pitfall is the failure to conduct strategic business planning to set the future direction of the company prior to starting the TQM process. Without an effective mission, vision and value statement, the executive management may fail to buy into the undertaking. Without these statements, the company will lack focus and the whole TQM effort will suffer. It is once again recommended that an expert be called upon to lead the company executive and key managers in a strategic planning session. This should have the further benefit that a team starts to develop before the TQM process is started and that people from the highest level of the organisation become committed and involved.

Failure by senior staff to produce a list of critical success factors for the company can be seen as pitfall number five. Without this list, no milestones can be set for the TQM goals and its monitoring will become difficult. To avoid this situation a tactical planning session can be held in conjunction with the strategic planning session mentioned above.

The last pitfall is a lack of internal customer satisfaction agreements between various departments. This will result in departments continuing individually as they did before without collectively focussing on the external client requirements, causing the whole company to suffer. To overcome this problem a system should be set up whereby the internal

customer satisfaction is measured and corrective actions taken where the satisfaction is lacking. (Hradesky, 1995, p.30)

Once the realisation has settled in that a company needs to change its culture and management style, it becomes necessary for someone to start the implementation process. Quite often the implementation is tackled in a haphazard fashion and soon runs out of momentum. To avoid this situation, it is important that it becomes a corporate priority for the implementation process to be done in a methodical manner.

Distributing booklets and having discussions does not equate to implementation. In most cases of implementation of a process, there is a general progression of activities that need to be followed. These can be summarised as follows:

- A goal or objective is identified
- A team gets appointed to draw up a plan for the achievement of the goal
- The plan is followed methodically
- Measurements are taken during the execution
- Corrective actions are taken, should they be required
- People are educated on how to use the new system

This process, which at its heart has the changing of the company culture, is not a short one, but rather one without an end. Changing a culture is "..a matter of exchanging values and providing role models. This is done by changing attitudes." (Crosby, 1984, p.98)

The importance of role models cannot be overemphasised. People will do what they think the company expects from them, even when the opposite is true. People's perceptions are moulded by the way the examples the company show them. Should a manager only be worried about getting a project done on time or within budget, then his subordinates will only focus on those issues. Should he however question methods of doing and their impact on the quality of the product, then the people working for him will also start looking for better ways of doing their jobs.

To change the corporate culture, we need to decide how we want it to be and then set about changing it accordingly.

According to Crosby (1984, p. 99) there are fourteen steps in the implementation of quality improvement. They are:

1. Attaining management commitment

2. Establishing a quality improvement team

3. Measuring

4. Determining the cost of quality

5. Creation of quality awareness

6. Taking corrective actions

7. Planning for quality

8. Employee education and training

9. Launching

10. Setting goals

11. Error-cause removal

12. Recognition and rewarding

13. Establishing quality councils and quality circles

14. Repetition

These fourteen steps do not necessarily have to be done consecutively. Once measurement starts, people will automatically start identifying goals while education will become a never-ending process.

Senior management is the most important key to the process of quality improvement. Senior management needs to be educated regarding quality and to set out on a mission to change the culture, before any benefit can be derived from such a change.

The company's culture only change when all employees realise their roles and responsibilities in attaining quality. They will also expect management to start demanding quality and themselves producing it.

4.2.1 Attaining management commitment

Senior management must not only be committed to quality improvement, but must exhibit their commitment in such a manner that it is clearly conveyed to the other employees.

The first step towards establishing commitment should be the drafting of a quality policy. The quality policy must first be written and then proven to be a serious message. The policy must be clear to avoid misunderstanding.

An example of a quality policy for a construction company could read:

> We are committed to establishing our company as the best in the industry by delivering buildings to our clients that conform to their requirements, on time and within our budgets.

The next step in establishing quality commitment is to ensure that it is given the same status as finances in management meetings. It must be placed on the agenda as a separate item for which a status report must be tabled.

The quality status report must include items describing the status of the quality improvement process, the latest updates regarding the cost of

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quality and a report on the actual quality achieved. Reasons for failures, corrective actions and successes must be highlighted.

Public affirmation from senior management through speeches by senior managers at social events, general meetings, etc. will further enhance the confirmation of their commitment to the quality improvement process. It must also continuously be emphasised that senior management takes conformance to requirements seriously and therefore no exceptions should be made.

In the construction company, with its emphasis often skewed towards time and budget constraints, it is important for managers to impress upon their subordinates that urgency or monetary impacts should never override the decision to do something correct the first time.

Management commitment will always be under close scrutiny, as people fearing change will always be on the lookout for the slightest indication that this commitment is slipping and thereby justifying their reverting to their original comfort areas.

4.2.2 The quality improvement team

Although individual commitment is a must for quality improvement, it takes teamwork and co-ordination to make it happen. This requires

organisation. The first step in organising for quality improvement is the establishment of a quality improvement team. This team will implement quality plans and motivate the acceptance of quality through teamwork. The task of the team must be to co-ordinate and support.

The team must consist of people from all functions of the organisation. They must further have the authority to make commitments without the threat of these commitments being overturned.

The team must have a champion. This team leader must be in direct contact with or part of top management. The team leader must also understand the overall business strategy and be able to change it if necessary. There must further be a full time co-ordinator who will ensure that all team members are fully briefed, attend meetings and supply the resources required to keep the process going.

The team leader, with the co-ordinator and top management will draw up an overall strategy for the implementation of Total Quality Management. This strategy is then developed in more detail with the quality team members. It is important that the team members adjust the strategy to comply with their practical needs.

The members of the quality team must all be educated in the concept of Total Quality Management. If they are not, a lot of time will be wasted and

the entire process can become disoriented. The team must, above all, be aware that it is the attitudes and practices of management that they want to change first, before they can hope to change that of the rest of the employees. The team needs to buy into the process to be committed to its success.

The main purpose of the quality team must be to effect change. They will do this through the creation of procedures and actions to be followed and taken, but also through ensuring the education of all employees. Training is best achieved through experiencing what can be achieved if certain actions are taken.

4.2.3 Measurement

Collecting information on how an organisation operates, including the determination of the cost of quality will identify the areas where improvement will have the greatest impact. This collection must be done through measurement. Measurement enables communication in finite terms. It is essential if the company wishes to know exactly how it is doing. Measurement is describe by Hradesky (1995, p.61) as "...the first step in being able to determine what additional action will be required to achieve our goal."

The quality improvement team does not have to determine what has to be measured. All work is a process of changing input, by applying a process, to output. Input, process and output can all be measured. The quality team must bring this under the attention of every employee and they must then determine how their own processes can be measured themselves. The quality team must however, ensure that the measurements are designed to give definite quantitative answers and not vague qualitative measures like "better" or "faster".

People must be convinced that measurement is done in order to track improvement, not to supply information for checking up on them. It must be made clear that the measurement targets improvement, not the employee.

There might be a perception that quality measurement must be done by the use of cost-accounting information. This is incorrect, as this information cannot map process performance. It does not indicate the improvement as observed by the customer. It is, for instance, not sufficient to measure quality based on cost-accounting methods for construction projects where cost reports are often only drawn up between two to six weeks after work was physically performed. This means that the cost of mistakes made is only identified up to six weeks later, by which time it is very difficult to do anything about it.

Measurement enables the company to identify areas of opportunities, determine how successful its process control and improvement is and comparing its performance with those of its competitors. Measurements should give information on how well people and processes are doing in order to motivate better performance.

The Deming cycle of continuous improvement is a useful aid in designing a measurement system (Oakland, 1989, p.165). It is based on the following:

- PLAN   establish performance objectives and standards

- DO   measure actual performance

- CHECK   compare actual performance with objectives and standards, determine the gap

- ACT   take the necessary steps to close the gap and make the necessary improvements

Some reasons for measurements are as follows:

- To ensure that customers are satisfied

- To provide goals to be attained

- To provide standards for comparisons

- To determine areas where additional attention to quality is needed

- To provide status reports on the progress of improvement

Measurement will further indicate what the overall impact of the TQM process on the business is.

In order to measure performance, one needs to measure quality, effectiveness, efficiency, impact and productivity. These are measured through determining input or output figures, the cost of quality, customer comments and complaints, etc. Indicators are used to communicate the results of the measurements. Indicators can include ratios, rankings, financial and time-based indicators. The indicators must emphasise quality improvement.

In developing Quality Indicators the following principles will be common to all cases:

- The entire process should be considered. No control mechanism or process can detect or correct weaknesses generated by activities or inputs not covered.

- Indicators should diagnose the real causes of each problem identified.

- The information system, as well as the measurement and evaluation of quality should be above reproach, i.e. values of indicators should be reliable.

- Indicators should be expressed as deterministic as possible, i.e. preferably percentages or costs, otherwise as a quantity or, at least,

degree of seriousness. Although difficult in the light of the above, indicators should, however, cover both "hard" and "soft" issues.

- Ranges of indicators concerning the same entity or process should be grouped together to afford a complete picture of the specific entity or process. Indicators are often grouped into, at least, internal and external indicators. Internal indicators identify problems which the entity's own control system detects and external indicators those which are not detected but present.

- Indications in each group should be weighted and prioritised to recognise Pareto's law (20/80% rule) and ensure maximum affect when improved.

    (Basson G, 2002, *Quality Indicators*, p. 3)

It is important for the measurements to be directly related to the company's competitive strategy, adjustable if required, easy to use, provide fast feedback and encourage improvement rather than just monitoring. Measurements must be understood and accepted by everyone involved, compatible with a recognition and reward system and not be open to manipulation. They must be correct and precise and relate to controllable aspects of the processes. The measures must further be timely and result-oriented. The measurement system must be designed to measure progress in excess of the current status.

Some examples of what must be measured in the construction industry are listed below:

- Total cost of construction versus Allowed cost

- Percentage of budgeted income realised

- Value of savings made

- Cost of rework

- Date of actual completion versus contractual completion date

- Number of items on defects lists

- Cost of items on defects list to quantify seriousness

- Completion times of defects on defects lists

- Number of bricks laid per week or per month

- Cubic meters of concrete placed per week, per month or per floor area.

- Value of work produced per employee

- Value of variations compared to contract value

- Material wastage as a cost or a percentage of material used

- Wastage reduction percentage

- Number of material orders made per month

- Number of suppliers

- Number of subcontractors

- Percentage completion of subcontractor work

- Percentage of defects costs of total cost of subcontractors' cost

- Material on site turnover

- Equipment downtime as a percentage of total operating time

- Labour force absenteeism

- Overtime as a percentage of total time worked

- Number of casual labour hours used or as a percentage of total workforce

- Labour turnover

- Training hours as a percentage of total hours

- Hours of training per employee per period

- Accidents per month

- Head office accounting cost per total project incomes

- Overhead percentage

- Market share

- Number of tenders submitted

- Percentage of tenders won

- Number of tenders awarded

- Value of tenders awarded versus submitted

- Follow up projects from existing clients

- Percentage of overhead cost to total construction cost

- Percentage of available employees currently busy on construction projects.

   (Hradesky, 1995, p.66-73)

It is important to measure all the elements of performance i.e. time, cost and quality. The performance measures must also reflect the requirements of the internal and specifically the external customer. The measurements made must be ones that indicate problems where smaller adjustments will have greater results. The principle described by Pareto's law can be followed here. It states that an 80 percent difference can be achieved through expending 20 percent of the effort required to achieve an 100 percent change, and that the last 20 percent change will require the remaining 80 percent of the total effort. It follows therefore, that measurement must focus on that 20 percent of actions required that will cause an 80 percent increase in quality. The measurement system will also have to be flexible, as most construction projects are unique and will require some adjustments thereof.

Ultimately the measurement system must indicate whether progress is made in the improvement process, and if not, it must indicate where management needs to focus their efforts to get it back on track.

Thought must be given to benchmarking. Benchmarking is the measurement of the organisation's performance against that of its competitors. The fact that information regarding the financial, time and quality success of construction projects undertaken by competing construction companies are very difficult to obtain renders benchmarking

difficult in this industry. Most information would be based on perceptions that do not allow accurate measurement.

4.2.4 The cost of quality

The next step is to provide a system that calculates and reports the cost of quality, as discussed in chapter 2, to senior management and to provide them with useful information regarding the quality improvement process. The cost of quality is usually only used to determine defects on the manufacturing or construction line. It could however, be used to determine where a small amount of effort would save a big amount of money.

One of the main obstacles in generating the cost of quality, is attempting to calculate it to one hundred percent accuracy the first time. This becomes a drawn out exercise that soon looses momentum. It should rather be attempted to get al least an eighty percent accurate figure, which will be alarming enough to get everyone's attention. The cost of quality can be calculated more accurately as proficiency in TQM grows. The more accurate figure must not be assumed to represent an increase in the cost of quality. It may only take account of costs that were previously overlooked. According to Philip B Crosby (1984, p.86) the rule for determining the cost of quality is: "Take everything that would not have to be done if everything were done right the first time and count that

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as the price of nonconformance." In other words, the cost of quality can be described as the cost to ensure the client gets what he requires. The effort expended in determining the cost of quality must be weighed up against the benefits received from use of that information.

The quality team must involve people from all departments of the company to help it design a system for measuring the cost of quality. In a construction company these people would include quantity surveyors who work with the costs on building projects individually to accountants who deal with accounting costs. The system must give an outline of how the cost of quality can be calculated per project and how the costs from various projects are to be combined to give a company wide cost. This would require aligning of the cost of quality system with the overall accounting system of the company.

The cost of quality must then be used by management as a tool to track improvement by measuring the same thing over and over, and not something to threaten people with. It must also not be used as a basis to place different projects in competition.

The determination of the cost of quality is a subsystem in the overall quality improvement system and therefor will require its own commitment, management, training, promotion and participation. The ultimate goal of

the cost of quality system must be to impact on the mission of the
organisation.

4.2.5 Quality awareness

Creating quality awareness requires communication. Acceptance of
quality improvement can only be achieved through communication
processes. The quality team must make sure that the company's quality
goals are communicated in an understandable format to all employees.
This communication must be part of the overall communication system.
Communication of quality improvement must not be kept separates as
people who think it does not affect them, might ignore it.

Communication is required to let people know how they will become part
of a TQM system, what the process will be and what the benefits and
successes of the TQM system are. Improving communication may require
the quality team to have people in management positions, including
themselves, trained in communication skills and methods such as talking
in front of a group, group communication, reporting and writing.

In order to remind people to strive for quality, they need to be constantly
reminded of it. Useful means of communication are competitions, prizes,
formal presentations, demonstrations, exhibitions and company
newsletters or –magazines. The use of posters should not be

underestimated. Having regular, formal discussions with the labourer on site regarding quality will also keep quality in the forefront of his mind. This is perhaps more important than posters when working with a labour force that may not have a high degree of literacy, as is often the case in the construction company.

Management's commitment to quality must be made clear through the quality communication. The workforce must know what the company policy regarding quality is and also what the costs of doing things wrong are.

The quality team must strive to make quality a part of the everyday communication in the company.

4.2.6   Corrective actions

A system is required to identify quality problems and to correct them. This fact, though simple, is often overlooked in the construction industry. Although people are aware of problems, these problems are not identified to the correct people who can do something about it. When a labourer comes across poor quality, he more often than not ignores it and applies his trade to the defective work. This only compounds the problems and results in higher cost to fix it. If the labourer was quality conscious and a

system was in place for him to notify his superior, the problem might have been solved earlier and cheaper.

A system of corrective actions must focus on eliminating problems. The phrase is however, often misunderstood and taken to mean "fixing mistakes that have already been made." Although this must be part of the corrective action system, the system must aim to prevent mistakes from being made, which would negate the need to fix mistakes.

The first step in taking corrective actions is to determine the cause of the defect. This is done through quality audits and reviews, surveys, scheduled inspections and unscheduled tours. The next step is to identify what has to be done in order to avoid a repeat of the actions that lead to the defect. The corrective action system must be based on data that indicate the root cause of the defect, as that is where the least amount of effort will have the greatest effect on quality. The identification process involves collecting, checking and selecting data to analyse. The data is analysed by determining causes of defects, determining and recording preventative measures and then reporting to all relevant people.

In the construction industry, with its high use of subcontractors, a system is required that involves the subcontractors in corrective actions. Regular meetings with and audits of the subcontractors' quality have a great impact on overall quality. The ideal would be to use subcontractors who

have proven quality management systems in place. In a country where companies are obliged to make use of and help with the development of subcontractors who are from previously disadvantaged communities, this is however not always possible. The bigger construction companies must therefore invest time and energy in helping the subcontractors in understanding quality and developing their own systems to manage it. This investment will eventually pay off in the form of better quality at lower prices.

Open communication between the large company and the subcontractor, regarding quality, is essential in ensuring subcontractor quality. If the subcontractor is aware of exactly what quality is expected of him, as well as the effect his lack of quality will have on the rest of the construction process, then he will be more inclined to deliver the required quality.

The quality system cannot function without regular audits and reviews. The audits must ensure that actual methods are following the prescribed procedures while reviews will determine whether the quality system is attaining the desired results.

4.2.7 Plan for quality

Quality planning must be focussed on attaining zero defects. Quality planning must involve a review of existing quality systems to identify

strengths and weaknesses of these systems. The new plan must then incorporate the strengths and avoid or address the weaknesses.

The plan must consist of detailed operating plans, procedures and techniques. It must set out all quality-related aspects in the construction process. These will include specifications for materials and services to be used, subcontractor adjudication methods, process controls and inspection procedures, including the use of checklists.

The plan should define the following:

- Specific allocation of responsibility and authority during the different stages of a project.

- Specific procedures, methods and instructions to be applied throughout the project.

- Appropriate inspection, testing, checking and audit programmes required.

- Methods for changes or modifications in the plan required as the project proceeds.

   (Oakland, 1989, p.70)

The quality plan must aim to provide processes that reduce the possibility of malfunctions to a minimum. It must ensure a safe, clean and orderly workplace, with adequate facilities and resources. The quality plan must

also describe where and how information must be gathered, how it must be reported on and whom the reports must be made to.

The system as set out by the quality plan, must be able to continue functioning regardless of changes in management and personnel involved.

4.2.8 Employee education and training

Once management is committed and well on its way towards TQM, the need arises to educate the rest of the employees on how to achieve quality. This requires training. It is such an important step that Juran says "..- training is how to make quality happen." (Juran, 1989, p.321)

The ideal is to develop a comprehensive quality education system that provides a standardised method of training that could be used by anyone who has been trained to use it. The system can include formal classes, with video or slide presentations, workshops, discussions and practical examples on site. The system would have to take the trainee's level of authority and education into account.

Although there is an investment required by the company to have employees trained, this investment will pay off in dramatic increases in

quality. Every person who undergoes training will understand that he plays an important part in the production of quality.

The training system must ensure that training is done objectively, systematically and continuously. As with all systems, the training system must be improved on a continuous basis. This means that once it has been implemented, it must be monitored, results assessed and adjustments made. The training programme must include follow-up activities and encourage the exchange of experiences and new ideas.

The main elements of quality training should include the following:

- Error/problem prevention

- Analysis and reporting

- Investigation

- Reviewing

  (Oakland, 1989, p.391)

Training needs to happen on four levels of the organisation. These are:

- Senior management i.e. Contract managers,

- Middle management i.e. Site agents and Quantity Surveyors

- First level supervision i.e. Foreman, Gang leaders.

- All other employees i.e. labourers and artisans

4.2.8.1   Senior management

Training must instil awareness of and commitment to quality under the senior management staff. The training must include the tools and methods to be used to create an atmosphere where quality can thrive.

Topics to be included in senior management training are meeting internal and external customer demands, setting quality standards, monitoring quality performance and spreading the idea of quality throughout the company.

4.2.8.2   Middle management

The aim of training middle management should be to ensure that they are conscious and anxious to achieve the benefits that TQM can provide them with. These managers should be trained with the technical skills to design, implement, review and change the parts of the quality system that is under their direct control.

Responsibilities must be clarified. This will prevent people from trying to avoid taking ownership of the quality system. The training must focus on the implementation of teamwork and the use of tools for process control.

4.2.8.3   First level supervision

This level of management is where the implementation of TQM is managed. These people must be trained in the principles of TQM and what quality will mean to them. They must be made aware of their role in the TQM system, teamwork and the need for their commitment.

4.2.8.4   All other employees

Awareness of and commitment to quality is as important on this level as on any other. The basics of quality must be taught at this level. It is important to use practical examples in order to ensure understanding.

The training should provide training in the quality procedures with which the employee will be involved. This will include "on the job" training and also foster an understanding of what the client requires. Follow-up on training is important to ensure implementation is followed through.

The group size for training should not be between ten and twenty people at a time. This size group will ensure that there are enough people to keep discussions going while enabling the trainer to give fairly personnel attention to everyone.

Consultants are often used to introduce TQM. A consultant should be chosen with specific attention given to his qualifications, experience, knowledge and proven previous successes.

When using someone from the company to conduct training, that person must himself be trained first.

The person selected to do the training must be:

- Technically competent

- Resourceful

- Professional

- A good communicator

And have:

- Management skills

- Good interactive skills

- Evaluation and feedback skills

- Planning skills

Successful training will manifest itself in a positive change in performance, positive relationships between managers and subordinates and a higher level of desired behaviours. (Hradesky, 1995, p.243)

4.2.9 Launching

There is a need to have an official launch day when implementing TQM. It is however, incorrect to see this day as an occasion when all employees must sign a piece of paper to signify their commitment to quality. Although this can happen, it is much more important for management to stand up and publicly commit to quality in a manner that will leave little, if any, doubt with the labour force that they are serious about improving quality.

In a construction company where the basis of operations are not centralised but spread over various construction sites, some of which can be hundreds of kilometres apart, it may not be practical to have a single day exclusively. It would be advisable to have a launch-day at the company's head office, which must be attended by the management teams from all the projects, and then have site launch-days where management visits a site and reaffirm their commitment in front of the general labour force.

It is important to make sure that material suppliers and subcontractors attend these site launches, as they will also be involved in the quality process. Launch-days can be combined where projects are in close proximity and share subcontractors. The various launch-days must be held within a restricted time frame, to avoid a perception that quality is

more important on some projects than on ones where the launch is on a later date. Consideration can be given to a "Quality launch-week" during which management will have their site launches and the main launch.

The launch should include special presentation techniques. The use of videos or even live actors to explain the impact and cost of quality may be useful. Using some of the management staff as actors will provide some comic relief while their willingness to do the acting will help express their commitment to the process. It is important to make the days memorable, and its anniversaries must be celebrated.

4.2.10 Setting goals

As mentioned earlier, goal setting will start automatically after measurement. The ultimate goal is to completely satisfy the requirements of the internal and external customers. Intermediate goals are however necessary to help identify progress towards that ultimate goal. The goals must be significant, as insignificant goals will detract from the importance of progress. According to Juran (1989, p.72), each goal should be quantified and should have a target date for completion. The monitoring of achievement of goals is necessary for the reward system that will be described later.

Goal setting will take place on all levels of management. Upper management will deploy macro goals while middle management will determine what is required to attain these goals. They will then set goals for the next level of management who will again interpret these goals and decide the courses of action required for achieving them. This process will repeat all the way down to the individual employee. Once at the lowest level, the goal should indicate a specific deed to be done by a specific person and the resources required by that person. The time frame for achieving the goals will also decrease the further down the chain of command one moves.

The ideal must be to get the individual worker to set quality goals for himself, which will result in the goal setting process turning around and forcing the managers to react to the success of the lower level. This will indicate a degree of maturity in the quality culture with communication flowing in both directions.

Examples of goals to be set by the senior management of a construction company are:

- Reducing the cost of rework on all projects by 50% over the next year
- Obtaining five projects through follow-up work from satisfied customers, as opposed to tendering, within the next 18 month

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Goals should be:

- Legitimate - so they have undoubted official status

- Measurable - so they can be communicated with precision

- Attainable - so they can be met by application of reasonable

  effort

- Equitable - so they can be attained by all employees on the

  same level

  (Juran, 1989, p 152)

Goals can be based on technological, market or historical analyses. The trend is to base macro goals on the requirements of the customers, performance in comparison with competitors and improvement on historical successes.

Goals must help employees to get a better understanding of what quality requires. This means that the goals must be expressed in language that is understandable and must describe results that have meaning to the employee. These goals will then serve as a motivational tool.

4.2.11 Error-Cause removal

This step involves the collecting of feedback in order to make the necessary adjustments to the system. Emphasis must be placed on the fact that people must indicate problems they have with the system, and

not necessarily come up with suggestions on how to fix them. This will convince people to freely communicate problems they see without having to know what the solution is. Care must however be taken not to let people just look for the faults. This could lead to focus being moved from the positive aspects to reasons why the system must fail.

It is important that the quality team act on all error-causes communicated to them. It is even more important that they are seen to act on them. This will increase the confidence in them and the system as people will see that their communication is received, analysed and acted upon.

Error-cause removal increases open, two-way communication that, in turn, will strengthen the success of error-cause removal. In the construction company with its various points of activity, it is important that the flow of information between the building site and the head office is effective. This might require the quality team to schedule regular meetings with the people on site in order to ensure that problems picked up there are passed on to where changes can be initiated. This is especially true if there are conflicting personalities involved. This may lead to a problem picked up by a foreman not being communicated up the line because he is unwilling or unable to communicate it to his direct manager. It is important for the quality team to be approachable by all employees. This might require dedicating each member of the team to

deal specifically with certain levels of people while not excluding communication with other levels.

Error-cause removals can also be tied in to the recognition and reward system by rewarding positive contributions made through identification of major problems or workable solutions suggested.

4.2.12 Recognition and reward

People use other people as reference points in determining their own behaviour. This is why mentors are such a great method of teaching. The pupil learns how to do something by watching someone he respects doing that specific task.

In implementing a total quality management system, the quality team must design and initiate a system whereby people who act as good examples regarding quality are identified and rewarded. The purpose of the recognition and reward system must be to influence employees' performance through reinforcement of desired values and behaviour. It is important that their peers choose the people who are rewarded and not management, this will give them a greater sense of achievement and respect.

The results of a recognition and reward system is the identification of hard-working, quality committed people, the description of what quality performance should be and the provision of an example everyone can strive to match.

The recognition and reward system is very important for TQM and should focus on employees and executives. People are not motivated by their salaries and therefore the company must provide alternative means of motivation. Rewards should also not only be monetary rewards, but must give the person respect and enhance his pride in his work. As Philip B. Crosby (1984, p.119) says: "…money is a very bad form of recognition. It is just not personal enough."

It may be necessary to reward some initial or intermediate performances to get the TQM system up and running. Once the system is operational, smaller rewards can be used to keep the momentum.

A team can be formed to run the recognition and reward system. This team should include employees from all levels of the organisation. They then need to be educated in what the desired behaviours to look for must be. These behaviours do not have to be ones whose benefits can be easily quantified i.e. having the lowest amount of defects per floor area, but can be ones with a more indirect influence i.e. the manager whose employees have been given the most hours of training. The first

behaviour has an immediate effect on quality but is limited to the specific project, while the second will reap rewards over a sustained period and on many projects in the future.

Some of the focus areas for the recognition and reward system can be training, involvement, individual suggestions, group and individual achievements and knowledge of the quality vision, mission and goals. The timing of rewards is critical. The more immediate the reward given after the desired performance is achieved, the more powerful the effect of the reward or recognition becomes. (Hradesky, 1995, p.188)

When a reward is awarded, it should be described in detail what the behaviour was that lead to the reward being given. The recognition should be clearly communicated throughout the company. Having official "Award ceremonies" which combines with social events like the Christmas party, will popularise the awards.

Recognition can take the form of verbal praise in public or private, a certificate, mention in the company newsletter or posting a photograph of the person and description of his behaviour on a notice board. Rewards do not have to be financial and could include dinner with the boss, promotion, additional leave days, holiday trips and even a token cup or shield engraved with the employee or team members' names. Economic rewards can be a cash bonus, company shares or salary increases.

In the construction company where many people from previously disadvantaged communities are employed, financial rewards will attract the most attention. These rewards should focus on bettering the employees' long-term financial situation. This could include combining raises with opportunities for further study. The raise would help alleviate possible poverty while education would empower the employee to better himself and his future.

Recognition and reward should be an ongoing process with awards being made at regular intervals. Irregular awards will create the illusion that it is done only when someone remembers to do it and will detract from its impact.

The system should also guard against creating any perception of punishment. No employee must ever feel he is being punished when he is not given recognition. Punishment has been proven to stop negative behaviour but not to encourage positive behaviour and also often create resentment and fear.

A reward and recognition system in the construction industry could be established on separate projects and be run by employees working on the specific projects. The system can also incorporate subcontractors and their employees with all the companies involved sponsoring rewards. The

traditional "Roof wetting" could be used for the awards while smaller recognition and rewards can be given on bimonthly intervals. For this to work however, all employees should be made aware of the system as part of their education in quality achievement.

4.2.13 Quality Councils and Quality Circles

Quality councils are ways of bringing people that are driving the quality process together to exchange ideas and learn from each other. Establishing a quality council provides a disciplined and systematic approach to ensure continuous improvements.

The quality council must be lead by the top executive in the company. The rest of the senior management together with the people in charge of the various construction projects must all be members of the council. Meetings must be held at least once a month and the aim of the meetings will be to review strategy, implementation progress and improvement. The objectives of a quality council are:

- Providing strategic direction on TQM for the organisation

- Establishing plans for TQM on each site

- Setting up and reviewing the project quality teams that will run the quality process

- Reviewing and revising quality plans for implementation

  (Oakland, 1989, p.306)

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The separate project quality teams must also have formal monthly meetings. These meetings must result in reports that are forwarded to the quality council for discussion during their meeting. It is further advisable for a member of senior management to be present at the project quality meetings to show management's support for employee participation and commitment to quality.

The Quality Council must concentrate on quality strategy while the project quality teams must try to solve problems themselves as far as possible. It would also be a good idea to get different project quality teams to meet on regular intervals. This would further the communication of solutions for problems encountered and keep everyone informed of the latest methods and results. These meetings can be arranged quarterly.

Quality circles are groups of people involved with similar work who meet voluntarily, regularly and under the leadership of their supervisor to identify, analyse and solve problems related to their work and to then make recommendations to management (Oakland, 1989, p.311). Quality circles provide the workforce with an opportunity to participate creatively in matters relating to their own jobs (Juran, 1989, p. 284).

In a construction company this should involve getting all labourers, artisans and subcontractors connected to the various trades i.e.

plastering, bricklaying or painting to form a quality circle under the leadership of the foreman in charge of that trade. It is important to have these meetings during working hours as attendance will not be guaranteed otherwise.

If a quality circle has identified a problem and has come up with a solution, they must implement it themselves and report on the effectiveness of the solution. Managers need to be trained in establishing and running quality circles. Initial education for all employees is necessary to get the process of TQM started. This education will lead to employees getting involved in quality circles. These quality circle meetings can then become an excellent forum to introduce further education and training.

It is important for higher level managers, like contract managers, to attend some of the quality circle meetings. This will again stress management's commitment to quality and will give the members of the quality circle an opportunity to communicate its successes, requirements or frustrations directly.

The fact that quality circle meetings should be held in working hours will mean that the company will be investing in the quality process in the form of "unproductive" man-hours. The fact does however remain that the improvement in quality and subsequently productivity will result in more

than adequate returns on this investment. Quality circles will give people a sense that they are important in the quality process and can, if administered correctly, be a very good motivational tool. Quality circles embody the concept of empowerment, which is very important in the current South-African social landscape.

4.2.14 Repeat

After the quality team decides that the TQM process has been implemented, they can hand over the responsibility of driving quality improvement to a new quality team. This team can include one or two members from the original team to ensure some form of continuity.

The new team will have been educated about quality improvement during the implementation process and would have experienced, first hand, some of the highs and lows of the quality improvement process. This will stand them in good stead to develop new and improved methods to maintain improvement, foster commitment and continue education. They will be the people who will be responsible for maintaining the quality momentum gathered during the implementation process by helping the quality culture evolve and adapt.

The route the new quality team will take will be familiar as it will always include attaining commitment, measuring, creating awareness, taking corrective actions, planning, education, setting goals, removing problems,

recognising and rewarding people, serving on quality councils, -circles

and –teams and in the end seeing someone else repeat the process.

4.3   Critical success factors for the implementation of Total Quality Management

For a Total Quality Management system to be implemented successfully,

certain critical factors have to be present. Through this chapter the

following factors have been identified.

- Create Commitment

Every person in the organisation must be committed to the improvement

of quality. This requires planning for small successes and celebrating

their achievement. Commitment will direct all focus on the customer.

Through commitment people will change their behaviour to attain the

organisation's goals and their own.

- Change the Quality Culture

The quality culture must identify how employees should behave generally

when faced with a problem. To bring about a change in the quality

culture, it is necessary to identify good reasons to change. A plan with

measurable goals and clear expectations must be drawn up. Training must be supplied and recognition given.

In an effective quality culture, defects will be prevented, not fixed. Co-operation must be at an optimum between departments and with suppliers and subcontractors. Cultural change is a continuous process without a completion date.

- Empowerment

A company of empowered employees, where every employee regards quality as his personal responsibility, will be a company with many problem solvers. Empowerment means that employees' decisions are supported and innovation rewarded.

Empowerment improves communication. Management must be trained in empowering people. Empowerment is a process that will take time. The phases of change taking place with empowerment must be managed carefully.

- A methodical implementation process

This is a process without end. This process has a change in culture through a change in attitude at its heart. The implementation process has

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14 steps that are repeated over and over. These 14 steps do not all have to be done consecutively but must all be completed.

- Communication

Communication is necessary for any venture. Good communication will allay fear of change that is a natural reaction to a changing environment. The lack of communications will scuttle the process of implementation very quickly. The success of the implementation process will hinge on how well the employees are informed. The necessary flow of information can only be achieved through effective communication channels.

- Measurement

Measurement allows communication in definite terms. Measurement is necessary to track progress and forms the basis for corrective actions to be taken to keep the implementation process on track. Measurement provides goals to be achieved and standards for comparison. Measurements must be made of all areas of performance i.e. time, cost and quality.

- Continued training and education

Training is necessary for the implementation process but also for maintaining Total Quality Management. TQM implementation plans must reinforce the training supplied. Training must be given to all levels of employees. Training requires investment in people from the company, but this investment will inevitable pay off in increased profitability and productivity.

- Recognition and reward

Recognising and rewarding behaviour that is in line with the TQM goals are very important. This is true during the implementation process and the continued maintenance of the TQM system. Recognition requires effective communication to be truly effective in providing role models. The recognition and reward system must be implemented on all levels of the organisation.

4.4   Conclusion

The critical success factors for the implementation of a Total Quality Management process has now been established as the creation of commitment, changing the current culture to a quality culture, empowering people, a methodical implementation process, effective

communication and measurement, continuous education and training and a structured recognition and reward system. However, once the TQM system has been implemented it will, like any system, require maintenance. The critical success factors for the maintenance of a TQM system will form the focus of chapter 5.