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3.1 Introduction

Quality plays a significant role in the higher education, as the dominance of market-orientation techniques leave no alternative for academic universities and colleges but to improve their quality and enhance efficiency. Feigenbaum\(^1\) believes that “quality of education” is the key factor in “invisible” competition between countries, since the quality of products and services is determined by the way that managers, teachers, workers, engineers, and economists think, act, and make decisions about quality. Education, and in particular, higher education itself, is also being driven towards commercial competition imposed by economic forces\(^2\). According to Freeman\(^3\) this competition is the result of the development of global education markets on the one hand, and the reduction of governmental funds that force public organizations to seek other financial sources, on the other. Considering the similarities between experiences encountered in the commercial world and those faced in higher education\(^4\), the phrase “market-orientation” is often used to describe the new situation in which a combination of quality and price, determines the competition factors\(^5\).

It seems that, there is a solid logical reasoning behind introducing the concept of total quality philosophy in universities. To substantiate this statement, Helms and Key\(^6\) opines that, “Total Quality Management (TQM) values are more compatible with higher education than many existing management systems”. According to Lewis and Smith\(^7\), the perception of “quality of education” by many academics is increasingly becoming a problem for many outside the system. Unhappy customers and low employee morale are also mentioned as major challenges in universities\(^8\). The primary objectives of Total Quality Management are universal, geographically consistent and
conformance to the customer expectation and building continuous improvement has been a prime agenda of any higher educational system for its sustenance and survival. While “accreditation” and “assessment” in universities focus on only “inputs” and “outputs” of the system respectively. The TQM approach integrates and improves all the three stages - inputs, processes, and outputs.

Recent decades suggest that information services will have a bright future. There is a worldwide understanding that information infrastructures have become a vital area of international political debate and strategic maneuvers in industry. There are advancements in electronic information technology, transforming the world into the global village that McLuhan foresaw more than twenty-five years ago. The several important factors that influence information services in the modern era are summarized below:

- **Technological factors.** Many advances have been achieved in this field of information technology and its impact on libraries have created the interest to many researchers and scholars, some of them seeming it as a concrete possibility.

- **Economic factors.** Printed material prices have increased remarkably in recent years principally journal subscriptions. On the other hand, with the increasing offer of new products, a decrease in the prices of many formats of electronic publishing can be reasonably expected.

- **Political factors.** The world lives at a moment when internationalism is no longer a dream and there is an evident predisposition to the unifying of frontiers among countries influencing on the information services of the academic library.
Social factors: The academic world experiencing the complexity and sophistication of the new information tools and new technologies speed for the identification and retrieval of data. At the same time, the popularization of global communication networks like the Internet and the Usenet is transforming computers in ordinary home appliances like telephones, televisions or radios influencing the library activities and services.

Change is the only constant today and equally applies to library and information services. With the emergence of information and communication technology and pressures of global competition, modern management techniques like Re-engineering, a flattening of hierarchies, networking, total quality management, part-time working and Tele-working are all part of the same inevitable process of re-adjustment to a new environment. Libraries are the integral part of the information society imparting the information consciousness to the society at large, due to their immense information resources; have to keep up with other mobile and flexible actors in the new information market. An extremely important role falls to the library managers, who are becoming carriers of the new ideology in the new millenium, there is a need for change in management becomes clear, creating the following critical factors:

- Reaction time, flexibility;
- Certain decision-making competencies; and
- Efficient use of resources.

3.2 Definition

"Total Quality Management, a management philosophy embracing all activities through which the needs of the customer and the community, and the objectives of
the organization, are satisfied in the most efficient and cost-effective way by maximizing the potential of all employees in a continuing drive for improvement."^9.

"TQM means that the organization's culture is defined by and supports the constant attainment of customer satisfaction through an integrated system of tools, techniques, and training. This involves the continuous improvement of organizational processes, resulting in high quality products and services."^10.

"TQM is a non-hierarchical and non-bureaucratic culture, based on an operating philosophy of employee involvement, committed to meeting customer requirements through the continuous improvement of key business processes, as measured by a variety of analytical tools."^11.

"Management Philosophy and company practices that aim to harness the human and material resources of an organization in the most effective way to achieve the objectives of the organization."^12.

Tenner and Detero^13 defines TQM as "A basic business strategy that provides goods and services that completely satisfy both internal and external customers by meeting their explicit and implicit expectations.... This strategy utilizes the talent of all employees to the benefit of organization in particular and society in general and provides positive financial returns to the shareholders".

Oakland^14 defines "TQM is a comprehensive approach to improving competitiveness, effectiveness and flexibility through planning, organizing and understanding each
activity and involving each individual at each level and ensures that management adopt a strategic overview of quality and focus on prevention, not detection of problems.”

Cantoni defines "TQM is a non-hierarchical and non-bureaucratic culture, based on operating philosophy of employee involvement, committed to meeting customer requirements through the continuous improvement of key business processes, as measured by a variety of analytical tools".

Quality becomes an issue when libraries try to expand the scope of, and improve their services as relating to how good a service is, and not necessarily how large or extensive. The recipients of a service therefore must experience quality, which may also be a property of the service itself and the client, and not necessarily of the provider. In the library, quality may be recognized by the customers in terms of the prompt delivery, or timely and error freeness, of the service i.e. Zero defects. In fact, there has to be a marked shift from a technical to a customer orientation in the delivery of service. All libraries may provide the same type of service but the delivery of that service will differ from place to place depending on its uniqueness.

Thus, Total Quality Management (TQM) is both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. TQM is a strategic, integrated management system for achieving customer satisfaction. It involves all managers and employees and uses quantitative methods to improve continuously an organization’s processes and emphasizes three principles: focus on achieving customer satisfaction; seek continuous improvements; and fully
Total Quality Management is a structured system for satisfying internal and external customers and suppliers by integrating the business environment, continuous improvement, and breakthroughs with development, improvement, and maintenance cycles while changing organizational culture. TQM is also known as continuous process improvement and continuous quality.

TQM can also be said as:

- Conformance to customer requirements;
- Continuous improvement of key business processes; and
- An organization wide culture that reinforces quality in everything that it does.

International Organization for Standardization (ISO) is an extension of Total Quality Management, that is a series of various quality standards for products and services and is very "generic", the standards desired can be applied to a broad range of businesses and companies in order to improve quality in the work process. The ISO 9000 refers to a combination of national standards from 100 countries established in 1947. The mission of "ISO is to promote the development of standardization and related world activities in order to facilitate international exchange of goods and services and to develop co-operation in intellectual, scientific, technological and economic activities". ISO 9000 helps industries organization/industries to improve quality and the process cycle of their industry and a very good guide line for international quality standards representing the consumers in implementing ISO 9000 procedures not only for the benefits of the consumer, but also to the manufacturer or service provider.
ISO 9001- Used as a model for quality assurance that is weighted toward design, development, installation, production, and service of a product or service.

ISO 9002- a model for quality assurance that is weighted more towards production and installation of a product or service.

ISO 9003- A Model for quality assurance that is weighted towards final inspection and testing of a given product.

ISO 9004- the final model of ISO is a guide for the development of quality management systems.

3.3 Historical Development of Total Quality Management

3.3.1 Evolution of Quality Management

Over the years, quality management has evolved through a number of developmental stages:

- Product, process, and work quality inspection;
- Application of statistical methods for product and process control;
- Total quality control (TQC), which extends responsibilities for quality to everyone in the company;
- Quality assurance system standards;
- Total Quality Management; and
- Global Quality Management.

The workmanship requirements under control of guilds are the earliest form of a system of quality assurance. During the 1920s and 1930s statisticians in Germany and
America applied statistical methods for analyzing and controlling variations in manufacturing.

3.3.2 History of Total Quality Management

Total Quality Management is an approach to the art of management that originated in Japanese industry in the 1950's and has become steadily more popular in the West since the early 1980's. The field of quality has its roots in agriculture. Early last century in Britain, R.A. Fisher conducted statistical research to assist farmers in understanding about plants and this work subsequently inspired Joseph M. Juran and Walter Shewhart at Bell Laboratories, whose work motivated W. Edward Deming to devote his life to the teaching and improvement of quality methods.

Deming took the idea of statistical control and transformed it into a method of management, statistical quality control (SQC) which was only an engineering tool became an over arching management style. Juran in 1954 raised the level of quality management from the factory to the total organization. He stressed the importance of systems thinking that begins with product designs, prototype testing, proper equipment operations, and accurate process feedback. Juran provided the move from SQC to total quality control (TQC) in Japan. This included company-wide activities and education in quality control (QC), QC circles and audits, and promotion of quality management principles. Kaoru Ishikawa, one of the fathers of TQC in Japan, had outlined the elements of TQC management includes; Quality comes first, not short-term profits; customer comes first, not the producer; customers are the next process with no organizational barriers; decisions are based on facts and data; management is
participatory and respectful of all employees and cross-functional committees covering product planning, product design, production planning, purchasing, manufacturing, sales, and distribution drive management\textsuperscript{18}.

During the course of time, Japanese products exceeded the quality of American products and by the 1970s and 1980s, the American car industry began feeling the effect of Japanese quality products and thereby the entire industries of America were lost to Japan. Genichi Taguchi was instrumental to the Japanese quality drive and often stated, "The quality of a product is the economic loss passed to society once the product has been shipped"\textsuperscript{19}. This;

- Expose your product to very bad usage conditions, which are close to the unfriendly treatment of the product by its later customers;
- Vary its design parameters intentionally under these bad conditions; and
- From the information obtained identify and verify the best design.

Japanese and American literature on TQM indicated that there is a significant community of Japanese engineers, which follow Taguchi's advice by using the Quality Loss Functions and Parameter Design techniques. They tackle breath-taking projects with good results in a very short period of time, starting in R&D. This has had an impact on trade since World War II. In 1987, the development of first international ISO 9000 standards has revolutionized the global quality management through the participation of 20 countries and became the industry standard. ISO9000, defining which features and characteristics should be present in an organization's quality management system.
The major Milestones of quality management in the global perspective especially United States, Japan and Europe are elucidated below.

> United States.

In the United States, major milestones toward international quality management are:

- Inspection became a special function under so-called Taylorism (around 1900).
- Walter A. Shewart, Harold Dodge, and Harry F. Romig, all of Bell Laboratories, introduced statistical methods for quality control (1925, 1940).
- American Society for Quality Control was formed (1946).
- Feigenbaum (1956) first publicized the concept of TQC.
- The Department of Defense issued by first quality system standards, the MIL-Q-9858 A (1957).
- Quality management concepts and practices were propagated by outstanding and widely recognized quality assurance professionals such as Juran, Deming, and Crosby (1960-1970).
- The Malcolm Baldrige National Quality Award for outstanding quality management was instituted (1980-1990).
- Community-centered partnerships for promotion of a quality movement, management, infrastructure and education were formed across the nation (late 1980s).

> Japan

In Japan, the development moved through the following stages that show greater and earlier leadership from executives and scholars, as well as direct government involvement:
Deming, the American statistician, taught the first courses in statistical quality control to Japanese executives (1945).

The Japanese Union of Scientists and Engineers (JUSE) was formed under the leadership of Ishikawa for the purpose of promoting quality control methods (late 1940s).

The Deming Prize was created for outstanding achievement in quality strategy, management, and execution (1951).

The concept of TQC was adopted (1954).

Company-wide quality control (CWQC) was developed (1960s).

Quality circle movement (1970s and 1980s).

Europe

Similar to Japan, planning and control of quality along with industrial history in European countries started much earlier than in the New World. In recent years some old traditions had to be broken. Quality here too needs to be managed and cannot anymore be taken for granted and simply implied in good workmanship alone. Major milestones in Europe were:

Craft guilds controlled quality since the fourteenth century.

Statistical methods were introduced in manufacturing (1930s).

Standards for quality systems were established in Great Britain along with the Institute for Quality Assurance (1950s).

National Organizations developed educational and research programs and similar quality-related services to business (since the early 1950s).
The European Standards Organization issued standards for quality systems, based on the ISO 9000 series and instituted accreditation of quality programme registration agencies (1988).

The European Foundation for Quality Management was established with membership from senior member states (1988).

Integrated computer-aided quality management systems have become an important focus for research and development (1980s).

### 3.4 Principles of TQM

An approach sought to embed the quality within the culture of an organization is total quality management (TQM). Library and information services managers have long recognized the need for customer orientation that is inherent feature in the Total Quality Management philosophy. Besides, library and information centers needs to map the information needs of the customers; well-defined quality policy and Quality Circle and translating into quality information services, by making use of various Information Technology based information retrieval tools. The principles of TQM have been propounded by various quality gurus using different terminology but within the purview of same principles. For the convenience, the principles of Total Quality Management are summarized below.

#### 3.4.1 Quality is Customer Defined

Quality is defined in terms of customers’ perceptions or, in a more complex model that is widely debated in the service quality literature, as the gap between expectations and perceptions. Such customer focus requires not only an attention to internal processes,
but also an awareness of the external marketplace. Only a match between the requirements of the marketplace and the internal processes and operations will lead to a quality service. Competitive pressures from different information providers; widely available information resources; rising costs of books and serials, and emerging new technologies and services providing information to potential library users raise questions about the role of academic libraries in present times. There has been some deliberation about the necessity to better understand and define the needs and expectations of library users to provide the appropriate kind and levels of service to the satisfaction of users. The first and major TQM principle is to satisfy the customer, the person who pays for the product or service. Customers want to get their money's worth from a product or service they purchase.

To transform the work and how it is accomplished, libraries must begin listening and acting on the voices of customers, staff, work processes, and the organization for the purpose of learning new directions and partnering with customers. Library services quality is an important factor that decides on customer satisfaction. Satisfaction is a psychology category yet, what means, it's subjective and not easy to measure.

3.4.2 System Approach and Strategy Planning

It should be noted that at-least 80% of an organization’s problems are due to the system and not the employees. Younger\textsuperscript{21} says, “The quality management approach focuses ... on finding and reducing the causes that occur in the systems used to produce the results. The most useful way to eliminate problems is to address directly the production systems and determine if the system has flaws that routinely lead to poor quality in the end.”
3.4.3 Internal and External Customers are both important

Customer services and satisfaction lies in the heart of TQM. The only way to ensure that the organization has a focus on customers which has an equal affect on all departments and teams, including those not in direct contact with the external customer, is to encourage all employees to identify those to whom they provide a service and to view those people as their internal customers. In this way the customer orientation can permeate the organization.

3.4.4 Employee Involvement

Employee involvement follows automatically from the need for all employees to consider their internal customer. Employee involvement means that each individual must take the initiative and not rely on someone else. In order to achieve, the organization needs a culture that encourage the involvement of its employees in the activities and services of the organization. Everyone must understand that they contribute equally to quality and can only succeed through co-operation and support through participatory style of management and not an autocratic style of management.

3.4.5 Error-free Processes

The focus of TQM is on prevention to eliminate waste, reduce costs and achieve error-free processes. The traditional approach to TQM, which developed in a manufacturing environment, was a strong focus on process quality control. Service managers need to interpret this focus in a way that is appropriate for services with inherent variability and the less controllable element of the customer.
3.4.6 Performance Measurement

Performance needs to be based on timely measures of, and feedback on, performance through superior quality information systems. The performances of library staff should be measured at regular intervals by adopting management techniques like Performance Appraisal and Evaluation. This will enable the Management to evaluate the strength and weaknesses of staff and thereby enable them to overcome the difficulties in executing proper work.

3.4.7 Continuous Improvement

Total Quality Management is an organizational approach to customer satisfaction involving customers, people, and the continuous improvement of processes. TQM is not an end in itself; it is an ongoing process and recognizes the need for TQM to operate in a world of continuously evolving products and a rapidly changing global economy. The libraries which are “guided by a system of continuous improvement, they will make conscious decisions about what improvements are needed or desired based on customer”22. Continuous improvement, in regard to organizational quality and performance, focuses on improving customer satisfaction through continuous and incremental improvements to processes, including by removing unnecessary activities and variations. Continuous improvement must be seen as the responsibility of everyone in the organization. Therefore, Total Quality Management should be a way of life and it should not be limited to one time deal and the every day improvements in the library products and services should be maintained.
3.4.8 Employees Empowerment and Respecting People

Employee empowerment is one of the key element of Total Quality Management that rise to the forefront most frequently, as the success of any information system depends upon their capability, spirit and dedication. Total Quality Management is a known philosophy for empowering to do their jobs more effectively and themselves should take decisions of the concerned and the librarian has to remove the obstacles at various levels. In this connection O'Neil\textsuperscript{23} says, “Invisible walls between the professional and non-professional staff will disappear when the library has developed team to work on strategies for achieving goals and objectives. Self-respect will also be garnered when the empowerment of the staff allows full contribution and satisfaction”.

3.4.9 Measurement and Analysis Techniques

Measurement provided the key for accountability, for that, proper tools and techniques should be adopted for measuring quality, which will help to trace the problems, evaluate improvements, and decisions should be based on data. Performance evaluation is a basic criterion to the success of entire information operation. Measurement however continues to be major impediment in improving the quality of our libraries. Statistical process control (SPC) as an application of statistical methods to the measurement and analysis of variation in any process... which helps in achieving quality objectives\textsuperscript{24}. SPC a quality management tool should be adopted in the library activities and services to measure the effectiveness of the library and its services.
In a nutshell, the principles of Total Quality Management are depicted in following figure.

Fig. 1. Principles of TQM model
3.5 Total Quality Management in Library and Information Service Sector

3.5.1 Quality Service in Library and Information Service Sector: A necessity

Our society’s digital revolution has transformed the traditional quiet world of libraries. Open to debate is the exact form and role we can expect for academic libraries in the beginning of the new millennium. Dramatic changes are in the offing for academic libraries as the result of the digital revolution, such as:

- Changes in the form of the library;
- Changes in the relationship between an institution’s library and its information technology division;
- Changes in the way collections are acquired, organized, stored, and delivered; and
- Changes in the outlook of library buildings and facilities.

The library of the future will be more a portal through which students and faculty will access the vast information resources of the world and less a place where information is kept. It will concentrate on access and knowledge management rather than on physical ownership of materials. This new library needs, to bring together scholars and information resources without necessarily bringing either to a physical building. The library of the future will have the daunting mission of helping scholars to discover what relevant information exists, anywhere in the world and in a variety of formats and media. Contrary to the belief of some that, the Internet will render librarians and their services obsolete, the digital revolution has made librarians all the more essential. A deep knowledge of the scope of what is readily available online, and sound
judgment on its reliability, is just one service that university librarians will be called on to provide in the future. The move toward digital collections and services forces librarians to focus on helping users:

- Navigate the Internet;
- Understand unorganized sites; and
- Consider certified sources on the Internet.

Until very recently, the most popular measure of quality for libraries was the size and coverage of their library collections. To a great extent, using the collection as a quality measure was logical because it was the only “variable” that could be easily quantified, by way of the number of volumes, the number of unique titles, the price, the allocation, percentage of price increase, etc. and usage, through the recording of loans. Quality can also be seen as relating to the fitness of a service or product to its intended purpose or use, subject to the expectations of the customer, user or public. Quality, therefore, must be in conformity with the customer’s requirements or needs.

Armstrong in 1991 contends that the criteria of quality, which customers ascribe to service, include:

- Accessibility;
- Responsiveness or timeliness;
- Reliability or accuracy, up-to-date ness and relevance;
- Security or non-threatening behavior, friendliness and helpfulness;
- Communications or easy to use;
- Assurance or reliability and consistence; and
- Affordability, tangibility or within price range.
The application of Total Quality Management in Library and Information Centres seems to be a very recent origin but it is not so in the Indian context wherein DR. S.R. Ranganathan, father of Library and Information Science stated in his fourth law ‘Save the Time of the User’ has direct implication to what is advocated in TQM approach.

The attainment of quality, therefore, is an ongoing process where the client is a key determinant of all the above mentioned. If libraries cannot provide what clients want, then they cannot hope to survive in a competitive world where the customer picks and chooses what is best of the service. Quality assurance is a continuous process of examination and re-examination of the needs of the client, providing the means by which expectation can be met or satisfied. It stands to reason therefore that customer service is not about training staff to be nice to the customer, looking them in the eyes and SMILE, where “S” stands for smart, “M” for manners, “I” for interest, “L” for listen and “E” for enthusiasm. We have all learnt about this acronym in service management. No, no, quality service is about helping a customer to define his/her needs, clarifying customer benefits, building confidence and monitoring and assessing the organization, and the impact of its products and services. The main idea is to identify opportunities for service excellence and improvement and taking corrective action where there are diversions. Actually, real service quality is attained when customer expectations are exceeded.

3.6 What do the Quality Gurus have to say to Academic Libraries?

The excerpts about academic libraries stated by the major quality guru’s viz. Edwards Deming, Joseph Juran and Philip Crosby are enunciated below.
3.6.1 W. Edwards Deming

W. Edwards Deming was born in 1900 and studied at the University of Wyoming and later pursued Ph.D. in mathematical physics at Yale University. During his graduate education, he worked summer months at the Hawthorne Plant of Western Electric in Chicago, developing his expertise in statistical quality control. Deming graduated from Yale in 1928 and began his lifelong work of denouncing quota systems and focusing on quality outcomes. He attempted to institute his ideas in U.S. organizations, but received little attention. Finally, after receiving accolades for his work in Japan, he began preaching his broad management philosophy at home an impassioned philosophy referred to as “Demingism” by some and “revolutionary evangelism” by others.

Until the time of his death in December 1993, the aging Deming conducted twenty seminars per year throughout the United States, lecturing to an estimated audience of ten thousand who paid more than one thousand dollars each to hear, ten thousand who paid more than one thousand dollars each to hear him. In his speeches, Deming relentlessly blamed management, not staff members, for low quality. He continually stated that 94 percent of all errors are due to system problems over which management has control. Only 6 percent of errors are the fault of staff members.

Deming’s rather loosely knit management philosophy consists of fourteen points, which may be applied to libraries as follows:

1. Establish constancy of purpose for service improvement. Libraries should avoid short-term “band-aid” solutions to quality problems. Instead, long-term planning
at the board and administrative levels must consider how quality service delivery can best be achieved.

2. Adopt the new quality philosophy. Those who work in libraries must adopt a philosophy in which negativism and poor service are unacceptable. Unhappy patrons not only cease visiting libraries, but also resist tax hikes and avoid making financial contributions to support the library.

3. Cease dependence upon mass inspection. Continuous improvement not quality assurance is the key to excellent service. With a quality assurance approach, staff members will assume their importance of doing things right the first time. Quality breakdowns are more difficult to fix after than before the fact.

4. End the practice of awarding vendor business based on price alone. Rather than constantly searching for cheaper suppliers, long-term relationships should be established with vendors. For example, when choosing a CD-ROM service, more than price should be considered. The capabilities of the system and service support will be important to the librarian. Vendors have also used TQM as a way to improve and promote their services. For example, the National Technical Information Service (NTIS) instituted a quality program in 1992. Today, they advertise that because of their TQM initiative they can fill millions of orders for reports, data files, and software programs with 99.9 percent accuracy at a 50 percent faster processing time.

5. Improve constantly and forever every system of service. TQM is not a one-time effort, not even something that is ever accomplished. Instead, it is a journey. Once this journey is embarked upon, management is obligated to continually
improve the library. Because of the high level of interdependency among organizational members in a library, a team approach is required for making decisions about quality improvements.

6. Institute training procedures. Staff members often learn their jobs for colleagues who were improperly trained. When this occurs, new members cannot adequately perform. Instead, organization members should receive proper training through activities such as in-services, professional conferences, and continuing education.

7. Adopt and institute leadership. Managers should go beyond telling employees what to do and actually lead by example. Leadership means discovering and removing barriers that prevent individuals from taking pride in their work.

8. Drive out fear so that everyone can work effectively. Library staff members must feel secure if quality is to improve. They must be able to ask questions. Report quality problems, and take a firm position on necessary improvements without fear of reprisal.

9. Break down barriers between departments. One department’s goals can interfere with another’s. Therefore, departments must be able to communicate with each other. Departmentalize must be replaced by an identification with the mission of the entire library.

10. Eliminate slogans, exhortations, and targets for the workplace. Management slogans (such as “if it’s worth doing, it’s worth doing right”) can breed resentment among staff members as these messages imply that improvement will follow increased effort on their part.
11. Eliminate numerical quotas, including management-by-objectives. Work standards place a cap on productivity, since very few numerical quotas do not focus on quality issues. In fact, Deming feels that the emphasis on numbers by American management impedes quality improvement more than any other single factor.

12. Remove barriers that rob people of pride in workmanship. Barriers such as outdated equipment, substandard materials, and authoritarian managers stand in the way of quality improvement. Annual ratings and merit pay heighten conflict and competition. The humanity of the workforce must be fostered through true delegation and autonomy - not through pseudo-participation.

13. Institute a vigorous program of education and self-improvement for everyone. Management, professionals, and nonprofessional staff members should be continually educated. People are important assets, and they must acquire new knowledge and skills to keep up with changing technology and advances in the field of librarianship.

14. Create a structure that puts everybody in the organization to work accomplishing the transformation. Administrators must communicate a new vision for the library. They should be accessible to organization members and provide a structure in which people can contribute to the quality mission.

3.6.2 Joseph M. Juran

A second quality guru, Joseph M. Juran, was born in 1900 in Eastern Europe, graduating from the University of Minnesota in 1924, Juran accepted a job at the Western Electric's Hawthorne Plant in Chicago and continued to work for the Bell
Telephone System until World War II. In 1954, Juran went to Japan, having developed a more coherent, integrated, and structured approach to quality management than that of Deming. Juran suggests that quality improvement be an integral part of an organization's strategic plan. He rejects the notion of postproduction inspections by quality control departments, insisting instead that quality issues be the domains of top management.

Juran advocates a "quality trilogy" approach, which includes quality planning, quality control and quality improvement. "Quality planning" includes four steps: identifying customers, determining their needs, designing services that meet those needs, and delivering the desired services. "Quality control" involves evaluating actual services, comparing actual services with planned services, and taking corrective action if there are discrepancies. Finally, quality improvement compels the organization to deliver increasingly higher levels of quality service. Juran encourages the concept of benchmarking—another important quality management activity—. Benchmarking is the continual process of identifying monitoring, and evaluating innovative service delivery techniques and adopting superior techniques so that they may delivery techniques and adopting superior techniques so that they may be implemented in a particular environment—in this case, the library. One important consideration is the selection of processes and outcomes to be benchmarked. In the library, there are several areas, which should be tracked. For example, data can be collected for benchmark comparisons on turnaround time, usability of forms, overall organizational performance, utilization statistics, and patron satisfaction.
Three types of benchmarking have been identified. The first type and probably the easiest to institute in large library organizations is internal benchmarking. Internal operations are examined, and superior techniques duplicated in departments that use less effective procedures. Competitive benchmarking against other library providers is often complicated by a lack of access to data. Competitive benchmarking does, however, force managers to look externally for superior industry practices. A third type of benchmarking, functional, involves examining organizational leaders in other industries. For example, a bookstore might be used as a benchmark to improve access to collections.

3.6.3 Philip B. Crosby

Philip B. Crosby, author of best sellers such as ‘Quality without Tears: The art of Hassle-Free Management' and 'The Eternally Successful Organizations: The Art of Corporate Wellness', is recognized as a third leader in the American quality movement. In the 1960s, Crosby became the director of quality at the Martin Company, which assembled Perishing missiles for the U.S. Army. In building the missiles, the Martin Company understandably strive for zero defects – a concept that Crosby took with him to ITT, where he became corporate vice-president for worldwide quality. In 1979, he retired from ITT and established a quality consultation firm, Philip Crosby Associates.

There are four major principles associated with Crosby’s philosophy:

(1) The only acceptable standard is zero defects;

(2) Quality is defined as conformance to service requirements;
(3) Prevention—or "does it right the first time" (DIRT-FooT) is the true avenue to quality; and

(4) Poor quality costs organizations money. Crosby believes management must be responsible for "injecting" their organizations with a "vaccination serum" that contains five ingredients. These includes: policies that clearly outline quality standards and expectations; positive reinforcement from management to encourage and recognize employees; adequate training and proper tools for staff members to meet the established standard; a systems approach to the organization-wide prevention of defects, and integrity in providing promised services to the customer.

3.6.4 Comparison of American Quality Gurus

<table>
<thead>
<tr>
<th>Descriptions</th>
<th>Deming</th>
<th>Juran</th>
<th>Crosby</th>
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<tbody>
<tr>
<td>Definition of Quality</td>
<td>A predictable degree of uniformity</td>
<td>Fitness for use</td>
<td>Conformance to requirements</td>
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<td></td>
<td>and dependability at low cost</td>
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<td>and suited to the marked</td>
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<tr>
<td>Degree of Senior Management</td>
<td>Responsible for 94% of quality</td>
<td>Less than 20% of quality problems</td>
<td>Responsible for quality</td>
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<td>responsibility</td>
<td>problems</td>
<td>due to workers</td>
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<td>Performance standards</td>
<td>Quality has many scales use statistics to measure performance.</td>
<td>Avoid campaigns to do perfect work.</td>
<td>Zero defects</td>
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<td>Critical of zero defects</td>
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<td>General Approach</td>
<td>Reduce variability by continuous</td>
<td>General Management approach to</td>
<td>Prevention not inspection</td>
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<td>improvements. Cease mass inspection</td>
<td>quality-specially human elements</td>
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<tr>
<td>Structure</td>
<td>Fourteen points for quality</td>
<td>Ten steps for quality improvement</td>
<td>Fourteen steps for quality</td>
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<td>Statistical process Control</td>
<td>Statistical methods of quality</td>
<td>Recommends SPC but warns that it can lead to total driven approach</td>
<td>Rejects statistically acceptable levels of quality</td>
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<td>control must be used</td>
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<td>Improvement Basis</td>
<td>Continues to reduce variations</td>
<td>Project-by-project team approach</td>
<td>A process not a programme. Improvement goals</td>
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<td></td>
<td>eliminate goals without methods</td>
<td>set goals</td>
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<tr>
<td>Team Work</td>
<td>Employee participation in decision-</td>
<td>Team and Quality circle approach</td>
<td>Quality improvements teams. Quality</td>
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<td>making.</td>
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<td>Councils</td>
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### 3.7 Tools for Quality Management

The powerful tools used in quality management to make the quality improvement process itself a powerful tool for improvement. These tools are commonly used in problems solving and continuous quality improvement process. Although these tools do not substitute for judgement and process knowledge but they help to deal with complexity and turn raw data into information that can be used to take necessary management decisions. The tools used in quality management are described below.

(1) Benchmarking (2) Brainstorming (3) PDCA cycle (4) Matrix diagrams (5) Fishbone diagram. (6) Flow charts (7) Histograms (8) Pareto charts (9) Control charts (10) Tree diagram (11) Scattered diagrams

#### 3.7.1 Benchmarking:

The concept of benchmarking can be traced in 1950s when benchmark standards were used to measure the performance of business sectors in terms of cost/sale effectiveness and investment ratios. This helped the business sectors to compare their performance with their competitors to trace their strength and weaknesses and thereby adopt management strategy accordingly. The rapid growth of benchmarking has got impetus...
thereof to many companies in USA to improve the quality output and its performance. Benchmarking became a recognized quality tool in the development and improvement process of Industries.

Cook\textsuperscript{28} says that Benchmarking is the process of identifying, understanding and adopting outstanding practices within the same organizations or from other business to help to improve performance.

Benchmarking is continuous, systematic processes for evaluating the products, services and work processes of organizations that are recognized as representing best practices for the purpose of organizational improvement\textsuperscript{29}.

Benchmarking is a Total Quality Management tool used to measure and compare the work processes in your library with those in another library. The goal of benchmarking is to increase your library's performance by identifying libraries with best practices as partners; measuring and comparing a selected work processes against partner libraries; conducting an interview with best practiced library and adopting or adapting their best practices in your library\textsuperscript{30}.

Therefore, it is an identification of best practice in another organizational unit, followed by its analysis and adoption. Thus, benchmarking process involves a process of comparing practices and procedures with the best organizations to achieve improvements by setting new standards and goals, which in turn helps organizations to satisfy the customer's requirements for quality service.

Benchmarking helps business organizations to focus on the external and internal environment to improve their process efficiency. Further it promotes conducive
climate for change by allowing their employees to acquire, gain and understand their performance.

Benchmarking and Total Quality Management

Total Quality Management is a long-term commitment to satisfy and enhance the customer satisfaction. Benchmarking is a part of Total Quality Management and increasingly this tool has been adopted by many companies/organizations striving for continuous improvement as it offers external perspectives in search of service quality. The maximum customer satisfaction is gained by benchmarking as it helps to adopt a strong vision to prevent complacency through developing the discipline of focusing externally.

Benchmarking: A Systematic approach

Benchmarking requires a systematic approach to undertake total quality initiatives in the organizations. The different approaches have been adopted by different organizations but among them Deming Principle has been quite popular approach, which is often applied to quality initiatives as shown in figure below.

<table>
<thead>
<tr>
<th>Input</th>
<th>Outputs</th>
<th>Result</th>
</tr>
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<tbody>
<tr>
<td>Benchmarking</td>
<td>Improved</td>
<td>Customer satisfaction and Retention Programme Performance</td>
</tr>
</tbody>
</table>

Fig.2 Benchmarking Approaches
However, a comprehensive six-step approach is also adopted which is enunciated below as a measure for quality applications in the organization.

**Identify and understand processes**

This is the first and foremost important step in the systematic approach of quality in organizations. The stage involves acquiring in-depth knowledge of the organization processes in order to understand the operations and key factors, which determine the success of organization.

**Agree what and who to Benchmark**

It is important at this stage to identify the perception of potential benchmarking partners and to understand what and who to benchmark through careful and critical analysis.

**Collection of Data**

Different methods have been employed in collecting the data from benchmarking partners either through direct exchange of information or through desk research. The success of systematic approach depends upon how best the data is collected as far as reliability and consistency is concerned.

**Analysis of data**

After having collated the data both quantitatively and qualitatively, the gaps between the organizations performance and the performance of the benchmarking partners needs to be identified and sorted out by preparing a plan of action for improvement to be undertaken.
**Plan and Action Improvements**

The next important step after having analyzed the data so collected is to generate ideas as a means of action plan on how the improvements can be made and put it for implementation. The project team is responsible for incorporating the action plan to ensure the smooth implementation of the quality programs.

**Review**

A critical review has to be undertaken in each step of systematic approach in the light of the findings of the study. Besides, after the 'Plan and action improvements' stage, progress should be monitored and reviewed.

**3.7.2 Brainstorming**

Brainstorming is a modern quality management tool used to generate a large number of ideas in a short period of time. This tool is feasible to use when a broad range of opinions is derived; when creative, original ideas are desired and when participation of entire group is desired. While using this tool, the entire team involved in Brainstorming should understand the subject of the brainstorm and they should be logical as to why, how or what question. In course of brainstorming large number of innovative ideas are generated.

**3.7.3 PDCA Cycle**

PDCA means Plan Do Check Act cycle is another important quality management tool used for improving the quality. The PDCA cycle consists of four steps to follow for improvement or for making changes and this cycle should be repeated again and again for continuous improvement and has no end.
Plan – Course of actions recognizing an opportunity and plan the change;
Do – Test the change and carryout a small-scale study;
Check – Review the test, analyze the results and identify the learning’s and
Act – Take actions on the basis of plan-do-check process.

3.7.4 Matrix Diagram

The matrix diagram, a quality tool graphically shows the relationship between two, three or four groups of information and also reveals how strong the relationship exists and their roles. Some of the common uses of matrix diagram are:

- Allocating responsibilities among a group of people;
- When relating customer requirements to elements of process;
- When sorting out the problems effecting the products and services; and
- When looking for conflict between two plans that will be executed together.

3.7.5 Fish bone diagram (cause and effect diagram)

The fish bone diagram relates the causes and effects used to structure a brainstorming sessions. This tool is used when broad thinking about possible causes is desired and when the team thinking tends to fall into ruts. This is desirable when a quality management process has to be critically analyzed to identify and understand the causes that have affected the process.

3.7.6 Flowcharts

A flowchart is a flowing picture, which describes the main-steps, branches and eventual outputs of a process. It shows sequence of actions, materials, or services entering or leaving the process and decision that can be made. The process describes
an administrative or service process, a manufacturing process, decision-making
process, and a plan for a quality improvement process.

3.7.7 Histogram

It shows the frequency of occurrences between the high and low range of data. It is a
bar graph that shows the distribution of a set of data: how often-different values occur.
In a histogram individual data value cannot be seen, a variation, the stem and leaf
display preserves the individual value. This quality tool is used to analyze whether a
process can meet the customer's requirements or whether a change is occurred over a
period of time. This is an easy tool to communicate the distribution quickly and easily
to others.

3.7.8 Pareto Analysis

It is a coordinated approach for identifying, ranking and working to permanently
eliminate the defects in the process. It focuses on important error sources, 80/20 rules:
80% of the problems are due to 20% of the causes. Pareto chart is a bar graph
representing the frequency of occurrence and visually shows which situations are more
significant.

3.7.9 Control Charts

Control charts are a time sequence chart showing plotted values of a statistics
including a central line and one or more statistically derived control limits. This chart
is used to analyze the variation from processes. By comparing the current data to
historically determined lines, conclusions can be drawn about whether the process is
stable or is being affected by special causes of variations. This is used to predict the expected range of outcomes from a process.

3.7.10 Tree Diagram
Tree diagram is a very significant tool for quality management in order to identify the action to solve problems or implement solutions to a problem. This diagram moves from broad goals to specific goals thinking logically. These tools can be used in a quality management process when developing logical steps to achieve an objective and developing actions to carry out a solution.

3.7.11 Scattered Diagram
It is also known as correlation chart. It shows the values of one characteristic versus another characteristics. Scattered diagram helps to identify relationship between two variables. This tool is used to identify potential root causes of problems and to determine whether two effects that appear to be related both occur with the same cause.

3.7.12 SERVQUAL
The concept of TQM indicates that, the evaluations of library quality are based on customer perception. An analysis of service quality of customer satisfaction is important, as the expectation of academic library customer's rise, as the number diversity to an independent of the electronic on the environments continues have a profound impact on service delivery and use. Service quality developed over a period of time, related to customer expectations, whereas satisfaction is transaction specific, in a more short time measure focuses on personal and emotional relations and service.
This raises the question as, how to measure the service quality in terms of library performance and evaluation with respect to customer expectations. Number of quality Gurus have identified and defined the key attributes of quality services in an attempt to understand the process of providing products and services, which not only meet the customer need but also exceed their expectations. Among them, the most important dimensions of quality services elucidated by quality profounder are discussed below.

3.7.12.1 Garvin’s eight dimensions of quality:

Gravin\(^{31}\) (1987) identified eight attributes, which characterize a quality product or service for the customer. These are:

- **Performance.** These are the primary operating attributes of the production or service. For a library they would include availability of books from stock, access to databases, access to subject experts, somewhere to sit and work, and so on.

- **Features.** These are the secondary operating attributes, which add to a product or service in the customer’s eyes but are not essential to it. For a library they might range from free use of a stapler through to provision of a lift for the able-bodied as well as the disabled. It is not always easy to distinguish performance characteristics from features, especially as what is essential to one customer may be an optional to another. Nevertheless, there is a valid distinction to be made.

- **Reliability.** Customers place high value on being able to rely on a product or service. For products this usually means that they perform as expected (or better). For libraries, a major issue is usually availability of advertised services. For example, is a working photocopier available or are the ‘Out of order’ notices in use again?
- **Conformance.** This was one of the key contributions of Taguchi. The question is whether the product or service meets the agreed standard. This may be a national or international standard or locally determined service standard. The standards themselves, however they are devised, must of course relate to customer requirements. It is interesting that service standards for libraries are now starting to emerge.

- **Durability.** The normal definition of durability is 'the amount of use the product will provide before it deteriorates to the point where replacement or discard is preferable to repair'. This is applicable to libraries if we bear in mind that the answer may be 'infinity' for those items, which are literally irreparable. For most customers, however, the library issues will centre on the question of the rate of obsolescence of information and hence on how up-to-date the information is provided. It may be appropriate under this heading, to consider the age of the library's book stock or the frequency of update of a CD-ROM database.

- **Serviceability.** When things go wrong, how easy will it be to put them right? How quickly can they be repaired? How much inconvenience will be caused to the customer and how much cost? This last will include not just the cost of the repair itself, but the inconvenience and consequential losses the customer faces. In general, libraries not only have to give a great deal of attention to these issues in the past but they could be of major importance. If, for example, an online information service was being provided on a commercial basis. Which the increase in use of IT-based systems libraries can be vulnerable to catastrophic failures. The 'service ability' issues also occur, for example, in interlibrary loan
services, if the wrong item is supplied, no matter whose ‘fault’ it may be. The heading of ‘serviceability’ also includes such factors as whether the customers are treated with courtesy when things go wrong.

- **Aesthetics.** While this is a highly subjective area, it can be of prime importance to a customer. Is the service area clean and well designed? Is it welcoming? Does it appear user friendly or, as someone put the alternative ‘user lethal’? Everyone has come across libraries, which look old, worn, gloomy and generally uncared for. Equally we all know libraries, which are bright, well designed, welcoming and fresh. There are customers who prefer the former of course and others who would rather have a dog-eared and annotated text than a book fresh from the publisher. Nevertheless, all customers judge a library as much by its aesthetics as by its services.

- **Perceived quality.** This is one of the most interesting of attributes, because it recognizes that, all customers make their judgements on incomplete information. They do not carry out detailed surveys of ‘fill rates’ or examine the library’s performance in answering reference inquiry’s over a six-month period. Most users do not read the library’s mission statement or service standards – or even the ‘welcome’ leaflet. However, they all quickly come to a judgement about the library based on their preconceptions as users and on the reputation of the library among their colleagues and acquaintances.
3.7.12.2 What is Service Quality?

There is no single, unequivocally accepted definition of service quality. The concept has been perceived from several perspectives.

Reeves and Bednary\textsuperscript{32} identified four dimensions of quality:

- \textit{Excellence}. It is the “mark of uncompromising standards and high achievement”, but there may be measurement difficulties, the “attributes of excellence may change”, and a “sufficient number of customers must be willing to pay for excellence”.

- \textit{Value}. Although value “incorporates multiple attributes”, it is difficult to extract “individual components of value judgment”. Besides, value and quality are not synonymous.

- \textit{Conformance to specifications}. Conformation is based on reducing errors, defects, or mistakes to improve quality. It “facilitates precise measurement” and “leads to increased efficiency”. Nonetheless, “consumers do not know or care about internal specifications” and such a perspective is internally focused” and “inappropriate for services”.

- \textit{Meeting and/or exceeding expectations}. This perspective focuses on expectations and evaluates service from the customer’s perspective. Yet, “customers may not know their expectations,” and there may be “confusion between customer service and customer satisfaction”.

Kroon\textsuperscript{33} suggests two other dimensions:

- Market perception, which “is the market evaluation or ranking of how well you are doing compared to your competitors,” and
- Strategic quality, which "is the combination of price and quality the company wants to provide to the market".

Research and practice in library and information science (LIS) reflect an interest in most, if not all, of these quality dimensions. For example, catalogers have long established standards to distinguish quality bibliographic records, for which customers of bibliographic utilities are willing to pay. Nonetheless, the research on service quality reported in the LIS literature tends to concentrate on one dimension i.e. expectations and defines service quality in terms of reducing the gap between the services provided and customer expectations. Implicit in the definition is that, the organization will try to narrow the gap.

For libraries, service quality applies to three general areas, each of which consists of assorted variables viz. Resources: information content; Organization: service environment and resource delivery and Service delivered by staff. These variables encompass the five previously mentioned elements of service quality: reliability, assurance, tangibles, empathy, and responsiveness.

Philip J. Calvert and Peter Hernon³⁴ has provided 12 dimensions of the total range of service quality, including:

- Guidance;
- Waiting times;
- Electronic services;
- Library staff (available, courteous, approachable, and friendly) and materials in their correct place;
• Equipment is kept in good working order;
• Material arriving within a set time;
• The building and the library environment;
• Library furniture and facilities (e.g. Drinking fountains); and
• Material for course needs.

Among the various pioneers of quality evaluation, American Researchers Zeithaml, Parsuraman and Berry were given the most influential analysis of the customer view of the quality of services. They identified ten dimensions of service quality, which appeared to be common across all of the services. These dimensions are -

□ Tangibles;
□ Reliability;
□ Responsiveness;
□ Competence;
□ Courtesy;
□ Credibility;
□ Security;
□ Access;
□ Communication; and
□ Understanding the customer.35

Further they went on to analyze these aforesaid quality dimensions in detail to provide a set of five key items known as RATER i.e., Reliability, Access, Tangible’s, Empathy and Responsiveness. SERVQUAL (Service quality) designed and developed by Berry, Parasuraman and Zeithmal in 1988, as an instrument to measure service quality
on the basis of customer minimum, perceived and desired level of performance.

SERVQUAL has been recognized as a valuable tool and widely used for measuring customer’s expectations and perception and it has enormous scope to apply in the library and information services sector. The key quality dimensions of Berry, Parasuraman and Zeithmal, which acts as a base and fundamental for this research study, to evaluate questions are briefly elaborated.

- **Reliability**
  Reliability involves delivery of the promised library service dependably and accurately. It means that the public services staff member performs the service right the first time. It also means that the library collections contain information appropriate to the need of patrons. Specifically it involves: giving correct answer to reference questions, making relevant information available, keeping records consistent with actual holdings/status, keeping computer databases up-to-date and running and making sure that overdue notice and fine notices are accurate.

- **Responsiveness**
  It concerns the readiness of library staff to provide service. It also involves timeliness of information, making new information available, checking in new journals and newspapers promptly, calling back a patron who has telephoned with a reference question immediately, minimizing computer response time, reshelving books quickly and minimizing turnaround time for interlibrary loans.

- **Assurance**
  Assurance refers to the knowledge and courtesy of the library staff and their ability to convey confidence. It involves politeness, friendliness as well as possession of
the skills to provide information about collections and services. Further it includes valuing all requests for information equally and conveying that sense of the worthiness of the inquiry to the patron, clean and neat appearance of staff, thorough understanding of the collection, familiarity with the working of equipment and technology, learning the patron’s specific requirements, providing individual attention and recognizing the regular patron.

- **Access**

  Access means that, there are sufficient number of staff and equipment as well as hours of operation which includes waiting time in circulation check out lines is minimal, computer terminals, OPAC, etc. are available without waiting, library hours meet expectations and location of library is central and convenient.

- **Communication**

  Keeping the customers informed in language they can understand and listening to them is termed as Communication. It may mean that the library has to adjust its language for different consumers by increasing the level of the sophistication with a well-educated one and speaking simple and plain with a new library patron. It involves avoiding library jargon, discerning what information a patron wants through “question negotiation”, developing precise, clear instructions at the point of use, teaching the patron library skills and assuring the patron that their problem will be handled.
Security

It is the freedom from danger, risk or doubt and involves: physical safety within the library and surrounding area and confidentiality.

Tangibles

Tangibles include the maintenance of the physical facilities and serviceability of the equipment, which encompass various environmental elements surrounding the services and the collections. They are: condition of the building (heat, light, etc.), conditions of equipment such as microfilm readers, copiers, computer used to provide library public services and impact of other patrons in the library.

3.7.12.3 Customer expectations

According to Zeithaml, four elements must be addressed in order to exceed customer expectations. They are:

- Assurance;
- Responsiveness;
- Empathy; and
- Communication.

Real customer satisfaction, therefore, represents the difference between what customers actually expect to get and the actual service performance exceeding such expectations.

Zeithaml et al.\textsuperscript{37} have identified precisely four gaps in this regard.

- Actual customer expectations and management’s perception of customer expectations;
In order to achieve real quality service, these gaps need to be closed by concentrating on the expectations and needs of the customer. By the way organizations such as libraries are there to serve people and not vice versa. In other words, profit is simply the by-product of customer satisfaction through quality. But what is customer satisfaction? How is the customer satisfied? To answer this, the organization must perform market research and since the needs and desires of the customers change over time, market research must be a continued effort. Since the goal is to satisfy the customer, the research methods must be unbiased as far as possible. Once this information is obtained, it must be distributed and applied appropriately for improvements to be made in the library services. Although the goal of TQM is customer satisfaction, this cannot be attained by creating a product and then modifying it to ensure quality and customer satisfaction. TQM must lie in the roots of the organization's culture. The hardest part of the TQM concept is creating and maintaining an organizational culture, which is not only committed to TQM, but also committed to it. Upper management must be willing to empower employees. Employees need to have both the authority and responsibility to take actions, which will improve quality and performance. No one knows the work better than those who are doing it. For empowerment to be effective, employees must also be enabled. Enabling employees involves giving them the knowledge and skill they need through
job and process training. Employees who are empowered and enabled will have the knowledge and opportunity to take corrective actions. Many managers fear they will lose control, and possibly their jobs, if employees are empowered. In most cases, this is because they are unable to perform the new roles as facilitator and coach. It becomes the manager's responsibility to maintain a supportive structure for problem solving.

Empowerment alone is not enough; it must be a team effort on the part of management and the employees to ensure success. Cooperation throughout the organization is a must. Small cross-functional groups are an excellent example. Group activities provide a great opportunity for brainstorming and problem solving. Employees will also feel a greater sense of "belonging" when they know their experience and input is valued.

Positive input as individuals and groups will only happen when employees feel secure in their jobs and surroundings. In a time when mass-layoffs are common, it becomes increasingly difficult to deter fear. One-way organizations are counteracting this to offer employee stock options. This way, employees actually have a vested interest in how the organization is doing. Many others have adopted profit sharing plans, in which employees receive a percentage of the company profits, thereby motivating them and creating a sense of security. Job related training also provides employees with the knowledge and self-confidence required in today's dynamic work environment.
A successful TQM program relies on product and process improvement through everyone in the organization. Total Quality Management must encompass all aspects of an organization, if it is to be successful. These are not meant to be separate entities, from which to pick and choose, but as “sub-processes” which constitute the whole. Total quality management is not a magic set of steps for an organization to perform rather; it is a philosophy of continuous self-improvement. Many different tools and techniques are used for process analysis, but the real heart of TQM lies in the organizational culture. When the organization's total focus revolves around complete customer satisfaction - quality, and profit will follow.

TQM has a customer-first orientation and their satisfaction is seen as the library's highest priority. The library believes it will only be successful, if customers are satisfied. The TQM is sensitive to customer requirements and responds rapidly to them. The concept of requirements is expanded to take in not only product and service attributes that meet basic requirements, but also those that enhance and differentiate them for competitive advantage.

To achieve customer satisfaction, the library has to respond rapidly to customer needs. This implies short product and service introduction cycles. These can be achieved with customer-driven and process-oriented product development because the resulting simplicity and efficiency greatly reduce the time involved. Simplicity is gained through concurrent product and process development. The result is a dramatic improvement in the elapsed time from product concept to first shipment.
3.8 Implementation of Total Quality Management in Library

There are five major steps, that TQM is typically implemented. TQM is a process that never ends and establishing organization wide TQM generally takes three or more years. First step is to gain long-term senior management commitment. This stage helps senior executives to understand the importance of long-term commitment to TQM. Senior managers' role in TQM implementation is to give directions and support throughout the change process. The changes are involved in the organization's support systems. Top executives must be able to allocate significant resources to TQM implementation, particularly in training. Senior managers also have to inform the organization a totally new orientation in producing and delivering products and services.

Second, members have to be trained in quality methods. Depending on the organization's size and complexity, it varies from couple of weeks to two or more years to conduct it. TQM implementation requires extensive training in the principles and tools of quality improvement. Members usually learn problem-solving skills and simple statistical process control techniques.

Third step is starting quality improvement projects. In this stage, individuals and work groups apply the quality methods to identify the few projects that hold promise for the largest improvements in organizational processes. Identifying output variations, such as to minimize deviations from quality standards is a key aspect of TQM.

Fourth, the whole progress has to be measured. Organizational processes are measured against quality standards. Competition's performance are known and analyzed and that
is essential for any TQM effort. It sets minimum standards of cost, quality and service and ensures the organization's position in industry over the short run. For longer term, benchmarks are concentrated on identifying world-class performance. The implied goal in most TQM efforts is to meet a competitor's benchmark.

Fifth and the final step are rewarding accomplishment. The organization links rewards to improvements in quality. TQM rewards members for process-orientated improvements, such as on-time delivery and gains in customers' perceived satisfaction with product performance. Rewards usually are designed to promote finding solutions to the organization's key problems. Organizational structure and information flow in TQM is horizontal approach. It provides real time information and it's flexible when decision-making team approach is used with team of employees.

3.9 Key Factors for TQM Success

The eight key factors for research and training program in academic and university library systems are summarized below.

☐ It is vital to gain visible commitment to the scheme from senior and middle management. A member of the senior library team should be clearly identified to ensure the quality-based service to the patrons. In itself, this may be difficult to achieve, requiring as it may do a radical realignment of the management culture of the organization.

☐ Every member of library staff should be encouraged to participate in the scheme. All employees will be eligible and this should be made clear in recruitment materials, job descriptions and in publicity material for the scheme.
Careful consideration should be given to the evaluation strategy. Those who are given responsibility for evaluating suggestions must be fully committed to the success of the scheme.

The suggestion scheme must be supported by effective administrative backup with sound procedural systems to ensure that suggestions are processed within published time scales.

An adequate budget must be provided to fund awards, other forms of recognition, the purchase of equipment and promotion and publicity of the scheme.

Every opportunity must be taken to promote the scheme throughout the organization. There is little point in launching a scheme, if nobody knows that it exists. It must be publicized at launch and at regular intervals throughout the year, in order to ensure that everyone is aware of its existence.

The number of suggestions that are actually implemented can measure the success of a suggestion scheme. Implementation is vital because implemented ideas demonstrate the continuing success of the scheme and implemented ideas provide the suggestion(s) with personal satisfaction at seeing their idea in operation – having the knowledge that they have made a difference.

It is important that everyone in the organization is aware of the benefits gained from implemented suggestions, so that they too may be encouraged to think about the ways in which they can contribute.

Continuous improvement of all operations and activities is the main thing of TQM. Once it is recognized that customer satisfaction can only be obtained by providing
a high-quality product, continuous improvement of the quality of the product is seen as the only way to maintain a high level of customer satisfaction.

The various steps involved in attaining Total Quality Management in Libraries are depicted in the following figure.

**Fig. 3 Steps to TQM**

- IMPLEMENTATION OF TQM
- TRAINING FOR QUALITY
- TEAM WORK FOR QUALITY
- CONTROL OF QUALITY
- CAPABILITY FOR QUALITY
- SYSTEM FOR QUALITY
- DESIGN FOR QUALITY
- PLANNING FOR QUALITY
- MEASUREMENT COSTS OF QUALITY
- ORGANIZATION FOR QUALITY
- POLICY ON QUALITY
- COMMITMENT TO QUALITY
- UNDERSTANDING QUALITY

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3.10 Barriers to Implementation of Total Quality Management

The major impediments come in the way towards TQM are:

1. Improper Data analysis of quality environment: A quality planning has to be designed perfectly based on the current status of the organization in achieving the objectives of the organization. But, due to negligence on the part of top management officials, an improper analysis of current status leads to faulty quality plan design resulting in deviation from the objectives of the organization.

2. The major obstacle for TQM implementation in the library is due to lack of time to devote quality initiatives; poor inter-organizational communication and lack of real employee empowerment in the university library organizational setup.

3. Lack of TQM tools and techniques and training: The employees in the organization receive inadequate TQM tools and superficial training, resulting in higher costs and lesser efficiency. Even the training programmes receive less feedback and superficial act as impediments in implementing TQM processes.

4. Lack of involvement in TQM process by All levels of management: It is observed generally that one of the major reason for failure of TQM in any organizational system is due to the lack of support and involvement of employees irrespective of cadre/levels in the management process. It is therefore the top management has to change their attitude- develop quality consciousness in building confidence amongst the employees or the organization. As such they should be effective participation and involvement at all levels of management in order to carry out the quality work in an organization setup.
Deficiency of Human Resource Development Management (HRD): HRD management is an integral part of TQM processes. The management has to create a culture of trust and enhance the employee's morale and motivation by providing structured training programmes, empowerment of employee's, recognition and rewards and provision for welfare activities, failing which acts as an hurdle in implementing TQM in an organization.

Ineffective management of process quality: The top management group responsible to manage the entire process of quality in an organization should be effective and efficient to attain TQM goals. But many times due to their inefficiency and ineffectiveness TQM cannot be achieved in an organization deviating from the goals and objectives of TQM.

Lack of customer care and satisfaction: The major objective of TQM is to achieve complete customer satisfaction and exceed their expectations. The essence of the library is found at; the nexus of information and use, information provider and information user, and that the successful library is one that manages services to maximize the benefits top stakeholders, of which the end user is the most important and that remains at the core of library services. But however it has been observed that in many organizations adopting TQM does not pay proper attention to the customer needs which is in-fact a basic necessity in achieving the TQM in an organization.

In a nutshell, the major roadblocks in implementing TQM are summarized below:

- Lack of organization quality policy;
- Lack of strong vision by the top management;
Lack of formalized strategic plan for change;
Lack of time to devote to quality initiatives;
Lack of customer focus;
Lack of team spirit and participation at all levels of management;
Ineffective communication;
Narrowly based training and development programmes to the employees;
Lack of leadership ability;
Insufficient TQM tools and techniques;
Lack of strong motivation; and
Non-implementation/delay of quality improvements teams recommendations.

3.11 Conclusion

With the advent of the Internet and numerous other new technologies, there have been tremendous opportunities and choices in life than man has ever had before. The world is a much more complicated place than it was even five years ago. A natural reaction to this new complexity would be a corresponding rise in the number of principles relied upon when performing our jobs. The application of Total Quality Management in the Library and Information Centers has been felt and gradually the libraries are applying the techniques of TQM with a view to enhance the efficiency of information services and build the image of the library for survival by making use of quality management tools and information and communication technologies. It is also evident that research and development activity, which is seeking to understand, how quality management techniques and philosophies can be applied, is on the increase. This is a healthy situation, which augurs well for the future of customer-centered services in the field. 

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REFERENCES


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