

Unit V

Subject Name	Sub Code	Semester	Prepared by
PRODUCTION MANAGEMENT	18BBA32C	III	Dr.S.Akilandeswari, Assistant Professor

Quality control (QC) is a process through which a business seeks to ensure that product **quality** is maintained or improved. ... A major aspect of **quality control** is the establishment of well-**defined controls**. These **controls** help standardize both production and reactions to **quality** issues

In the words of John D. McHellen, “Quality is the degree to which a product conforms to specifications and workmanship standard.

Inspection

To **inspect** is to carefully examine. The main **objective** of **inspection** is to meet customer requirements, wants, and needs. The **objective** is to prevent defective product flowing down the successive operations and prevent loss to the company. Many characteristics cannot be **inspected** at the final stage of production.

Inspection separates defective components from non-defective ones and thus ensures the adequate quality of products.

(ii) Inspection locates defects in raw materials and flaws in processes which otherwise cause problems at the final stage. For example, detecting the parts not having proper tolerances during processing itself, will minimize the troubles arising at the time of assembly.

(iii) Inspection prevents further work being done on semi-finished products already detected as spoiled.

(iv) Inspection makes sure that the product works and it works without hurting anybody, i.e., its operation is safe.

(v) Inspection detects sources of weakness and trouble in the finished products and thus checks the work of designers.

(vi) Inspection builds up the reputation of the concern as it helps reducing the number of complaints from the customers.

Kinds of Inspection:

(a) Roving, process, patrolling or floor inspection,

- (b) Fixed inspection,
- (c) Key-point inspection, and
- (d) Final inspection.

(a) Roving Inspection:

The inspector walks round on the shop floor from machine to machine and checks samples of the work of various machine operators or workers.

Floor Inspection:

- (i) Helps catching errors during process itself, i.e., before the final production is ready; and
- (ii) It is more effective and desirable because the work need not be transported to a centralized (inspection) place.

Incoming raw materials are inspected in order to:

- (i) Eliminate those materials which do not meet specifications and are likely to cause trouble during processing; and to
- (ii) Evaluate vendor's quality and ability to supply acceptable materials.

Raw materials involving high transportation charges are checked by the buyer at vendor's end whereas others are inspected as soon as received at purchaser's plant. Inspection of raw materials may involve a visual check up only, a dimensional check, a test of physical properties and chemical composition, etc. Raw materials depending upon their characteristics and use may require a Sampling Inspection or 100% Inspection (as in purchased aircraft component parts). After inspection, the right quality parts are sent either to stock room or assembly lines.

(b) Fixed Inspection:

The work is brought at intervals for inspectors to check. Fixed inspection discovers defects after the job has been completed. Fixed inspection is used when inspection equipments and tools cannot be brought on the shop floor. It is a sort of centralized inspection, the worker and the inspector do not come in contact with each other; thus it eliminates any chances of passing a doubtful product.

(c) Key-Point Inspection:

Every product (more or less) has a key point in its process of manufacture. A key point is a stage beyond which either the product requires an expensive operation or it may not be capable of rework. Inspection at a key point segregates and thus avoids unnecessary further expenditure on poor and substandard parts, which are likely to be rejected finally.

In process Inspection:**An effective in process inspection eliminates:**

- (i) Defects so that the subsequent operation is not badly affected;
- (ii) A defect which may be concealed in the final product (e.g., after painting, etc.);
- (iii) Extra work from being performed on reject able materials.

In-process inspection is carried out by:

- (a) Workers doing the job.
- (b) Inspectors from the inspection department.

In process inspection may check:

- (a) A first few parts of the new machine set up, or a new operation.
- (b) A part before it moves for the next operation.
- (c) A part before it goes for an expensive operation.
- (d) A part after a series of manufacturing operations.
- (e) Parts before sub-assembly or final assembly.
- (f) A part before it is being sent for plating or painting.
- (g) A part before it moves to the next department.

For in process inspection, the inspectors are stationed at specific stages in the manufacturing process.

Automatic sizing and gauging equipments which can check a large number of dimensions simultaneously are sometimes built in the processing machinery. A feedback system automatically resets the machine to correct for the error measured by the automatic gauging equipments.

(d) Final Inspection:

The final inspection of the product may check its appearance and performance. Many destructive and non-destructive inspection and test methods such as tensile, fatigue, impact testing, etc., and ultrasonic inspection, X-ray radiography, etc., respectively, are available for final inspection of the products manufactured. Final inspection is a centralized inspection and it makes use of special equipments.

Inspection of Finished Goods:

An unthorough inspection of finished and final goods may permit faulty products to be dispatched to the customers, because it is the last chance of detecting imperfections in the products manufactured.

TQM

TQM is a continuous process of improvement for individual, groups as well as the entire organisation, whereby managers attempt to change the organization's way of working by developing people's

knowledge about what to do, how to do, doing it with the right methods and measuring the improvement of the process and the current level of achievement.

Total Quality Management (TQM) is a business management strategy aimed at embedding awareness of quality in all organizational processes.

Total quality management benefits and advantages:

- Strengthened competitive position
- Adaptability to changing or emerging market conditions and to environmental and other government regulations
- Higher productivity
- Enhanced market image
- Elimination of defects and waste
- Reduced costs and better cost management
- Higher profitability
- Improved customer focus and satisfaction
- Increased customer loyalty and retention
- Increased job security
- Improved employee morale
- Enhanced shareholder and stakeholder value
- Improved and innovative processes

Objectives of TQM

- i Total customer satisfaction
- ii Totality of functions
- iii Total range of products and services
- iv Addressing all aspects of dimensions of quality
- v Addressing the quality aspect in everything – products, services, processes, people, resources and interactions.
- vi Satisfying all customers – internal as well as external
- vii Addressing the total organizational issue of retaining customers and
- viii Improving profits, as well as generating new business for the future.
- ix Involving everyone in the organization in the attainment of the said objective.

x Demanding total commitment from all in the organization towards the achievement of the objective.

Elements of TQM

1. Customer-focused: The customer ultimately determines the level of quality. No matter what an organization does to foster quality improvement—training employees, integrating quality into the design process, or upgrading computers or software—the customer determines whether the efforts were worthwhile.

2. Total employee involvement: All employees participate in working toward common goals. Total employee commitment can only be obtained after fear has been driven from the workplace, when empowerment has occurred, and when management has provided the proper environment. High-performance work systems integrate continuous improvement efforts with normal business operations. Self-managed work teams are one form of empowerment.

3. Process-centered: A fundamental part of TQM is a focus on process thinking. A process is a series of steps that take inputs from suppliers (internal or external) and transforms them into outputs that are delivered to customers (internal or external). The steps required to carry out the process are defined, and performance measures are continuously monitored in order to detect unexpected variation.

4. Integrated system: Although an organization may consist of many different functional specialties often organized into vertically structured departments, it is the horizontal processes interconnecting these functions that are the focus of TQM. ▪ Micro-processes add up to larger processes, and all processes aggregate into the business processes required for defining and implementing strategy. Everyone must understand the vision, mission, and guiding principles as well as the quality policies, objectives, and critical processes of the organization. Business performance must be monitored and communicated continuously.

▪ An integrated business system may be modeled after the Baldrige Award criteria and/or incorporate the ISO 9000 standards. Every organization has a unique work culture, and it is virtually impossible to achieve excellence in its products and services unless a good quality culture has been fostered. Thus, an integrated system connects business improvement elements in an attempt to continually improve and exceed the expectations of customers, employees, and other stakeholders.

5. Strategic and systematic approach: A critical part of the management of quality is the strategic and systematic approach to achieving an organization's vision, mission, and goals. This process, called

strategic planning or strategic management, includes the formulation of a strategic plan that integrates quality as a core component.

6. Continual improvement: A large aspect of TQM is continual process improvement. Continual improvement drives an organization to be both analytical and creative in finding ways to become more competitive and more effective at meeting stakeholder expectations.

7. Fact-based decision making: In order to know how well an organization is performing, data on performance measures are necessary. TQM requires that an organization continually collect and analyze data in order to improve decision making accuracy, achieve consensus, and allow prediction based on past history.

8. Communications: During times of organizational change, as well as part of day-to-day operation, effective communications plays a large part in maintaining morale and in motivating employees at all levels. Communications involve strategies, method, and timeliness.

Benchmarking

Benchmarking is the process of comparing the cost, cycle time, productivity, or quality of a specific process or method to another that is widely considered to be an industry standard or best practice. Essentially, benchmarking provides a snapshot of the performance of your business and helps you understand where you are in relation to a particular standard. The result is often a business case for making changes in order to make improvements. The term benchmarking was first used by cobblers to measure ones feet for shoes. They would place the foot on a "bench" and mark to make the pattern for the shoes. Benchmarking is most used to measure performance using a specific indicator (cost per unit of measure, productivity per unit of measure, cycle time of x per unit of measure or defects per unit of measure) resulting in a metric of performance that is then compared to others.

Advantages of Benchmarking

1.Improves Learning Methodology: Benchmarking paves the way for idea generation and sharing of proven business practices which can be seen as a learning experience for the companies.

2. Initiates Technological Upgradation: Through this strategy, the companies get to know about the new technology and techniques which have been adopted by the market leaders. The companies can accordingly plan for up-gradation of its technology to sustain the competition.

3.Improve Company's Standards: The company analyzes and studies the standards of the competitors. This facilitates the company to raise its standard of production and products accordingly.

4.Enhances Work Quality: It leads to organizational growth since it improves the overall quality of the output and reduces the chances of errors due to the standardization of business operations.

5.Cope Up with Competition: Knowing about the competitors' business and their strategy, helps the company to design its strategies efficiently. It also facilitates the company to be updated with the recent developments and technology, hence beating the market competition.

6. Improves Efficiency: The overall efficiency of the employees increases with this practice since standardization of work motivates them to perform better without making many mistakes.

7. Increases Customer Satisfaction: Through benchmarking, the company collects sufficient data on customer's needs and wants through customer feedback. This information helps the company to enhance the customer experience and satisfaction level.

8. Help Overcome Weaknesses: These strategies help the company in finding out its shortcomings and working over them to get the desired results.

Objectives of Benchmarking

- Becoming competitive
- Improving industry best practices
- Defining customer requirement
- Establishing effective goals and objectives
- Developing the measures of productivity

AGMARK

AGMARK is a certification mark applied to agricultural products in India. Ensuring that they adhere to a set of standards established by the Directorate of Marketing and Inspection. It is an attached office of the Department of Agriculture, Cooperation and Farmers Welfare under the Ministry of Agricultural & Farmers Welfare an agency of the Government of India. It also complies with the rules and regulations of the Agricultural Produce (Grading & Marking) Act, 1937 & a 1987 Amendment.

It is a mark approved by the government of India for all agricultural products assuring their good quality along with standard. It is a mixture of two words which are AG and MARK. AG proposes agriculture and MARK indicates a certification. It's standard covers agricultural product which has been described as to cover all products of agriculture. Even including the horticulture, all food items or drink and partly manufactured from any such products, and fleeces and the skins of animals.

The group-wise breakup of commodities is represented in the following name of the group and number of commodities notified :

1. Food grain and allied products- 30
2. Fruits and Vegetables- 51
3. Spices and condiments- 27
4. Edible Nuts-8
5. Oil Seeds-17
6. Vegetable Oils and Fats-19
7. Oil cakes-8
8. Essential oils-8
9. Fiber crops-5
10. Livestock, Dairy, and poultry products-10
11. Other products-30

In complete it involves about 213 commodities including cereals, pulses, vegetable oil, and other semi-processed goods. This mark ensures that all the agricultural goods reach the standard ensured by the government. AGMARK is India's government quality certification mark. All the producers don't require to apply this mark on their products. It is used only on those products which affect the health and safety of the consumers.

Requirement of Application Proceedings of Agmark :

1. A copy of the test report which is duly authenticated, from independent Agmark recognized laboratory.
2. Document which authenticates the establishment of the firm (like Registration by Company Registrar)
3. Memorandum of association (when the applicant is a company)
4. Partnership deed a written document including rules & regulation of the partnership (when the applicant is a partnership firm)
5. List and name the products for which the company required AGMARK standardization.
6. Name of the applicant should also be mentioned
7. Name of the Firm or the Company
8. Address of the Firm or the Company
9. Product sample must be submitted in small sachets.

Benefits of having AGMARK on food products :

1. Agmark adds legal advantages. It is a quality certification for agricultural produce by the Government of India, under Agricultural Produce Grading and Marketing Act, 1937 revised in 1986.
2. Agmark certified product must show an Insignia of Agmark directed by the Directorate of Marketing and Inspection (DMI), an agency of Government of India.
3. To make the products comparable in the international market the grading standards are fixed keeping in view the terms of WTO.
4. Agmark certification is an optional certification except it is made mandatory as per the provision of Food Safety and Standards .

ISO

Understanding the the International Organization for Standardization (ISO) guidelines is where the TQM process can become a bit overwhelming. These standards are guidelines on how to document the processes in specific industries. The goal is consistency and a set of complete, easy to follow instructions. While TQM is focused on employee involvement and product improvement, achieving a particular ISO certification shows that an organization is following well-established industry standards.

- Suitable for both small and large organisations
- Better internal management
- Less wastage
- Increase in efficiency, productivity and profit
- Improved customer retention and acquisition
- Consistent outcomes, measured and monitored
- Globally recognised standard
- Compatible with other ISO standards

ISO Procedure

A process is any activity or set of activities that use resources to transform inputs into outputs. The ISO 9001 standard is based on a process approach. (Establishing effective and efficient processes that are consistently followed and improved upon is the basis for most management standards.)

Processes must have defined (and hopefully measurable) objective(s), input(s), output(s), activities, and resources. These key elements should be present when defining a process:

- Inputs/Resources:
- Specified requirements (needs), for example:
 - What information do you need to start work?
 - Where does that information come from?
 - Interrelated or interacting activities that use resources needed to achieve a specific output
- All of the operations, activities, and sub-processes carried out to produce the desired result, for example: What are the basic jobs carried out in your department?
- Can you explain to me your operations here?
- Outputs: Satisfying requirements (results), for example: Who receives the result of your work?
- How do you know if you've done your job correctly? (met objectives)

Advantages

- Increased efficiency
- Reduced costs
- Improved customer satisfaction
- More engaged employees
- Reduced risks

The Contents in this E-Material has been taken from the text and reference book as given in the syllabus.

