

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

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INTRODUCTION

Determine the role of standards in improving efficiency, meeting customer requirements and opening up new opportunities for trade

- The history of standards.
- The role of standards and their importance in enabling and supporting trade and industry.
- Standards for measurement.
- International Standards for management (ISO 9000, 14000, 18000).
- European Foundation for Quality Management (EFQM) as an aid to developing strategic competitive advantage.

Analyse the importance of Total Quality Management and continuous improvement in manufacturing environments

- The importance of quality to industry: how it underpins the ability to improve efficiency, meet customer requirements and improve competitiveness.
- Principles, tools and techniques of Total Quality Management (TQM).
- Understanding and implementation of Six Sigma.

GUIDANCE

This document is prepared to break the unit material down into bite size chunks. You will see the learning outcomes above treated in their own sections. Therein you will encounter the following structures;

Purpose

Explains *why* you need to study the current section of material. Quite often learners are put off by material which does not initially seem to be relevant to a topic or profession. Once you understand the importance of new learning or theory you will embrace the concepts more readily.

Theory

Conveys new material to you in a straightforward fashion. To support the treatments in this section you are strongly advised to follow the given hyperlinks, which may be useful documents or applications on the web.

Example

The examples/worked examples are presented in a knowledge-building order. Make sure you follow them all through. If you are feeling confident then you might like to treat an example as a question, in which case cover it up and have a go yourself. Many of the examples given resemble assignment questions which will come your way, so follow them through diligently.

Question

Questions should not be avoided if you are determined to learn. Please do take the time to tackle each of the given questions, in the order in which they are presented. The order is important, as further knowledge and confidence is built upon previous knowledge and confidence. As an Online Learner it is important that the answers to questions are immediately available to you. Contact your Unit Tutor if you need help.

Challenge

You can really cement your new knowledge by undertaking the challenges. A challenge could be to download software and perform an exercise. An alternative challenge might involve a practical activity or other form of research.

Video

Videos on the web can be very useful supplements to your distance learning efforts. Wherever an online video(s) will help you then it will be hyperlinked at the appropriate point.

Sample

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