

Pearson BTEC Level 4 Higher Nationals in Engineering (RQF)

Unit 17: Quality and Process Improvement

Unit Workbook 4

in a series of 4 for this unit

Learning Outcome 4

Total Quality Management

Quality improvements will improve all aspects of a company: employees, employers, shareholders and customers. By improving the quality of the company, the employees will feel more motivated, meaning they are more efficient, proactive and productive. This will have a roll-on effect to the customers, as the quality of the products will improve, and this will improve customer satisfaction, loyalty and retention. The happy customers will spend more with the company, which will make the shareholders happy. Happy shareholders reduce the pressure on the employers and allocate a higher budget for the employers to improve the facilities and processes, which will then motivate the employees further and the cycle will continue and grow.

4.1 Total Quality Management

Total quality management (TQM) is a method that is adopted company-wide to maintain and achieve high quality products and services to their customers on the idea of “continual improvement”.

4.1.1 Principles of TQM

TQM has eight principles:

- 1. Customer Focused:** The customer is the final say in terms of quality, a company can implement everything they can to improve quality, but the customer will determine whether or not these systems are worthwhile.
- 2. Total Employee Involvement:** TQM is a collective goal and all employees need to be on board if it is to succeed. The employees need to be confident in the new processes and a support network between workers, managers and leaders will need to be established.
- 3. Process-Centred:** A fundamental part of improving quality is to focus on the processes, performance should always be monitored and analysed to find any problems and rooms for improvement.
- 4. Integrated Systems:** While the processes are analysed in TQM, its also important to analyse the business performance as well, and work to constantly improve and exceed the expectations set by the customers, employees and the shareholders.
- 5. Strategic and Systematic Approach:** Achieving a goal will always require a plan, the process will need to be strategically planned, considering a range of aspects and planned systematically to ensure the best possible results.
- 6. Continual Improvement:** This is not a “one-off” project, if the company is to deliver success to its customers, employees and shareholders, then it needs to be ongoing and continuous. Stopping the process will lead to a loss in the company’s competitive edge.
- 7. Fact-Based Decision Making:** A company can not make its decisions based on assumptions, uncertainty is dangerous to a company (why is why markets will drop during elections and referendums). By analysing the data that is collected throughout, more accurate predictions and appropriate actions can be made.
- 8. Communication:** Effective communication plays such an important part in any company, it builds and maintains morale and motivation at all levels of the companies.

4.1.2 ISO 9001

The basis of TQM is covered by ISO 9001, which can be implemented into businesses of all sizes and the benefits include:

- Improving the efficiency of the company as the processes will be aligned and understood by everyone in the business and organisation

- Improving efficiency will increase the productivity and lower internal costs
- Meet necessary statutory and regulatory requirements
- Expand into new markets, some sectors and clients require ISO 9001 before doing business
- Identify and address associated risks

The key ideas of ISO 9001 involve defining the objectives, and asking why the company should implement the standard, if there is no end goal to the project, then there is no direction. It is important the everyone in the company is supportive of the objectives and the initiative of implanting ISO 9001, so it is crucial that senior management is on board with the system. The company should then identify the key processes that are involved in meeting the objectives and the needs of the customer. These processes aim to ensure that you understand the customer's requirements and work to guarantee that these are met, and this will be the foundation of the quality management system.

Sample

4.2 Six Sigma

The quality control tools used by Six Sigma have already been discussed in Workbook 1, however the implementation has not been discussed. It has been noted that companies that implement Six Sigma see an improvement in company performance and increased financial returns.

4.2.1 Project

Ideally, Six Sigma would be implemented into a new pilot project. This will be the easiest way to analyse a process that generates any defects or causes other problems. The process of identifying the defects has to involve the people carrying out the work and taking into account their input into the process. The idea of implementing Six Sigma is that everyone in the workforce is involved.

4.2.2 Training

One of the most important steps before the implementation stage, for Six Sigma to be appropriately implemented into a project, a business will need to have a “black belt” (an expert) in Six Sigma. A black belt can be hired, or they can train one of their current employees. Small businesses only typically need one black belt, but larger companies will require a few more.

4.2.3 Building Team

The chosen black belt team leader must then build their own team within the company, a group of people who will assist the leader with the implementation. The company will consult the team involved with the project. While much of the team will become “green belts” in Six Sigma terms, as people who will support the black belt leaders, some team members will be able to become black belts in their own right. While good workers are needed on any team, the support workers will need to run the project after the implementation and ensure it is maintained.

4.2.4 Plan

Under the leaderships guidance, the team will begin to plan the Six Sigma implementation. The goal of which is to create an organisational structure that will streamline the target production process to reduce any defects. The blackbelt will identify any problem areas and the workers help with possible solutions, this may include:

- Waste reduction
- Increasing worker efficiency
- Eliminate process bottlenecks

4.2.5 Implementation

Six Sigma is not just an initial effort, it is a continuous process, the project has to set up the initial steps and then put the organisation in place to ensure it is maintained. The team make the changes highlighted in the plan, and then puts a black belt in place to run it. Green belts will help with the operation according to the plan and take responsibility for specific aspects.

4.2.6 Evaluation

With the pilot project complete, the team will then evaluate the project, and discuss what went well and where there were problems. The workers are one of the main sources of information for the evaluation criteria. At this stage, the company has at least one qualified black belt, with several black belt candidates in