Certified TQM Professional
Sample Material

V-Skills Certifications

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V-Skills

1. TQM AND QUALITY BASICS

1.1. Managing Quality

In manufacturing organization, production manager and the quality control manager argue and debate the evidence before them, the rights and wrongs of the specification, and each tries to convince the other of the validity of his argument. Sometimes they nearly start fighting.

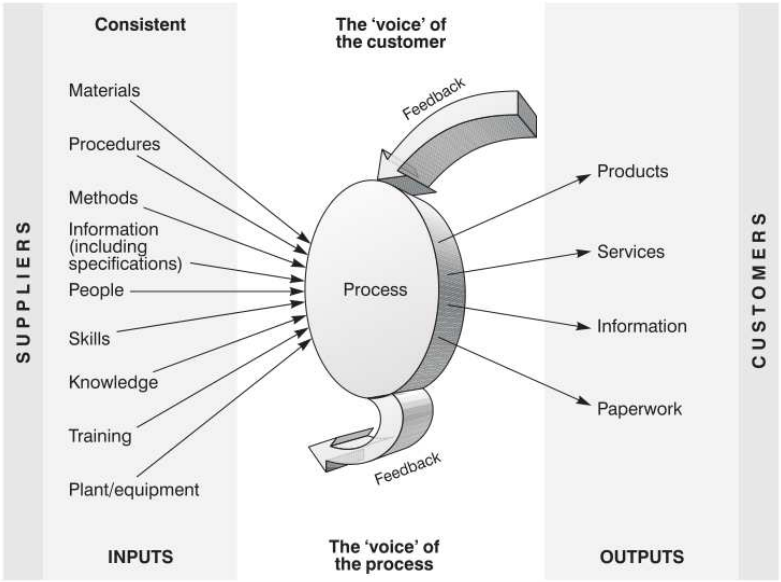
This activity, answers, 'Have we done the job correctly?'. It only results in detection of bad product before reaching the hands of customer. Usually people think that to achieve quality more checks, tests, inspection or measurements need to be done, at the end of the process. Even in the office one finds staff checking other people's work before it goes out, validating computer data, checking invoices, word processing, etc.

To get away from it, ask different questions of not whether the job has been done correctly but, 'Are we capable of doing the job correctly?'.

Quality and processes

Quality is a measure of excellence or a state of being free from defects, deficiencies and significant variations. It is brought about by strict and consistent commitment to certain standards that achieve uniformity of a product in order to satisfy specific customer or user requirements.

Quality is linked to the business or service processes used by any organization. A process is the transformation of a set of inputs into outputs that satisfy customer needs and expectations, in the form of products, information or services. Each process in each department or area can be analyzed by an examination of the inputs and outputs for improvements. The output is transferred to somewhere or to someone. Hence, at every supplier/customer interface then there resides a transformation process and every single task throughout an organization must be viewed as a process in this way.



After knowing the process to meet a need, focus on doing the job correctly thus, resulting in a requirement to monitor and control the process

Business processes

A business process or a process is a group of tasks which result in a specific service or product for customers. It can be visualized with a flowchart or a process matrix. Business processes are fundamental to every company's performance and implement the business strategy. Understanding and optimizing the business process is the crux of six sigma.

Frequently, organizations treat the symptoms of a process performance issue without truly understanding the root cause or impact of the issue. Dissecting and truly understanding root cause for process performance is critical to effective process improvement which is can be accomplished by six sigma. Each process, have the three elements of inputs, process and outputs that affect its function. A business process is a collection of related activities that produce something of value to the organization, its stakeholders or its customers.

Having a standard model such as DMAIC (Define-Measure-Analyze-Improve-Control) makes process improvement and optimization much easier by providing the teams with an easy roadmap. This disciplined, structured, rigorous approach consists of steps which are linked logically to the previous step and to the next step. It is not enough for organizations to treat process improvement as one-time or periodic events. A sustaining focus on process management and continuous improvement is the key.

Types of Processes - Processes can be classified as management processes, operational processes and supporting processes.

- ✓ Management processes - These processes administer the operation of a system. Some examples of management processes are planning, corporate governance, etc.
- ✓ Operational processes - These processes create the primary value stream for the customers. Hence, they are also called 'core business processes'. Some examples of operational processes are purchasing of raw materials, manufacturing of goods, rendering of services, marketing, etc.
- ✓ Supporting processes - These processes support the core business processes of the organization. Some examples of supporting processes are accounting, technical support, etc.

These processes can be divided into many sub-processes that play their intended roles to successfully complete the respective head processes.

Business System

A business system is a group of business processes which combine to form a single and identifiable unit of business as a whole. It is composed of processes, which in turn are composed of sub-processes and which are further composed of individual tasks.

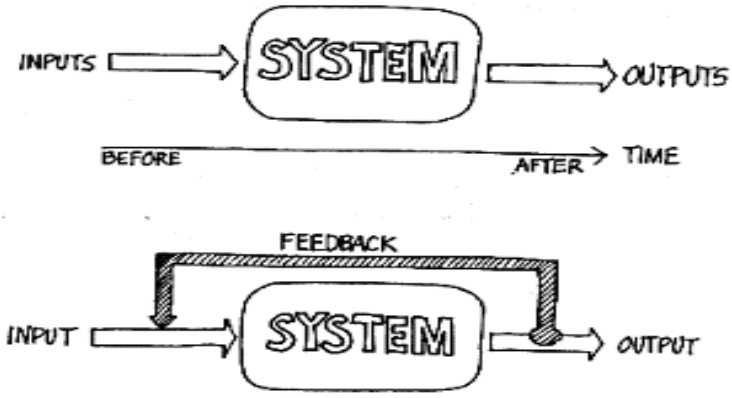
A business system is a system that implements a process or a set of processes. It ensures that all the processes operate smoothly without delays or lack of resources. Six sigma directs business systems to ensure that the processes, products, and services are subjected to continuous improvement and for which collection and analysis of data from processes is initiated.

It is important to have an appropriate business system in place and the relevant processes under the system are well-documented. The documentation of the processes must be done in such a way that every task, activity, and their sequence are taken into account for proper execution as planned for in the business system.

Process Control

Feedback received from process is used for process control thus, focusing on the input and output of the process for data collection. Every sub-process or task act as an input to next task or as output for previous one. Achieving optimum resources usage by a process though keeping quality output by

- ✓ Applying feedback loop to collect data from various process stages so as to apply improvisation
- ✓ Re-design the process for data collection, analysis and improvisation as part of the process.



A real-time feedback will initiate improvisation quickly. Tools like control chart helps in data collection and analysis as well.

The control of quality can only take place at the point of operation or production and the act of inspection is not quality control or quality assurance but both are

Quality control then is essentially the activities and techniques employed to achieve and maintain the quality of a product, process, or service. It includes a monitoring activity, but is also concerned with finding and eliminating causes of quality problems so that the requirements of the customer are continually met.

Quality assurance is broadly the prevention of quality problems through planned and systematic activities (including documentation). These will include the establishment of a good quality management system and the assessment of its adequacy, the audit of the operation of the system, and the review of the system itself.

1.2. Understanding the needs

The marketing department is the customer facing and should take the lead in establishing requirements for the product or service after which it's the market sector and demand are defined, to determine attributes like grade, price, quality, timing, etc. For example, a major hotel chain thinking of opening a new hotel or refurbishing an old one will need to consider its location and accessibility before deciding whether it will be predominantly a budget, first-class, business or

family hotel. Then, customer requirements also need to be developed by reviewing the market needs, particularly in terms of unclear or unstated expectations or preconceived ideas held by customers and which is done by market research techniques, data gathering, and analysis of customer complaints. Quasi-quantitative methods may also be used to grade the characteristics in importance, and decide in which areas superiority over competitors exists like SWOT analysis.

Excellent communication between customers and suppliers is the key to a total quality performance as it removes whims and fancies. Feedback from both customers and suppliers needs to be improved where dissatisfied customers and suppliers do not communicate their problems. Further, communication amongst the organization is also paramount which should be prompt, clear and accurate. A formal statement or outline of the requirements from the marketing department having brief set of specifications is used as a base for service or product design.

In the design phase of any process, the customers' needs and expectations are identified and translated into Critical-To-Quality (CTQ) characteristics. These characteristics are put into the products' design so as to manufacture or deliver it consistently and economically. But variability comes during delivery or manufacture hence, tolerance levels are specified thus, the company should measure and control the variations. Then the process performance is measured to know how the output against specified limits by the process capability or the ability of the process to generate products that are within the specified limits, and the process stability or company's ability to predict the process performance based on past experience. Usually the SPC is used with sample being tested at specified intervals and estimation is derived for whole to know number of defects.

The review of market readiness of a new product or service requires some attention include assessment of

- ✓ The suitability of the distribution and customer-service processes.
- ✓ Training of personnel in the 'field'.
- ✓ Availability of 'spare parts' or support staff.
- ✓ Evidence that the organization is capable of meeting customer requirements.

There are various techniques of research which are used both externally and internally are

- ✓ Surveys – questionnaires, etc.
- ✓ Panel or focus group techniques.
- ✓ In-depth interviews.
- ✓ Brainstorming and discussions.
- ✓ Role rehearsal and reversal.
- ✓ Interrogation of trade associations.

Good research, coupled with analysis of complaints data, is an essential part of finding out what the requirements are, and breaking out from the obsession with inward scrutiny that bedevils quality.

1.3. Quality in all functions

For complete effectiveness, each components of the organization must work properly together as any one of it if affected will also affect others and the whole organization is affected. Errors have a way of multiplying, and failure to meet the requirements in one part or area creates problems.

Applications of TQM is more successful after training different parts of organizations and are shown the usefulness of the techniques. Sales staff can monitor and increase successful sales calls, office staff has used TQM methods to prevent errors in word processing and improve inputting to computers, customer-service people have monitored and reduced complaints, etc.

The culture requires quality in all aspects of the company's operations, with processes being done right the first time and defects and waste eradicated from operations. TQM, is a method by which management and employees can become involved in the continuous improvement of the production of goods and services. It is a combination of quality and management tools aimed at increasing business and reducing losses due to wasteful practices. Some of the companies who have implemented TQM include Ford Motor Company, Phillips Semiconductor, SGL Carbon, Motorola and Toyota Motor Company.

Managements that rely heavily on exhortation of the workforce to 'do the right job right the first time', or 'accept that quality is your responsibility', will not only fail to achieve quality but may create division and conflict. Everyone must work together at every interface to achieve improved performance and that can only happen if the top management is really committed.

1.4. Quality Pioneers

Various pioneers emerged who helped shape quality principles and laid the foundations for six sigma. They included

Walter A. Shewhart - He is the pioneer of Modern Quality Control who, recognized the need to separate variation into assignable and un-assignable causes. He is the founder of the control chart and originator of the plan-do-check-act cycle. He was the first to successfully integrate statistics, engineering, and economics and defined quality in terms of objective and subjective quality.

Dr. W. Edwards Deming – He studied under Shewhart at Bell Laboratories and major contributions includes developing 14 points on Quality Management, a core concept on implementing total quality management, is a set of management practices to help companies increase their quality and productivity. The 14 points are

- ✓ Create constancy of purpose for improving products and services.
- ✓ Adopt the new philosophy.
- ✓ Cease dependence on inspection to achieve quality.
- ✓ End the practice of awarding business on price alone; instead, minimize total cost by working with a single supplier.
- ✓ Improve constantly and forever every process for planning, production and service.
- ✓ Institute training on the job.
- ✓ Adopt and institute leadership.

- ✓ Drive out fear.
- ✓ Break down barriers between staff areas.
- ✓ Eliminate slogans, exhortations and targets for the workforce.
- ✓ Eliminate numerical quotas for the workforce and numerical goals for management.
- ✓ Remove barriers that rob people of pride of workmanship, and eliminate the annual rating or merit system.
- ✓ Institute a vigorous program of education and self-improvement for everyone.
- ✓ Put everybody in the company to work accomplishing the transformation.

Joseph Juran - His major contributions are directing most of his work at executives and the field of quality management and developing the "Juran Trilogy" for managing quality, as Quality planning, quality control, and quality improvement. He also enlightened the world on the concept of the "vital few, trivial many" which is the foundation of Pareto charts.

Philip Crosby - He stressed on Quality management and four absolutes of quality including

- ✓ Quality is defined by conformance to requirements.
- ✓ System for causing quality is prevention not appraisal.
- ✓ Performance standards of zero defects not close enough.
- ✓ Measurement of quality is the cost of nonconformance.

Arman Feigenbaum - He developed a systems approach to quality (all organizations must be focused on quality) by emphasizing that costs of quality may be separated into costs for prevention, appraisal, and failures (scrap, warranty, etc.)

Kaoru Ishikawa - He developed the concept of true and substitute quality characteristics as

- ✓ True characteristics are the customer's view
- ✓ Substitute characteristics are the producer's view
- ✓ Degree of match between true and substitute ultimately determines customer satisfaction

He also advocated of the use of the 7 tools and advanced the use of quality circles or worker quality teams. He also developed the concept of Japanese Total Quality Control

- ✓ Quality first and not short term profits.
- ✓ Next process is the customer.
- ✓ Use facts and data to make presentations.
- ✓ Respect for humanity as a management philosophy of full participation

Genichi Taguchi - He developed the quality loss function (deviation from target is a loss to society) and promoted the use of parameter design (application of Design of experiments) or robust engineering. The goal is to develop products and processes that perform on target with smallest variation insensitive to environmental conditions and the focus is on engineering the design.