



Module: Business Processes

Unit: Quality Management

Lesson: Introduction to Quality Management

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# Introduction to Quality Management

## Introduction and Background

As in any subject it is important to start with a clear idea of basic concepts and definitions. Quality is defined in many ways. One list can be found in one of the recommended sources for further reading - a free e book by Graeme Knowles called Quality Management published in 2011 and available at <http://bookboon.com/en/textbooks/management-organisation/quality-management>. He lists the following definitions of quality:

- *A degree of excellence* - The Concise Oxford Dictionary
- *Fitness for purpose* - Defoe and Juran (2010)
- *The totality of features and characteristics that bear on the ability of a product or service to satisfy a given need* - British Standard 4778 (British Standards Institution (BSI); 1991)
- *The total composite product and service characteristics of marketing, engineering, manufacturing, and maintenance through which the product and service will meet the expectations of the customer* - Feigenbaum (1961)
- *Conformance to requirements* - Crosby (1979)
- *Quality is a dynamic state associated with products, services, people, processes and environments that meets or exceeds expectations and helps produce superior value* - Goetsch and Davis (2010)

We will be referring back to some of these and others as we trace the development of quality management by organisations.

## Quality Management Principles

A good source by which to gain a view of quality management is the small booklet 'Quality Management Principles' published by the International Organisation for Standardisation (ISO). The ISO is a high profile organisation in quality management and related fields. Their main activity is the setting of standards that organisations can use to demonstrate that they have achieved a certain level of quality assurance. Some of these are mentioned briefly in the booklet and we will return to the series later in the module. As you read this short publication - also available at [http://www.iso.org/iso/qmp\\_2012.pdf](http://www.iso.org/iso/qmp_2012.pdf), ( Permission to reproduce pending ) You will see it sets out:

1. Eight principles of quality management.
2. Key benefits of each principle.
3. How organisations might typically apply each principle.

This document introduces the eight quality management principles on which the quality management system standards of the ISO 9000 series are based. These principles can be used by senior management as a framework to guide their organizations towards improved performance. The principles are derived from the collective experience and knowledge of the international experts who participate in ISO Technical Committee ISO/TC 176, *Quality management and quality assurance*, which is responsible for developing and maintaining the ISO 9000 standards.

The eight quality management principles are defined in ISO 9000:2005, *Quality management systems - Fundamentals and vocabulary*, and in ISO 9004:2009, *Managing for the sustained success of an organization - A quality management approach*.

This document gives the standardized descriptions of the principles as they appear in ISO 9000:2005 and ISO 9004:2009. In addition, it provides examples of the benefits derived from their use and of actions that managers typically take in applying the principles to improve their organization's performance.

'Principle 1 - Customer focus

Principle 2 - Leadership

Principle 3 - Involvement of people

Principle 4 - Process approach

Principle 5 - System approach to management

Principle 6 - Continual improvement

Principle 7 - Factual approach to decision making

Principle 8 - Mutually beneficial supplier relationships

### **Principle 1 - Customer focus.**

Organizations depend on their customer and therefore should understand current and future customer needs; should meet customer requirements and strive to exceed customer expectations.

Key benefits:

Increased revenue and market share obtained through flexible and fast responses to market opportunities

- Increased effectiveness in the use of the organization's resources to enhance customer satisfaction

Improved customer loyalty leading to repeat business.

Applying the principle of customer focus typically leads to:

- Researching and understanding customer needs and expectations

Ensuring that the objectives of the organization are linked to customer needs and expectations

Communicating customer needs and expectations throughout the organization

Measuring customer satisfaction and acting on the results

Systematically managing customer relationships

Ensuring a balanced approach between satisfying customers and other interested parties (such as owners, employees, suppliers, financiers, local communities and society as a whole).

## **Principle 2 - Leadership**

Leaders establish unity of purpose and direction for an organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.

Key benefits:

- People will understand and be motivated towards the organization's goals and objectives

Activities are evaluated, aligned and implemented in a unified way

Miscommunication between levels of an organization will be minimized.

Applying the principle of leadership typically leads to:

- Considering the needs of all interested parties including customers, owners, employees, suppliers, financiers, local communities and society as a whole
- Establishing a clear vision of the organization's future
- Setting challenging goals and targets
- Creating and sustaining shared values, fairness and ethical role models at all levels of the organization
- Establishing trust and eliminating fear

Providing people with the required resources, training and freedom to act with responsibility and accountability

Inspiring, encouraging and recognizing people's contributions.

### **Principle 3 - Involvement of people.**

People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.

Key benefits:

- Motivated, committed and involved people within the organization

Innovation and creativity in furthering the organization's objectives

People being accountable for their own performance

People eager to participate in and contribute to continual improvement

Applying the principle of involvement of people typically leads to:

- People understanding the importance of their contribution and role in the organization

People identifying constraints to their performance

People accepting ownership of problems and their responsibility for solving them

People evaluating their performance against their personal goals and objectives

People actively seeking opportunities to enhance their competence, knowledge and experience

People freely sharing knowledge and experience

People openly discussing problems and issues

### **Principle 4 - Process approach.**

A desired approach is achieved more efficiently when activities and related resources are managed as a process.

Key benefits:

Lower costs and shorter cycle times through effective use of resources

Improved, consistent and predictable results

Focused and prioritized improvement opportunities.

Applying the principle of the process approach typically leads to:

- Systematically defining the activities necessary to obtain a desired result

Establishing clear responsibility and accountability for managing key activities

Analysing and measuring of the capability of key activities

Identifying the interfaces of key activities within and between the functions of the organization

Focusing on the factors - such as resources, methods, and materials - that will improve key activities of the organization

Evaluating risks, consequences and impacts of activities on customers, suppliers

and other interested parties

### **Principle 5 - System approach to management.**

Identifying, understanding and managing interrelated processes as system contributes to an organisation's effectiveness and efficiency in meeting its objectives.

Key benefits:

Integration and alignment of the processes that will best achieve the desired results

Ability to focus effort on the key processes

Providing confidence to interested parties as to the consistency, effectiveness and efficiency of the organization

Applying the principle of the system approach to management typically leads to:

Structuring a system to achieve the organization's objectives in the most effective and efficient way

Understanding the interdependencies between the processes of the system

Structured approaches that harmonize and integrate processes

Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers

Understanding organizational capabilities and establishing resource constraints prior to action

Targeting and defining how specific activities within a system should operate

Continually improving the system through measurement and evaluation

### **Principle 6 - Continual improvement.**

Continual improvement of the organization's overall performance should be a permanent objective of the organization.

Key benefits:

Performance advantage through improved organizational capabilities

Alignment of improvement activities at all levels to an organization's strategic intent

Flexibility to react quickly to opportunities

Applying the principle of the system approach to management typically leads to:

Employing a consistent organization-wide approach to continual improvement of the organization's performance

Providing people with training in the methods and tools of continual improvement

Making continual improvement of products, processes and systems an objective for every individual

in the organization

Establishing goals to guide, and measures to track, continual improvement

Recognizing and acknowledging improvements

### **Principle 7 - Factual approach to decision making.**

Effective decisions are based on the analysis of data and information.

Key benefits:

Informed decisions

An increased ability to demonstrate the effectiveness of past decisions through reference to factual records

Increased ability to review, challenge and change opinions and decisions

Applying the principle of factual approach to decision making typically leads to:

Ensuring that data and information are sufficiently accurate and reliable

Making data accessible to those who need it

Analysing data and information using valid methods

Making decisions and taking action based on factual analysis, balanced with experience and intuition

### **Principle 8 - Mutually beneficial supplier relationships.**

An organisation and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

Key benefits:

Increased ability to create value for both parties

Flexibility and speed of joint responses to changing market or customer needs and expectations

Optimization of costs and resources

Applying the principle of mutually beneficial supplier relationships typically leads to:

Establishing relationships that balance short-term gains with long-term considerations

Pooling of expertise and resources with partners

Identifying and selecting key suppliers

Clear and open communication

Sharing information and future plans

Establishing joint development and improvement activities

Inspiring, encouraging and recognizing improvements and achievements by suppliers.

## The next step

This document provides a general perspective on the quality management principles underlying the ISO 9000 series. It gives an overview of these principles and shows how, collectively, they can form a basis for performance improvement and organizational excellence.

There are many different ways of applying these quality management principles. The nature of the organization and the specific challenges it faces will determine how to implement them. Many organizations will find it beneficial to set up quality management systems based on these principles.'

Reading the above document will have given you a good overview of principles of quality management that tend broadly to be shared by most current approaches to quality management. Different approaches have arrived at this broad consensus as they have developed over time and we will be looking at some of these developments later in this lesson.

## group learning activity.....

You should consider an organisation of which you have some knowledge. It could be one you have worked for, or may have attended as a student - e.g. your school or college. Consider which of these principles were demonstrated most strongly and most weakly by that organisation and post your views in the group learning space on ilearn. In doing so try and give some reasons or evidence for the views you are expressing. Post your views on the group learning space for discussion with your fellow students.

## Eras in Quality Management

Knowles (2011) identifies the following periods or 'eras' in the development of quality management.

**The Craft Era up to 1900.** In these days before the Industrial Revolution and mass production, products were generally produced on a small scale by craftsmen who by and large dealt on a face - to - face basis with their customers. Quality standards were maintained via the close relationships between the craftsmen and their customers. Also guilds of craftsmen grew up and quality standards were maintained to an extent by 'Masters' who assessed whether a craftsman was sufficiently skilled to join the guild.

**Standardisation and Mass Production 1900 - 1930.** In this era Knowles (2011) sees responsibility for the quality of output being transferred from those who produce the output to an army of inspectors. This was for a variety of reasons including the focus on high volume production as technology that could achieve this was introduced and the widespread use of cheap unskilled labour in the production processes. Based on Knowles (2001) a number of points can be made about the implications of the use of inspection to try and ensure quality.

- a. Perhaps most importantly inspection occurs after the event or after the product has been produced. Thus it cannot prevent sub standard product being made but can only identify it and either return it to be reworked or scrap it.
- b. Inspectors are obviously not infallible and they will make mistakes. Thus some sub-standard product will get through to the customer or some unnecessary cost will be caused by scrapping or returning for rework perfectly good items.



- c. As inspectors become responsible for quality, workers may tend to lose commitment to quality as pressures exist to produce high volumes and they can rely on inspectors to pick up quality problems.

As a free eBook we are not using Knowles as a text but you may wish to refer to it as additional reading. It is a useful source but if you do consult it you ought to be aware of the following issue. When discussing this era, Knowles uses the term 'quality assurance' to describe the work of the inspectors. He thus uses the term differently from many other writers on quality. Knowles uses it to describe the maintenance of quality standards by means of inspection of output after it has been produced. Other writers might refer to that as quality control by means of inspection. Quality assurance is more often seen as a process whereby the quality of all relevant processes is assured so that the chances of defective output being produced is minimised. In simple terms quality assurance seeks to affect the quality of output by assuring the production process and other related processes, while inspection seeks to control quality by examining output only after it has been produced. We will look at quality assurance in the way we have defined it here in more detail later in this module.

### **Quality Assurance Era 1930 - 1950**

To quote { RL - Knowles (2011)} quality cannot be inspected into a product; quality has to be built into each process. This is what Knowles says about developments in this era.

'By as early as the 1920s, Walter A Shewhart, an American statistician who worked for the Bell Telephone Company, became involved in the manufacture of millions of telephone relays, and he realised that inspection after the event was not a good way of ensuring quality. He studied how the manufacturing process could be monitored in such a way as to prevent non-conforming items being produced and in 1924 he invented the control chart. In 1931 he published "Economic Control of Quality of Manufactured Product" (Shewhart, 1980) and his work forms the basis of all teaching on Statistical Process Control today, a key technique of quality assurance.

Dr. William Edwards Deming had been a student of Walter Shewhart and he spent his early years as a Government employee, mainly in the Department of Agriculture and the Bureau of Census. Following the Second World War the US Government played a significant role in rebuilding Japanese industry, and Deming was invited to apply his statistical knowledge to the Japanese situation. He taught them to apply the statistical method and team approach to quality improvement that has transformed Japan into market leaders of virtually every form of manufactured goods.'

**The Total Quality Management (TQM) Era (1950 - 1970)** Total Quality Management (TQM) is a concept that has been defined in a number of different ways and we will look at it in more detail later. As its name suggests, it involves a recognition that all of an organisation's activities contribute to the quality of what it does and consequently need to be proactively managed by an organisation as it pursues quality. It is an approach to quality that is still currently embraced by organisations and it was central to developments in quality management around 1950 to 1970. It involved, amongst other things, the view that effective quality management involved soft 'people' oriented activity as well as 'harder' process oriented activity and we will discuss it in considerably more detail later in the module.

**Standards and Awards 1970 - 1990** As was suggested above, TQM is capable of being interpreted in different ways by different people and different organisations. A degree of objectivity in the design of quality oriented systems and the evaluation of organisations' performance was provided by a series of quality standards and awards. High profile amongst the standards was ISO 9000 - a form of quality assurance in terms of our definition of the term above - while the highest profile award is probably the Excellence Model. Both of these have developed through a number of stages and will be examined in more detail later in this unit.

**Initiatives 1990 - present.** This final stage identified by Knowles (2011) reflects the use of what he calls 'mega-initiatives' in the field of quality management, such as Lean and Six Sigma.

## my learning space activity .....

What are the different costs of maintaining quality by using a system of inspecting output?

## feedback

The costs of such a system would include:

The cost of employing the inspectors the cost of equipping the inspectors e.g. training, inspection technology etc. the cost of reworking output that is returned to the production process the cost of defective output that has to be scrapped In the face of costs such as those set out in the feedback above, it would clearly be better and cheaper if quality could be built into the processes that were responsible for producing the output, rather than just inspected for after output had been produced.

## group learning activity .....

**Case Study**

To conclude this lesson you should look at the case study on Portakabin made available at:

<http://businesscasestudies.co.uk/.../introduction.html#axzz2 N4VODZU4> ( Permission to reproduce pending )

I suggest you first read the introduction to Portakabin and then listen to the MP3 of the case study. In case you cannot access the link, we have reproduced both the introduction and the transcript of the talk below. This 13 minute case study discusses the approach to quality and quality management taken by Portakabin, a leading UK manufacturer of modular or pre-fabricated building units. This is an introductory case study, which valuably touches upon a number of themes that are central to this module such as customer orientation, quality systems, process design and the ISO 9001 quality assurance system.

As you listen to the case study write your own notes in response to the following two questions.

1. What are the benefits of quality to a company like Portakabin?

2. What does Portakabin do as part of its pursuit of quality?

Post your responses in the group learning space on ilearn

### Case Study transcript

#### Introduction

Most businesses operate in competitive markets: they have to 'take on' and 'see off' rivals. Each organisation must decide for itself how best to try and do this. Not all firms come up with the same answer and for good reason. Firstly, there are several different ways of gaining competitive advantage. Secondly, businesses need to play to their strengths and not all businesses have the

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same strengths. Thirdly, many markets are segmented and what is important to one set of customers may be less important to another set. So businesses need to decide which segments of the market they are targeting. Ways of seeking to gain competitive advantage include:

1. offering lower prices
2. offering clearly superior products at above average prices
3. delivering products more quickly
4. offering superior customer service, including after sales service

This case study focuses on how Portakabin has set about gaining a competitive advantage in the hire and sale of temporary or permanent accommodation by concentrating on quality.

Portakabin has positioned its products at the top end of the market: it looks to provide high levels of quality at premium prices.

Quality is associated with consistency. A customer who is happy with the first buying experience needs and wants to be equally happy on each further occasion. Portakabin has the motto 'Quality - this time - next time - every time'.

The company believes that clients who really care about quality are willing to pay that bit more to obtain it and see 'the extras' as worth the additional expense. Today the company operates in a range of European countries as well as the UK.

## **What Is Quality?**

Quality relates to 'appropriate use': how well a product does what it is intended to do.

Portakabin's 'Ultima' building illustrates quality well. The Ultima specification includes:

1. modern design
2. high quality materials
3. layout and fitting of the building to clients' requirements

allied to :

1. rapid construction

to provide:

1. a smart modern working environment
2. an image that reflects the status of the client

The 'appropriate use' quality comes from two sources. One is internal to the company. Portakabin has developed its range of buildings around its own market research, which discovers customers' precise needs. The company knows how important it is to offer optional extras, such as high quality carpeting, fitted furnishings and climate control systems to provide a quality working environment. Simultaneously being able to offer not only the building but also the aforementioned accessories, gives the customer a quality 'one-stop-shop' service.

The other source of quality control is external e.g. national building requirements and standards. Portakabin's products, whether interim or permanent, comply fully with all appropriate building regulations. They also meet the demands of ISO 9001: Quality Management Systems. This is an internationally recognised standard which acts as a form of guarantee that everything the company does is managed to the highest quality standards.

The group's Quality Systems Manager (QSM) is responsible for ensuring that Portakabin has in place systems that guarantee quality throughout the Group. To manage quality, the QSM has created an electronic system that all PCs throughout the whole company can access. One of the system's key features is the 1-page Quality Manual that defines the requirements of the Quality Management System. This is easy to communicate both within the organisation and also to customers.

### **The importance of quality in creating competitive advantage**

Most businesses operate in competitive markets: they have to 'take on' and 'see off' rivals. Each organisation must decide for itself how best to try to do this. Not all firms come up with the same answer and for good reason. Firstly, there are several different ways of gaining competitive advantage. Secondly, businesses need to play to their strengths and not all businesses have the same strengths. Thirdly, many markets are segmented and what is important to one set of customers may be less important to another set. So businesses need to decide which segments of the market they are targeting. Ways of seeking to gain competitive advantage include:

- offering lower prices

- offering clearly superior products at above average prices

- delivering products more quickly

- offering superior customer service, including after sales service

This Case Study focuses on how Portakabin has set about gaining a competitive advantage in the hire and sale of interim (temporary) or permanent accommodation by concentrating on quality.

The Portakabin Group is a private company, owned by the Shepherd family. Clients want modular buildings for a variety of reasons. For example:

Portakabin operates in a highly competitive market and competes with tough competitors. Despite this, Portakabin has 17% of the overall UK market (its nearest competitor has 14%). In competing for business, the company decided early on to establish a reputation for quality. It has attracted key customers who recognise that their own reputations depend, at least in part, on the quality of accommodation and facilities they offer their own customers. The chart shows the broad nature of Portakabin's high profile customer base.

Portakabin has positioned its products at the top end of the market: it looks to provide high levels of quality at premium prices.

Quality is associated with consistency. A customer who is happy with the first buying experience needs and wants to be equally happy on each further occasion.

Portakabin's motto is: Quality - this time - next time - every time.

The company believes that clients who really care about quality are willing to pay that bit more to obtain it and see 'the extras' as worth the additional expense. Today the company operates in a range of European countries as well as the UK. Portakabin's brand vision is:

'To provide peace of mind for our customers across Europe through quality buildings and services.'

## **Quality products**

The term 'product' covers not only goods but the services that support them. Portakabin offers a range of tangible products e.g. Lilliput (a modular nursery building) and Titan (a modular building for office applications). The company also offers key services e.g. Total Solutions, a planning and project management service for customers wanting to hire modular buildings. Portakabin also offers a wide range of support services to clients for whom a modular building is part of a larger plan. If requested, Portakabin will take on the customer's project from start to finish. This includes managing planning applications, project management and providing health and safety advice, as well as providing access for the disabled.

Product quality also relates to how well a product meets changing demands. In modular buildings, technologies are increasing the range of what is possible. At the same time, customers are becoming more particular about their own requirements. For example, they want building solutions that are safe and clean, which minimise disruption, save time and guarantee quality. Quality involves keeping pace with these demands.

Modular construction involves manufacturing a building off-site in a controlled factory environment. For example, the steel modules used to construct Ultima buildings are fully fitted out with all electrics, plumbing, heating, doors, windows and internal finishes before they leave a Portakabin production centre. This enhances their quality and also reduces programme times.

Being registered as meeting the requirements of ISO 9001 is very important to Portakabin. This is because many customers will deal only with organisations that can demonstrate they meet this rigorous standard. All of Portakabin's products meet with modern standards and requirements, and this enhances consumer confidence. To reinforce this quality system, Portakabin has a 'zero tolerance' quality checking system (see section 4) in place, so that no building may leave the production site until it has been checked against, and complies with, demanding customer standards. Furthermore, because of their high quality standards, Portakabin are the only modular building company to offer quality guarantees in the form of 5 and 20 year warranties.

The standards required are wide ranging. For example, the recently ratified Kyoto Protocol requires industrialised nations to limit their production of gases that are harmful to the environment. Portakabin takes this requirement very seriously. As a result, all of its buildings are thermally efficient to minimise energy use. Following Kyoto there are a range of new building requirements and these are particularly important for Portakabin's public sector customers such as hospitals and schools.

## **Quality processes**

Any form of production activity involves sets of interlinking processes.

Portakabin's factory-based production process combines standardisation with customisation. The modules to be assembled come in standardised sizes and shapes. However, the way they are put together and their interior design depends on clients' individual specifications. For example, modules that are assembled for Sainsbury's to train new checkout staff are different from those designed for an easyJet office.

To ensure that all customers get what they want, Portakabin deploys the Quality Systems approach referred to earlier. A Corporate Quality Team (comprising senior managers) is responsible for ensuring that individual teams understand quality processes.

Communication takes place by means of process charts. These are clear illustrations that set out the processes involved e.g. in creating a new set of school classrooms or laboratories.

The essentials of the Quality System are:

1. Say what you do

By studying the Quality Manual, teams working on a particular process know what the job requires. If in doubt, they can ask team leaders. This process enables everyone involved to understand and state the process and their role within it.

2. Do what you say

Once they understand the process, team members are able to implement it e.g. by constructing a new building for a specific client.

3. Record what you have done

Construction teams record all actions taken, so that all those involved know the current position, what has gone on before and what still needs to be done.

4. Review what you have done

Records are regularly reviewed both to ensure delivery targets can be met and to identify any problem areas.

5. Take remedial action where necessary

If problems or potential problem areas are identified, steps are taken to eliminate or reduce these.

6. Then start the process again

This procedure is followed for each stage in each process to ensure that everyone benefits from solutions to problems, which have already been devised.

These essential steps can be illustrated in the form of a hierarchy of quality processes:

An essential part of improving quality is to identify problems as and when they occur. These can then be addressed and resolved immediately. This is what Portakabin mean by 'zero tolerance'. To address any issues, Portakabin deploys a 'commando team' as part of its Quality Team. This team scrutinises products and processes from the customer's viewpoint. On one occasion the team found blistering on the walls of a particular building, a quick 'alert' to the manufacturing team led to the fault being eliminated before it became a problem for the customer. Teams complete quality reports with the purpose of:

fixing the immediate problem

identifying its cause

making changes to prevent the problem reoccurring.

## Quality Service

Providing customer service is another vital part of Quality Management. See steps 6 and 7 in the chart below.

The company believes that providing exceptional levels of customer service is as important as the quality of the products it makes. To support this commitment, it has developed a number of

initiatives aimed at continuously improving service. Portakabin: guarantees to complete projects on time and on budget

operates a Customer Charter that sets out minimum standards that customers of its Hire Division can expect to receive. This charter includes the pledge where Portakabin will recompense the customer if it fails to deliver a building on time

offers a complete plan, design and build service, whereby a client can choose simply to accept the keys and open the doors on completion

runs a comprehensive customer satisfaction survey every month

## **Case Study Conclusion**

In a competitive market, businesses stay ahead by offering products that are different and/or superior in ways that matter to customers. Portakabin has positioned itself at the top end of the modular buildings market in terms of quality, whilst at the same time providing value-for-money products that fully meet key standards set out in ISO 9001. The most recent external audit of Portakabin's practices showed that the company is meeting the required standards in all aspects of quality. This outcome is the result of a great deal of thought, careful planning and ongoing education and training of a skilled and dedicated workforce.