Quality Management

Quality management ensures that an organization, product or service is consistent. It has four main components: quality planning, quality assurance, quality control and quality improvement. Quality management is focused not only on product and service quality, but also on the means to achieve it. Quality management, therefore, uses quality assurance and control of processes as well as products to achieve more consistent quality. What a customer wants and is willing to pay for it determines quality. It is written or unwritten commitment to a known or unknown consumer in the market. Thus, quality can be defined as fitness for intended use or, in other words, how well the product performs its intended function.

Evolution

Walter A. Shewhart made a major step in the evolution towards quality management by creating a method for quality control for production, using statistical methods, first proposed in 1924. This became the foundation for his ongoing work on statistical quality control. W. Edwards Deming later applied statistical process control methods in the United States during World War II, thereby successfully improving quality in the manufacture of munitions and other strategically important products.

Quality leadership from a national perspective has changed over the past decades. After the second world war, Japan decided to make quality improvement a national imperative as part of rebuilding their economy, and sought the help of Shewhart, Deming and Juran, amongst others. W. Edwards Deming championed Shewhart’s ideas in Japan from 1950 onwards. He is probably best known for his management philosophy establishing quality, productivity, and competitive position. He has formulated 14 points of attention for managers, which are a high level abstraction of many of his deep insights.
They should be interpreted by learning and understanding the deeper insights. These 14 points include key concepts such as:

- Break down barriers between departments
- Management should learn their responsibilities, and take on leadership
- Supervision should be to help people and machines and gadgets to do a better job
- Improve constantly and forever the system of production and service
- Institute a vigorous program of education and self-improvement

In the 1950s and 1960s, Japanese goods were synonymous with cheapness and low quality, but over time their quality initiatives began to be successful, with Japan achieving high levels of quality in products from the 1970s onward. For example, Japanese cars regularly top the J.D. Power customer satisfaction ratings. In the 1980s Deming was asked by Ford Motor Company to start a quality initiative after they realized that they were falling behind Japanese manufacturers. A number of highly successful quality initiatives have been invented by the Japanese (see for example on this pages: Genichi Taguchi, QFD, Toyota Production System). Many of the methods not only provide techniques but also have associated quality culture (i.e. people factors). These methods are now adopted by the same western countries that decades earlier derided Japanese methods.

Customers recognize that quality is an important attribute in products and services. Suppliers recognize that quality can be an important differentiator between their own offerings and those of competitors (quality differentiation is also called the quality gap). In the past two decades this quality gap has been greatly reduced between competitive products and services. This is partly due to the contracting (also called outsourcing) of manufacture to countries like China and India, as well internationalization of trade and competition. These countries, among many others, have raised their own standards of quality in order to meet international standards and customer demands. The ISO 9000 series of standards are probably the best known International standards for quality management.

Customer satisfaction is the backbone of Quality Management. Setting up a million dollar company without taking care of needs of customer will ultimately decrease its revenue.
There is a huge number of books available on quality management. Some themes have become more significant including quality culture, the importance of knowledge management, and the role of leadership in promoting and achieving high quality. Disciplines like systems thinking are bringing more holistic approaches to quality so that people, process and products are considered together rather than independent factors in quality management.

The influence of quality thinking has spread to non-traditional applications outside of walls of manufacturing, extending into service sectors and into areas such as sales, marketing and customer service.

Principles

The International Standard for Quality management (ISO 9001:2015) adopts a number of management principles, that can be used by top management to guide their organizations towards improved performance.

Customer focus

The primary focus of quality management is to meet customer requirements and to strive to exceed customer expectations.

Leadership

Leaders at all levels establish unity of purpose and direction and create conditions in which people are engaged in achieving the organization’s quality objectives. Leadership has to take up the necessary changes required for quality improvement and encourage a sense of quality throughout organisation.

Engagement of people

Competent, empowered and engaged people at all levels throughout the organization are essential to enhance its capability to create and deliver value.

Process approach

Consistent and predictable results are achieved more effectively and efficiently when activities are understood and managed as interrelated processes that function as a coherent system.
Improvement
Successful organizations have an ongoing focus on improvement.

Evidence based decision making
Further information: decision making. Decisions based on the analysis and evaluation of data and information are more likely to produce desired results.

Relationship management
Further information: Relationship management. For sustained success, an organization manages its relationships with interested parties, such as suppliers, retailers.

Quality improvement and more

The PDCA cycle
There are many methods for quality improvement. These cover product improvement, process improvement and people based improvement. In the following list are methods of quality management and techniques that incorporate and drive quality improvement:

- ISO 9001:2015 - a certified quality management system (QMS) for organisations who want to prove their ability to consistently provide products and services that meet the needs of their customers and other relevant stakeholders.
- QFD — quality function deployment, also known as the house of quality approach.
- Kaizen — 改善, Japanese for change for the better; the common English term is continuous improvement.
- Zero Defect Program — created by NEC Corporation of Japan, based upon statistical process control and one of the inputs for the inventors of Six Sigma.
- Six Sigma — 6σ, Six Sigma combines established methods such as statistical process control, design of experiments and failure mode and effects analysis (FMEA) in an overall framework.
• PDCA — plan, do, check, act cycle for quality control purposes. (Six Sigma’s DMAIC method (define, measure, analyze, improve, control) may be viewed as a particular implementation of this.)
  • Quality circle — a group (people oriented) approach to improvement.
  • Taguchi methods — statistical oriented methods including quality robustness, quality loss function, and target specifications.
  • The Toyota Production System — reworked in the west into lean manufacturing.
  • Kansei Engineering — an approach that focuses on capturing customer emotional feedback about products to drive improvement.
  • TQM — total quality management is a management strategy aimed at embedding awareness of quality in all organizational processes. First promoted in Japan with the Deming prize which was adopted and adapted in USA as the Malcolm Baldrige National Quality Award and in Europe as the European Foundation for Quality Management award (each with their own variations).
  • TRIZ — meaning "theory of inventive problem solving”
  • BPR — business process reengineering, a management approach aiming at optimizing the workflows and processes within an organisation.
  • OQRM — Object-oriented Quality and Risk Management, a model for quality and risk management.
  • Top Down & Bottom Up Approaches—Leadership approaches to change[18]

Proponents of each approach have sought to improve them as well as apply them for small, medium and large gains. Simple one is Process Approach, which forms the basis of ISO 9001:2008 Quality Management System standard, duly driven from the 'Eight principles of Quality management', process approach being one of them. Thareja[18] writes about the mechanism and benefits: "The process (proficiency) may be limited in words, but not in its applicability. While it fulfills the criteria of all-round gains: in terms of the competencies augmented by the participants; the organisation seeks newer directions to the business success, the individual brand image of both the people and the organisation, in turn, goes up. The competencies which were hitherto rated as being smaller, are better recognized and now acclaimed to be more potent and fruitful”. The more complex Quality improvement tools are tailored for enterprise types not originally targeted. For example, Six Sigma was designed for manufacturing but has spread to service enterprises. Each of these approaches and methods has met with success but also with failures.
Some of the common differentiators between success and failure include commitment, knowledge and expertise to guide improvement, scope of change/improvement desired (Big Bang type changes tend to fail more often compared to smaller changes) and adaption to enterprise cultures. For example, quality circles do not work well in every enterprise (and are even discouraged by some managers), and relatively few TQM-participating enterprises have won the national quality awards.

There have been well publicized failures of BPR, as well as Six Sigma. Enterprises therefore need to consider carefully which quality improvement methods to adopt, and certainly should not adopt all those listed here.

It is important not to underestimate the people factors, such as culture, in selecting a quality improvement approach. Any improvement (change) takes time to implement, gain acceptance and stabilize as accepted practice. Improvement must allow pauses between implementing new changes so that the change is stabilized and assessed as a real improvement, before the next improvement is made (hence continual improvement, not continuous improvement).

Improvements that change the culture take longer as they have to overcome greater resistance to change. It is easier and often more effective to work within the existing cultural boundaries and make small improvements (that is 'Kaizen') than to make major transformational changes. Use of Kaizen in Japan was a major reason for the creation of Japanese industrial and economic strength.

On the other hand, transformational change works best when an enterprise faces a crisis and needs to make major changes in order to survive. In Japan, the land of Kaizen, Carlos Ghosn led a transformational change at Nissan Motor Company which was in a financial and operational crisis. Well organized quality improvement programs take all these factors into account when selecting the quality improvement methods.

**Quality standards**

ISO standards

The International Organization for Standardization (ISO) created the Quality Management System (QMS) standards in 1987. They were the ISO 9000:1987 series of standards comprising ISO 9001:1987, ISO 9002:1987 and ISO 9003:1987; which were
applicable in different types of industries, based on the type of activity or process: designing, production or service delivery.


The last major revision was in the year 2000 and the series was called ISO 9000:2000 series. The ISO 9002 and 9003 standards were integrated into one single certifiable standard: ISO 9001:2000. After December 2003, organizations holding ISO 9002 or 9003 standards had to complete a transition to the new standard.

ISO released a minor revision, ISO 9001:2008 on 14 October 2008. It contains no new requirements. Many of the changes were to improve consistency in grammar, facilitating translation of the standard into other languages for use by over 950,000 certified organization in the 175 countries (as at Dec 2007) that use the standard.

The ISO 9004:2009 document gives guidelines for performance improvement over and above the basic standard (ISO 9001:2000). This standard provides a measurement framework for improved quality management, similar to and based upon the measurement framework for process assessment.

The Quality Management System standards created by ISO are meant to certify the processes and the system of an organization, not the product or service itself. ISO 9000 standards do not certify the quality of the product or service.

In 2005 the International Organization for Standardization released a standard, ISO 22000, meant for the food industry. This standard covers the values and principles of ISO 9000 and the HACCP standards. It gives one single integrated standard for the food industry and is expected to become more popular in the coming years in such industry.

ISO has also released standards for other industries. For example, Technical Standard TS 16949 defines requirements in addition to those in ISO 9001:2008 specifically for the automotive industry.
ISO has a number of standards that support quality management. One group describes processes (including ISO/IEC 12207 and ISO/IEC 15288) and another describes process assessment and improvement ISO 15504.

Other quality management information
VDA: Organisation developed for the German automobile industry VDA
AVSQ: Organisation developed for the Italian automobile industry AVSQ
EAQF: Organisation developed for the French automobile industry EAQF
QS-9000: Standard developed for the US automobile industry QS9000
ISO 19011 Standard developed for auditing a management system (international)
ISO 19011

**Quality terms**

Quality Improvement can be distinguished from Quality Control in that Quality Improvement is the purposeful change of a process to improve the reliability of achieving an outcome.

Quality Control is the ongoing effort to maintain the integrity of a process to maintain the reliability of achieving an outcome.

Quality Assurance is the planned or systematic actions necessary to provide enough confidence that a product or service will satisfy the given requirements.

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