Process Quality Management

Deepak R. Thakur
Assistant Professor, Department of Management Studies, DevBhoomi Institute of Technology, Dehradun, Uttrakhand

Abstract
In his attempt author strives to say that quality depends upon the efficiency of process. An efficient process contains some standards of processing. If these standards will be kept preserve from tempering, it will work in a standardized mood and produces quality product. In Process Quality Management (PQM) author has to convert the quality choices in to different standards, say in terms of color, length, weight, accuracy, fitness for use and capacity. Secondly author thrusts to apply these standards to the process because these standards build the core purity of quality processing. The only thing we have to do here is to maintain the authenticity of standards during total conversion (processing) period. As per author's intention, process quality management can reduce the frequent inspection visits and cost because a well managed process itself works like a round the clock on duty quality inspectors. Only the time-to-time calibration of process is required here because day-to-day working load may produce the deviation in working standards of process.

Keywords: Process quality, quality management, managing process quality.

1. Introduction

During this competitive age all business houses like to have some unique features in their services or products. For holding a competitive advantageous position, management may make several types of compromises in term of investment, workforce, production, markets and customer services. But one thing which stands out un-compromise able is quality. No company or management can play with quality because quality is only thing which generates customer satisfaction. Goodwill of company is also directly related with quality of its end product or service. Quality is the important survival criteria in the competitive situations. Quality is defined as being the value which conforms to standards, specifications and fitness for use. Quality is that value which needs customer's expectations. Quality is judged by the user rather than the producer. The late 1980's saw a movement away from the concept of quality to that of Total Quality Management (TQM). It looked at the entire organization as the unit for implementing quality. It started looking at 'how the organization met these standards'. Total Quality Management can be defined as "managing the entire organization so that it excels in all dimensions of products and services that are important to the customer". TQM is a process approach and it is a management strategy. This approach is also used in ISO 9000 standards. When managers use a process approach, it means that they manage the processes that make up their organization, the interaction between these processes, and the input and output that join these processes together (Kachru,2007)**.**Another Japanese concept 'Kaizen' believes in process improvement in small doses for better quality with existing resources and without making much financial investment. ISO document provides an understanding of the concepts, intent and the application of the, process approach' to the ISO 9000 family of quality management system standards. ISO certifies the universal applicability of process approach to any management system regardless the type or the size of organization. This includes but is not limited to management system for:

a) Environment (ISO 14000 family)
b) Occupational Health and Safety
c) Business Risk
d) Social Responsibility (Kachru,2007)

Here author wants to add that process is the prime concern matter of every quality concept and revolution. All the business activities happen in a processed way whether it belong to human resource, marketing production or finance. If the process goes in a standard or tampering free mood, all the inputs will be processed or resulted in a specified output. This Process Quality Management (PQM)

concept strives to explain that the total quality of any output depends over the fitness of process applied. A process can be defined as a "set of interrelated or interacting activities, which transforms inputs into outputs". These activities require allocation of resources such as people and materials. In his work author states that quality is nothing but only the management of process. Only a well managed process can yields the quality. PQM is the application of management to process to obtain quality products and services. PQM tries to break a giant process into various simplified sub-process. PQM thrusts to maintain the quality specification of these sub-process which in turn into a combined giant process. As a simple concept, author explains if all sub-processes work according to pre decided specifications then surely the complete full process will produce a quality output.

2. Review of Literature

All customers have some expectation of the quality of the goods or services which are to be provided. There will be an agreed specification. Agreement will have been reached with the organization. They will have accepted the specification which has been offered or there will be agreement from discussion and negotiations. Given an acceptable specification, customer will expect the product or service which is provided to confirm to the specification. The degree to which the product or services confirm to the specification will be influenced by the capability of the conversion process (Wild, 2004). If the conversion process is incapable of providing products or services at the degree of quality specified, then it must follow that the product or services provided will be inferior in quality. The degree to which the product or services, when made available to the customer, confirms to specifications, will be known as process quality. A desired result is achieved more efficiently when activities are related resources are managed as a process. Philip Crosby the quality guru believes that ensuring quality should occur primarily at the design phase, i.e.; it should be proactive rather than reactive. Rather than spending time and money on finding and fixing mistakes and errors, Crosby advocates doing a job right at the first time. Crosby challenges organizations to think of how processes can be designed or redesigned to reduce errors and defects to reach a good of 'Zero Defects'. The ISO 9001:2000 quality management system is made up of processes and input-output relationships. The input-output relationships join the processes together (Kachru, 2007). The core concept of six-sigma is to minimize variation in a particular process (Pandi, Rao and Jeyathilagar, 2008). According to Deming quality comes not from inspection but from improvement of the process in other words "built quality into process, do not rely on inspection" (The Deming Management Method by Walton, 1986). Statistical Process Control (SPC) also advocates that the process should be monitored to monitor quality. The process will be monitored by checking the quality (Chunawala & Patel, 1999). Quality Assurance is quality control, but with an emphasis on quality in the design of process. Total Quality Control (TQC) and Total Quality Management (TQM) are all about the quality of all business processes. TQM is a process approach and it is a management strategy. This approach is also used in ISO 9000 standards (Kachru, 2007). ISO 9001:2000 quality management system lists 22 processes and process approach can be applied to any management system regardless the type or the size of organization (International Standard Organization [ISO], 2008). The ISO 9001:2008 states the application of a system of processes within an organization, together with the identification and interactions of these processes, and their management to produce the desired outcome (International Standard Organization [ISO], 2008).

The organization shall:

a) determine the processes needed for the quality management system and their application throughout the organization,

b) determine the sequence and interaction of these processes,

c) determine the criteria and methods needed to ensure that both the operation and control of these processes are effective,

d) ensure the availability of resources and information necessary to support the operation and monitoring of these processes,

e) monitor , measure (where applicable), and analyze these processes, and

f) Implement actions necessary to achieve planned result and continual improvement of these processes. (International Standard Organization [ISO], 2008).

Kaizen is Japanese concept of seeking to continually improve the operation. Like quality it also is an applied to process improvements. Continuous improvement involves identifying benchmarks of

excellent practice and instilling the sense of employee ownership in the process. Management has two broad approaches process oriented and result oriented. Kaizen believes in process-oriented approach discussed four fundamental elements (process, people, system and management) of TQM and management of process is vital for selection of input, operation, work flow and methods that transform inputs into outputs(Sarangi, 2008).

3. Problem Faced By Organizations

To survive in this competitive world no organization wants to loose its customers. Customers choose the products or services which have quality or fitness for use as per their requirement. No business house can manipulate the product quality according to its feasibility because rival firms may fetch the competitive advantage of this manipulation. As a common practice most of the business houses apply inspection method (based on various sampling plans) to control and check the quality status of output. Generally all major sampling plans are post production exercises in their orientation. By default sampling plans have chances of producer's risk and consumer's risk in different magnitude. We can easily estimate that no quality philosophy (whether it is TQM, QA, Six-Sigma or other) assures total quality in various business activities. With this paper author attempts to promote Process Quality Management (PQM) to rectify the problems related to quality assurance because process management is the heart of every quality philosophy. With the inspiration of TQM, QA and Six-Sigma author strives to present the PQM as a combined approach of various prominent quality philosophies and concepts to maximize the degree of quality assurance for better prosperity of all stakeholders in a business process.

4. Proposed Framework

The creation of any product or service requires a certain kind of conversion process. This process has the responsibility to furnish the raw material or data in to a finished product or information. A process is a set of several interrelated activities; these activities are known as sub-processes. Every sub-process leaves a unique impact on the final outcome. It means product is a result of mutual processing of many sub-processes. If a process works in an efficient way, it will produce a high degree quality product. In other words quality depends upon the efficiency of process. An efficient process contains some standards of processing. If these standards will be kept preserve from tempering, it will work in a standardized mood and produces quality product. In process quality management we have to convert the quality choices in to different standards, say in terms of color, length, weight, accuracy, fitness for use and capacity. Secondly we apply these standards to the process because these standards build the core purity of quality processing. The only thing we have to do here is to maintain the authenticity of standards during total conversion (processing) period. There are some important principles to run the PQM (Process Quality Management):

4.1. *CIS (Continuous Improving System)*

No system or process can remain unchanged in this dynamic environment. For greater quality and productivity we have to carefully indulge in regular improvement of existing process. The author of the present study emphasizes that successful implementation of PQM can not be achieved with out continuous improvement system because business processes have deep impact of external and internal environment. Every dynamic environment explores the new venues for threats and opportunities and an organization can update the quality of its process through close scanning of environments. Environment works like a mirror which reflects the dynamic needs, fashion and requirements of customers. Business processes should be capable to mould itself as per the need of hour.

4.2. *Functional Involvement of Different Management levels*

All management levels should understand their responsibilities regarding process quality like wise; top management should be clear about, what type of quality is required for their customers and other stakeholders? The author stresses that the top management should be committed in such a way to mould every one in the organization to be customer focused and with clear performance measures. It should recognize the employee who contributes to the quality process in response to vision and mission of the organization. Middle management should responsible to convert the customers' requirements into standards for processing. Middle management should understand the requirements of customers and convert them into measurable standards. Before the application of standards all types of

complications should be removed off from final standards. Middle management should put enough stress over the capacity and productivity of process and related resources. Standards should be set to optimize the process capacity. Simple standards generate specialization in process. To make the process simple and specialized a whole process should be broken down into various sub-processes. Every sub-process will have a unique specification with an alignment to general standards determined. A net process will be a result of all sub-process. Middle management should monitor the functioning of all sub-process as per their specifications decided. At last bottom or operative level management should look after the true obey of all prescribed standards during complete processing. Bottom level people should understand the whole process with entire working of all sub-process. Bottom level management should responsible for monitoring and maintaining the standard working of process. Time-to-time corrective measures should be taken to avoid the sub-standard working of process. The all efforts should be made for keeping the process in a form of standard working.

4.3. *Traineeship*

In the starting of job, every employee should allow to observe the total process as a trainee. It will help him to enhance the understanding about the entire process. Training provides a relaxed communication environment to the trainees. During traineeship, trainees can make them familiar with process. Training avoids the reality shocks. New recruits should be coached by their senior counterparts, it will help the trainees in enhancing their knowledge about process and they also can gain the readymade experience form seniors. During the traineeship, trainees should be made aware about the permissible degree of process variations. Trainees should be introduced with prescribed standards. An individual trainee should be well informed about his position and location in whole business process. A trainee should have all specialized information about his role in process. Contribution of an individual in final out come should be traceable.

4.4. *Empowerment of Operative level Management*

Operative level people are directly related with the process. They can feel even a micro deviation in process form is prescribed standards. They should be delegated with adequate decision making power in case of immediate action. In this principle author stresses over the authority delegation to operative level people for making on the spot decisions. A sub-standard working period can be minimized through direct and immediate interfere of shop floor workers. Shop floor decision making can overrule the chances of production held-up.

4.5. *PIP (Process Improvement Programmes)*

Due to change in fashion, trends, taste and preference customers may desire to have new quality parameters. For this managers must organize the PIPs for making workers more flexible to improve the prescribe process. Short term customized refresher training programmes must be introduced for making employees aware regarding the dynamic needs of process. A well established and defined PIP policy should be designed by top management. Particularly PIPs should be organized before the commencement peak season for making employee conscious about quality and quantity.

4.6. *BAI (Breakdown Avoidance Incentives)*

Breakdown may generate sub-standard problem in processing and process can damage the quality of outcome. So the workers should be motivated in monetary and non-monetary terms to preserve the standard working of process. A well communicated BAI sub-policy should be sworn in existing maintenance policy. Through BAI an employee can enjoy the value added salary with an increased productivity. For top management, BAI can lower down the preventive maintenance cost. Regular maintenance charges may also come to their minimized rate.

4.7. *ASM (Allied Services Management):*

Environment scanning, technology transfer and customers survey should be handled sensitively. Some experts can be hired for environment scanning and day-to-day market analysis. Without proper management of allied services no process can be developed or improved. A separate department should be established for managing allied services. Production people may be more focused to process as they are spared from arranging allied services. Timely procurement of necessary services and inputs should be the base responsibility of ASM.

4.8. *Authenticity of Standards*

There should be no tempering or unauthorized trial of process. Because it may decay the pre-settled standards of process. There must be proper documentation of prescribed standards. Once some

process standards are adopted it should not be amended without enough discussion and experiments. Standards should be stable and practical. Standards should be flexible enough to cope-up with some practical chances of variance in standards. Upper and lower limits should be identified that up to what extent standards are permitted to deviate. Here author indicates to establish some tolerance limit up to which deviation in process standards is tolerable. Because in practical situations no process can follow the prescribed standards word-to-word. By the introduction of some tolerance limit standards can be more practical and effective.

5. Techniques to maintain a good PQM:

5.1 *Calibration*

Calibration is the process of comparing a measuring instrument with a measurement standard to establish the relationship between the values indicated by the instrument and those of the standard. To provide confidence in the accuracy of process results, the measurement must have demonstrable traceability. This means that all results associated with a calibration including those relating to the calibration of the measurement standard used- must be traceable back to standards held by the management, through an unbroken chain of comparisons and where each link has stated measurement uncertainties. Day-to-day operational practices produce some malfunctioning in process. In other words author wants to say that process may stop the standardized working due to various reasons like dynamic physical environment (in which process exists), inappropriate utilization of process, human errors, delayed maintenance etc. Due to this process may encroach out beyond the tolerance limit. At this moment process required to tune back to prescribed standards. As per author, calibration is a technique which helps in identifying the gaps between actual working and standard working. Calibration works like a yardstick which compares the current situation of process with standard position of process. Through calibration top management can measure the process and restore the prescribed standards in process. Regular calibration of process is required to keep the process in standardized mood.

5.2 *TPPQA (Third Party Process Quality Assessment)*

An impartial body of experts should be constituted to check the quality of process. These experts may include technologists, customers, suppliers and experts from professional bodies. Various other stakeholders may be invited for the same. Opinions, suggestions, comments and advises of third party experts should be recorded and implemented as per their suitability. Author strives to raise a knowledge pool in term of TPPQA which may serve like a microscope for magnifying the hidden problems because the people directly involved with process, by default behave like a sub-part of process. Third party people can give the true feedback without getting biased. TPPQA can generate some working and fresh ideas for process quality development.

5.3 *Process Survey*

A periodic survey should be conducted to analysis the quality of process. This survey may be internal or external. Process survey should be exercised regularly to study the process working. Proper records should be maintained simultaneously during survey. During the course of survey due weightage should be given to the problems faced by employees associated with process. There must be some provision for periodic surveys done by internal and externals surveyors. Surveying teams must give a survey report based on their observations and findings.

5.4 *Process Audit*

Management should make the arrangements of audit for process once in a year on external basis and twice in a year on internal basis. Audit should cover the total cost, performance and quality conciseness regarding PQM. Author wants to establish a balance between quality and its cost. Through process audit, management can identify the situations where optimum process quality may be achieved with better utilization of cost. Process audit can also help in budget formation for future needs of process. Elimination of useless and non-feasible activities in process can be ruled out for cost optimization. A good PQM always supports the process quality at minimum cost. But one thing should be clear that there should be no compromise over process quality because there is no substitute is available for quality in the present competitive situations

5.5 *Process Setting and Trial*

Before actualizing a change in process standards, this new version should be settled on trial basis to check the feasibility of quality of output. Enough trials should be exercised before finalizing any

process. Every amendment in process should be taken carefully because every change in process will produce a series of changes through out the process. Process should get adequate time and concentration during its setting and installation. A good installation of business process does maximize the probability of having better outcomes with desired quality.

6. Conclusion

Quality exists into process which applied for conversion of input in output. A process should be given proper attention to maintain the high quality standards. The quality of a process should be managed in such a way that an organization can achieve the excellence in competitive situations. Through PQM business houses can cater their customers in a better way and other stakeholders also can have the maximized satisfactory level. In the current business situations quality of product itself provides a mean of cost free advertisement. Hence quality is like a double edged weapon which retains the existing customer and attracts the potential customers. Process quality management thrusts over the management of any business process through some principles which try to install and manage a business process in such a manner that a business house may rely on the process for quality output. In further these principles are followed by some useful techniques to maintain the process in a good condition. Proper implications of these techniques can help the business houses in making time to time amendments in business process for better result.

6.1 Process quality management emphasis on certain principles which are compulsory to be obeyed by any production unit. In this series of principles continuous improvement system has a top position in hierarchy, CIS works like an information system which generates all necessary information to make the process competent enough as per the latest requirement of market. Besides information, CIS provides a chance for comparing the existing process with the new one. CIS indicates the necessary amendments to make with in the process for better quality conditions. Involvement of management should be well defined in other words up to what degree a particular level of management should interact with process. Beyond a dignified extent no management should interfere with process. Traineeship and employee empowerment enhances the decision making ability in among the employees particularly at operative level. As a result employee may solve the day-to –day process related problem which minimizes the chances of production held-up and total production cycle time. Process Improvement Programmes provide a platform of interaction between existing process and future process. PIP simply makes the stakeholders comfortable with new improvements in existing process for better quality working. In the continuation Breakdown Avoidance Incentive integrates employee motivation with long run error free working of process .In order to ignore the breakdown possibilities in process, top management should encourage the employee monetarily. Management of allied services presents a support system which supplies the necessary input and services to cater the process for making it competent as per the dynamic needs. Authentic standards works like a concrete pillar which keep the process in a stable position. Authenticity of standards preserves the process from tempering and creates an in-build standardized quality in process functioning.

6.2 In the techniques of PQM calibration has an important role because it provides a chance for rearranging of quality standards which may loses their authenticity due to continuous working. In other words author wants to say that calibration identifies the gap between actual working of standards and its standard working. Calibration is a technique through which business process can be adjusted back to its fair and quality working. Third party process quality assessment involves the opinion and suggestion of various stakeholders and experts from society about business process. These suggestions may be utilized for making process more adequate and responsible towards market demand. Process survey studies the periodic fluctuations in process and discusses the detail interaction of various sub-processes in building of giant business process. Process Audit controls the cost part of process functioning and suggest the optimum cost for process working without compromising with quality. At last Process Setting and Trial confirms the standard installation of process. Appropriate number of trials should be worked out before commercialization of business process. Every time when any kind of amendment takes place in process it should be settled and tried, afterwards process should be actualized for conversion purpose.

7. Practical Implications

The author found in his work, the PQM is the significant step in quality enhancement. Business houses need to pursue PQM in an effective manner for attaining world-class quality output. The model presented in this paper will be more helpful to the top management of organizations for providing the quality products and services to their customers as well as improvement in the delivery mechanisms not only for the production sector but also applicable in general to the broadest area of service sector.

References

1. Chunawalla & Patel (1999). Production and operation management. (4th ed.). Himalaya, Mumbai: Himalya, (Chapter 16).

2. Crosby, P. (1996). Quality is free. In Chunawalla & Patel (Eds.), Production and operation management (pp.329-330).Mumbai: Himalaya.

3. Demirbag, M. (2006).An analysis of the relationship between TQM implementation and Organizational Performance. Journal of Manufacturing Technology Management, 829-847.

4. Kachru, U. (2007): Production and operation management text and cases. (1st ed.). New Delhi: Excel, (Chapter 7).

5. Pandi, Rao & Jeyathilagar, (2008). A model for global quality in technical institutions. Journal of Association of Indian Universities, 46, 42.

6. Sarangi, S K. (2008). Operations management an integrated concept. (1st ed.). New Delhi:, The Asian Books, (Chapter 18).

7. Wild, Ray. (2004). Operation management. (6th ed.).Singapore: Thomson Learning, (Chapter 20).

8. International Standard Organization (2008), ISO 9000 introduction and support package. [Online] Available: http://www.iso.org (October 15, 2008).

9. International Standard Organization (2008), ISO 9000 introduction and support package. [Online] Available: http://www.iso.org/tc176/sc2 (October 15, 2008).