

1. Introduction

Total Quality Management (TQM) is a concept created by W. Edwards Deming. It was originally introduced in Japan after World War II to assist the Japanese in re-building their economy. The main focus of TQM was and is continuous quality improvement in the areas of product or service, employer-employee relations and consumer-business relations. Total Quality Management is a management approach that originated in the 1950s and has steadily become more popular since the early 1980s. Total Quality is a description of the culture, attitude and organization of a company that strives to provide customers with products and services that satisfy their needs. The culture requires quality in all aspects of the company's operations, with processes being done right for the first time to eradicate defects waste from operations.

Total Quality Management 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 the business and reducing losses due to wasteful practices.

Definitions of Quality and Quality Management

Definition of Quality

Defining quality is far from easy. Just try to find why one finds that a product is not of quality. Quality refers to grade of service, product, reliability, safety, consistency and consumer's perception. The notion of quality often subsumes a comparison between products. Product A is better than B and therefore has a higher quality (Lorente, 1998). However, the word "better" is vague and different definitions can be used. Quality: means "degree of excellence"; implies "comparison", is not absolute. Quality – is to satisfy customers' requirement continually, where as Total Quality is to achieve quality at low cost. Broadly quality includes fitness for use, grade, degree of preference, degree of excellence and conformity to requirements.

According to British Standard BS 7850, quality is defined as “Quality is concerned with meeting the wants and need of customers” (Sivankalai and Yadav, 2012).

The dictionary has many definitions of “quality”. A short definition that has achieved acceptance is: “Quality is Customer Satisfaction”. “Fitness for use” is an alternative short definition (Walton, 1990). Here, customer means anyone who is impacted by the product or process.

Deming (1986) defines “Quality is a predictable degree of uniformity and dependability, at low cost and suited to the market”.

According to ISO 8402, quality is “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs”.

Dimensions of Quality

The following are the components given by Juran (2005) reveal the dimensions of quality.

1. Manufacturing Industries Service Industries
2. Product Features Accuracy
3. Performance Timeliness
4. Reliability Completeness
5. Durability, Friendliness and Courtesy
6. Ease of use Anticipating Customer needs
7. Serviceability Knowledge of Server

8. Aesthetics

9. Availability reputation

10. Reputation

Quality Planning

Quality planning is the pre determined activities in order to achieve conformation to the requirements. Many organizations are finding that strategic quality plans and business plans are inseparable. The quality planning procedure given by (Juran, 2005) has the following steps:

- Identify the customers
- Determine their needs
- Translate those needs into our language
- Develop a product that can respond to those needs
- Optimize the product features to meet our and customer needs

Quality Costs

All organizations make use of the concept of identifying the costs needed to carry out the various functions – product development, marketing, personnel, production etc. Until the 1950's this cost concept had not been extended to quality function, except for the departmental activities of inspection and testing. During the 1950's the concept of "Quality Cost" emerged. Different people assigned different meanings to the term. Some people equated quality cost with the cost of attaining quality; some people equated the term with the extra incurred due to poor quality. But, the widely accepted thing is "Quality cost is the extra cost incurred due to poor or bad quality of the product or service" (Juran, 2005).

Categories of Quality Cost

Many companies summarize quality costs into four broad categories. They are;

- a) Internal failure costs - The cost associated with defects that are found prior to transfer of the product to the customer.
- b) External failure costs - The cost associated with defects that are found after product is shipped to the customer.
- c) Appraisal costs - The cost incurred in determining the degree of conformance to quality requirement.
- d) Prevention costs - The cost incurred in keeping failure and appraisal costs to a minimum. Sometimes we can also include the hidden costs i.e. implicit costs (Juran, 2005).

Emerging Quality Cost Model

It is been argued that higher quality doesn't mean higher costs. The companies estimate quality costs for the following reasons:

- a) To quantifying size of the quality problem in the language of money improves communication between middle managers and upper managers.
- b) To identify major opportunities for cost reduction.
- c) To identify the opportunities for reducing customer dissatisfaction and associated threats to product saleability.

The main focus of TQM was and is continuous quality improvement in the areas of product or service, employer-employee relations, and consumer-business relations using the following 14 Deming's Principles.

1. Create constancy of purpose for improvement of product and service;
2. Adopt the new philosophy;
3. Cease dependence on mass inspection to achieve quality;
4. End the practice of awarding business on the basis of a price tag-instead, minimize the total cost;
5. Improve constantly and forever the system of production and service;
6. Institute training for all employees;
7. Adopt and institute leadership;
8. Drive out fear;
9. Break down barriers between staff areas;
10. Eliminate slogans, exhortations, and targets for the work force;
11. Eliminate numerical quotas for the work force and numerical goals for people in management;
12. Remove barriers that rob people of pride in their work;
13. Encourage education and self-improvement for everyone;
14. Take action to accomplish the transformation"

Total Quality Management

ISO defined TQM as “A management approach of an organization centred on quality, based on participation of all its members and aiming at long term benefits to all members of the organization and society.”

TQM is "a system of continuous improvement employing participative management and centred on the needs of customers" (Jurov and Barnard, 1993).

There are a broad range of definitions of TQM, some examples are as follows:

- TQM is an integrated, corporately led programme of organizational change designed to engender and sustain a culture of continuous improvement based on customer oriented definitions of quality (Kanaji, 1990).
- TQM is defined as fitness for use or purpose. TQM is a way of managing the effectiveness, flexibility and competitiveness of business as a whole TQM represents the management of quality as a strategic issue rather than an operational issue for lower levels of the hierarchy (Engelkemeyer, 1993).
- TQM is a systematic approach to the practice of management, requiring changes in organizational processes, strategic priorities, individual beliefs, individual attitudes and individual behaviors (Oakland, 1990).
- Brockman, J. R. (1992) has defined that “TQM is a management philosophy, embracing all activities through which the need of customer, the community and the objectives of the organization are satisfied in the most effective and potential of all employees in continuing drive for improvement.”

According to Moghaddam and Moballeghi (2007), TQM is the application of a number of activities with perfect synergy. The various important elements of TQM are:

- Customer-driven quality;
- Top management leadership and commitment;
- Continuous improvement;

- Fast response;
- Actions based on facts
- Employee participation; and
- A TQM culture

Libraries can benefit from TQM in three ways: breaking down interdepartmental barriers; redefining the beneficiaries of library services as internal customers (staff) and external customers (patrons); and reaching a state of continuous improvement (Jurow and Barnard, 1993).

Four-level model in TQM

In his study of total quality management in managing quality, Dale et al., (1990), outline a four-level model of the evolution of quality management. In addition to the framework it proposes, clear definitions of quality terms are also provided.

Level 1. Inspection: measure the characteristics of a product and compare them with its specifications; the goal here is the fitness of standards. This is the passive "Inspecting" attitude.

Level 2. Quality Control: inspection performed by the workers themselves with a feedback loop to the production line; here we avoid the "inspector" effect and allow some learning to take place.

Level 3. Quality Assurance: set of (implemented) predefined and systematic activities necessary to give confidence in the process quality; one step further. Quality procedures are designed and planned as a whole to ensure that no bad products be delivered. We do not just rely on everybody's work and control. This introduces the notion of a coherent set of quality procedures/tests. The given confidence (in the definition of QA) is important both for the producer and for the customer.

Level 4. Total Quality Management: centred on quality and based on the participation of everybody which aims at the customer satisfaction and at the improvement of the company's personnel, of the company and of the society.

The ultimate step in TQM is a quality assurance plan is operational but the management; the workers and the customers continuously interact to review/improve this plan. Quality is concerned with meeting the wants and needs of customers. One of the key and enduring definitions is that "Quality is fitness for purpose". According to the British Standards, quality is defined as "the totality of features and characteristics of a product of service that bear on its ability to satisfy the stated or implied needs".

Components of TQM

The primary focus of this study was to understand the impact of TQM principles on library management. Hence, seven components of TQM were identified after extensive review of literature. The seven identified components were:

Leadership, policy and strategy, training and development, staff management, teamwork, resources and processes. These components of TQM are fundamental to the basic principles of TQM, propounded by the quality gurus and available in all established TQM literature

Leadership

According to Deming's 14 points, 7th point says "Adopt and institute leadership". On this basis, first component is considered as Leadership. The presence of leadership quality in the librarian would go long way to drive out the fear of change that the employers may perceive in Total Quality Management effort. The challenge is to build a management team that possesses such characteristics. The two intellectual capabilities that is essential to the leader is ability to perform abstract thinking; to move from concrete experience to a set of generalized ideas; and back to concrete experience again in ways that change the way the people think about the problem or an opportunity. The leadership of an organization must be committed to continuous improvement. This commitment must be visible throughout all layers of management. Management must "walk the talk" (Heinbuch, 1993). The leaders must possess a

vision and share the vision with everyone. Leadership is a work-in-progress and is a practical step in a journey to change organizational culture and build individual and organizational leadership capacity (Williamson, 2009).

Policy and Strategy

All the services provided by the library should come under the scrutiny of Total Quality Management. The coupling of policy and Total Quality Management services as a measure in assuring the entire library will be involved in strategic quality management programmes. Total quality management as a tool that can help in achieving the objectives of educational institutes in such a competitive modern global economy (Ahmed, 2012).

Training and Development

By creating an awareness of training opportunities, the organization demonstrates its commitment to a continuous improvement of employee's skills. The training programme will enable the staff to become familiar with the techniques such as latest development in their field. Thus, the training and development will eliminate waste and effecting continuous improvement. The training, development and education of employees at all levels within organizations is now considered a vital component in maintaining competitiveness in the international arena. It is also of some significance within the human resource management (HRM) and development (HRD) literature (Garavan, 1997).

Staff Management

Deming's model of profound knowledge emphasizes need to understand the human psychology, which is not an easy task. The managers needs to develop an attitude of awarding their staff for better performance, which will boost the morale of staff in achieving Total Quality Management. The form of recognition should fit the accomplishment; in other words, the value of the recognition should be commensurate with the value of the accomplishment (Porter and Parker, 1993).

Team Work

Working in teams is one of the current popular management techniques and it is becoming increasingly common for academic librarians to work with others on campus to solve problems, deliver services, develop information resources, create facilities and formulate policies. Collaborative teams of librarians and computing professionals have created campus websites, offered workshops for staff and users, planned labs and instructional technology centers and developed joint service desks. Graham (2003) says "it was tough he says the teams are very good about giving new workers safety guidelines and saying, look, if you are ever in doubt, make sure that you come and ask.

Resources

Processes

The pursuit of quality must become the primary motivation in the organizational process. The wide range of library activities and services aimed at collecting, organizing, maintaining and delivering information services and products.

Benefits of TQM

Customer satisfaction oriented benefits (Hackman and Wageman, 1995) of TQM are;

1. Improvement in product quality
2. Improvement in product design
3. Improvement in production flow
4. Improvement in employee morale and quality consciousness
5. Improvement in product service

6. Improvement in market place acceptance

Economic improvement oriented benefits of TQM are,

1. Reduction in operating costs
2. Reduction in operating losses
3. Reduction in field service costs
4. Reduction in liability exposure

Concept of continuous improvement by TQM

TQM is mainly concerned with continuous improvement in all work, from high level strategic planning and decision-making, to detailed execution of work elements on the shop floor. It stems from the belief that mistakes can be avoided and defects can be prevented. It leads to continuously improving results, in all aspects of work, as a result of continuously improving capabilities, people, processes and technology. Continuous improvement must deal not only with the improving results, but more importantly with improving capabilities to produce better results in the future.

The five major areas of focus for capability improvement are; demand generation, supply generation, technology, operations and people capability (Sivankalai and Yadav, 2012).

A central principle of TQM is that mistakes may be made by people, but most of them are caused, or at least permitted, by faulty systems and processes. This means that the root cause of such mistakes can be identified and eliminated and repetition can be prevented by changing the process (Gilbert, 1992).

There are three major mechanisms of prevention:

1. Preventing mistakes (defects) from occurring (mistake-proofing or pokayoke).
2. Where mistakes can't be absolutely prevented, detecting them early to prevent them being passed down the value-added chain (inspection at source or by the next operation).
3. Where mistakes recur, stopping production until the process can be corrected, to prevent the production of more defects. (Stop in time).