

CHAPTER-1

INTRODUCTION

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. The quality of a library is defined and assessed from a perspective of different groups of people. Moreover, the quality of library services decides on the perception of the library within its parent organization (**Gilbert, 1992**).

The practice of Quality Management in Library and Information Science existed since the evolution of the subject itself, but the terminology used for these varies widely. Performance indicators; performance evaluation; evaluation of reference sources using precision and recall ratios; cost benefit and cost effectiveness studies; user surveys electing opinions on library services all these make a part and parcel of quality studies using different mechanisms of assessment and methodologies (**Shewhart, 1986**).

Quality assurance studies were mostly restricted to technical libraries and academic libraries. Although quality assurance studies based on ISO 9001:2000 and

other accreditation schemes were conducted in other countries, such studies are rarely reported in Indian Libraries and Information system.

1.1 Definitions of Total Quality Management

1.1.1 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”.

1.1.2 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. Esthetics
9. Availability reputation
10. Reputation

1.1.3 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

1.1.4 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**).

1.1.5 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**).

1.1.6 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 salability.

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 eliminate 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"

1.2 Total Quality Management

ISO defined TQM as “A management approach of an organization centered 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 centered on the needs of customers" (**Jurow 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**).

1.3 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: centered 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".

1.4 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

1.4.1 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. Since the success of library depends upon the leadership ability of librarian to lead the team and take into confidence and work in team support in achieving customers satisfaction in the light of the objectives of the college. Efforts have been made to identify the leadership quality of the librarian in achieving Total Quality Management in management college libraries. 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**).

1.4.2 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. Libraries and information services are not static entities impervious to outside influences but are dynamic and may be affected by one, or a number of factors. The total commitment to the strategic quality management has to be embedded in the management college libraries vision statement and policy and strategy of the libraries will re-enforce the commitment and clear goals before the library personnel, for which they exist.

The policy and strategy designed by the library should be made aware to the library users about the library objectives and services. The customer services and satisfaction lie at the heart of the service quality and therefore the library managers should focus upon the problem definitions. Policy and strategy of the management college library reflects the libraries vision statement, mission, goals and objectives

and also services. 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).

1.4.3 Training and Development

One of the essential ingredients of quality program is an extensive amount of training to the library staff. By training and development, the full potentials of library personnel can be achieved to improve the efficiency and development of the library. 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).

1.4.4 Staff Management

Deming's model of profound knowledge emphasizes need to understand the human psychology, which is not an easy task. The library staff are the primary resource of the library, whatever the quality of collection, databases, services and building may be, but the effective organization, maintenance, motivation and empowerment of the library staff are the most crucial factors that can make the name of the institution. It is certainly true that, as long as there is an understandable human desire for development exists between the library managers and its staff achieving total quality management in library is not an impediment rather it is a simple 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 in Libraries (Stuart, 2007).

The effective cooperation and co-ordination among library staff and the librarian is a basic necessity for achieving quality goals in the library. 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**).

1.4.5 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. Teams of faculty, librarians, instructional technologists and others have created network-based learning experiences incorporating electronic information resources as an integral aspect of the curriculum. Faculty, student, librarian, and technologist teams have developed publishing projects such as electronic journals, electronic dissertations and databases. Teams of librarians, technologists and assessment experts are working to establish measures of the use and value of technology and electronic information resources on campuses. **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.

1.4.6 Resources

An approach to re-thinking the functions and objectives of the management college library is to start from a zero-base, this approach will identify what the college library aims to do and how to do then calculate, what information resources are needed to serve the institution, objectives effectively. The budget projects the amount of financial support required for personnel, equipment and suppliers needed to carry out the show of the library. The facilities like library books, building, furniture, equipment should be properly maintained in good condition (**Schmiedel, 2007**).

1.4.7 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. As a leader of the library, the library manager must identify the key processes of the

library activities by breaking the processes in small activities. Each key processes of the library are assigned with library staff based upon type of work involved and competencies and skill required for the work. If however, the work process by which service was delivered is examined, there is an opportunity to say confidently that services was delivered is examined, there is an opportunity to say confidently that services were improved. With the emergence of computers and communication technology on one hand and complex needs of user community, there is a need to improve the work processes of the library on the basis of principle that nothing is constant and change for betterment is the ultimate. The library manager should authorize their library staff to identify the key processes of the library and assist for improvement in the execution of the work processes **Cordes (2007)**.

1.5 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

1.5.1 Benefits of TQM in Libraries

If implemented carefully, quality management principles yield positive benefits for libraries such as **(Miller and Stearns, 1994)**:

1. Incremental changes lead to continuous improvement – quick solutions may yield only partial results.
2. Forces library managers to develop leadership skills interested of replaying on power within position to obtain results.
3. Increase staff participation in decision-making, thus increasing the feeling of “ownership of decisions and directions once charted.
4. Improves the level of training given to staff, thus increasing skills.
5. Helps break down barriers between library departments and improves communication within the organization.
6. Provides a method of improving services to users in a period to similar resources.

1.6 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 poka-yoke).
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).

1.7 Total quality management in LIS sector

The growing needs of information make the librarians to think in a logical way so as to satisfy the users at large. Library is the centre of any academic institution. While class room teaching provides for learning, the libraries disseminate a wide range of knowledge required to excellent and intellectual heights. Libraries supplement the instructional work of class rooms and carry forward the ideals of education. Thus, the libraries provide the informal education, guiding the learners to search vast range of material available. The libraries are gradually being recognized for their academic services and they are occupying prominent position in education, throughout the world (**Sivankalai and Yadav, 2012**).

Since, the libraries are information providers, import knowledge by means of meticulous reference, sometimes they are termed as information centers or knowledge centre. Quality based organizations should strive to achieve perfection by continuously improving the business and production process. Of course, perfection is impossible because the race is never over; however, we must continually strive for its attainment. TQM is a method by which management and employees can become involved in the continuous improvement of the production of goods and services.

In early 1980s, good number of studies were made on automated data validation, error rates and patterns, authority control which belongs to quality control in online databases. However, customer and employee satisfaction are seldom in focus.

The quality assurance initiative in LIS has primarily come from the parent organisation to which it provides services. However, in the later years, the quality assurance system has become as an essential feature of LIS management. Quality studies in LIS sector are mostly isolated and are made on different aspects of library management, services, user-studies etc. The evidence produced by the few TQM cases in the LIS sector indicates that TQM is highly relevant management theory for information sector.

Many librarians still hold a rather myopic view that their services and products are so essential that people will use them as they have always done without any additional effort on their part. They erroneously assume that users' needs are also satisfied because they come to use the library. Unfortunately however, although librarians may regard libraries as indispensable, it is by no means certain that those outside the profession share this view. This aversion however seems strange, since marketing like librarianship places the user at the centre of all activities. It is thus very essential that the marketing concept is wholly and quickly adopted if libraries are to continue to exist as information providers in the future (**Weingard, 1995**).

A controversy over the expansion of TQM into service-oriented organizations (such as libraries) has to do with the question of profit making. Business as we all know, are designed to make profit. Libraries, unfortunately, are not profit making ventures and are considered to offer "free" service. It should be noted, however, that libraries, be they public, academic or research are not 'free'. Customers may not be paying directly for the use of the library but are entitled to the service because their taxes, school fees, the contributions and membership subscriptions of the organizations they serve, coupled with grants of various types donated to the libraries, are good enough reasons for them to be managed efficiently. Accountability is crucial both in the business sector in general and in the library in particular. This is yet another justification for the applicability of TQM to businesses and libraries. Another reason why libraries should adopt TQM is that it (TQM) embodies certain values and approaches, which are common and already established concepts in libraries. These include the elements of participative management, staff training and development and responsive service to customers (**Clinton, 1994**).

1.8 ISO is a management system standard

International Organization for Standardization is headquartered in Geneva. It is a worldwide federation of national standard bodies, which are responsible for creating standard for each member country. The creation of ISO 9000 standard is to assure that the products and services offered by the member countries are globally recognized and accepted. It is one of the most widely recognized quality management tools for effective quality management and for achieving greater customer satisfaction. ISO 9001:2000 improve the operation efficiency of the libraries enabling to provide best quality of services at lower cost to meet the challenge of increasing competition in global market (**Balague, 2007**).

ISO standards provide clear guidelines for the top management of an institution or university to improve the effectiveness of their education system.

ISO develops International Standards, including management system standards such as ISO 9001, ISO 14001 and ISO 31000. However, it is not involved in the certification to any of the standards it develops. Certification is performed by external certification bodies, which are largely private. When an Education organization is certified to an ISO standard they will receive a certificate from the certification body (**Johannsen, 1996**).

1.9 Need for the study

Management education is essential to improve the technical manpower of our country. In Karnataka many Management and Technical institutions have ISO/NAAC/ NBA certificates but, it seems the quality of education in those institutions is not satisfactory. Some of the problem like lack of infrastructure; shortage of qualified faculty, student's attitude towards learning, poor student results and placement in adequacy in the management organization. So this is the right time to give more importance to quality education. The implementation of Total Quality Management practices in management institutions will certainly help the students to get the quality education.

Change in economics and availability of modern management techniques and emphasis on information technology has made drastic changes in the whole situation under which today's management libraries are need to operate. The fusions of

information technology and quality management have dramatically bearing on the functioning of the today's management libraries in fulfilling the expectations of the library users. "Implementation of Total Quality Management in the library and information service environment poses interesting challenges on the road to potentially significant benefits" (Shafi, 2001).

A preliminary step in TQM implementation is always needed to assess the organization's current reality. Relevant preconditions to deal with the present TQM needs, which are to do with the organization's history and its elative participation for betterment, precipitating events leading to TQM, and the existing employee quality of working life are all to be considered with due consideration to the present applications and requirements. If the current reality does not include important preconditions, TQM implementation should be delayed until the organization is in a state in which TQM is likely to succeed.

While TQM is not normally thought of in terms of the library, it certainly can be used to increase the patron and employees satisfaction. As noted above, TQM can be used in any area in which an organization wants to improve. The scope of this study would be the use of TQM techniques in the management libraries in attempts to improve service to its patrons (customers) through the solicitation of user opinions and staff concerns.

Over the years, management libraries in Bangalore and elsewhere have been performing the traditional role of identifying, accessing, storing and disseminating information to a relatively small number of users. In recent years, things are gradually changing. In all types of libraries, the number of users is increasing. Students are now demanding quality service for their financial investment too. There is a need for the library managers to re-examine their traditional role and adopt an entirely new culture, which would satisfy the ever-increasing demand for improved and quality service to the clientele.

The objectives of this study are to identify the items in the operating systems and critical factors of integrated TQM in institutions and to develop the questionnaire for librarians of TQM implementation. Librarians are considered to be most important in management education.

In India, hardly few studies were conducted on Total Quality Management (TQM) in the management library system. As studies are scanty, little evidence is available on management library TQM functions. Hence, there is a need to study application of TQM in management college libraries for effective functioning.

Therefore, this study is an attempt in this direction into the realm of Total Quality Management applications in the management college libraries in Bangalore. This study is undertaken with a hope that TQM is a way of management helps to improve the effectiveness, efficiency, flexibility and competitiveness among the management colleges libraries.

1.10 Statement of the problem

This research topic is envisaged under the title, “**Application of Total Quality Management in Management College Libraries in Bangalore: A Study**”.

1.11 Definition of concepts

The key terms of the study are defined as follows:

- **Application**

The meaning of application is action of putting something into operation.

- **Total Quality Management**

St. Clair (1997) gave a very useful definition of Total Quality Management “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”.

- **Management College Libraries**

Management College Libraries stands for libraries having their colleges management courses primarily and have been accredited or even non-accredited by one or more certifying institutions.

- **Study**

According to Collins English Dictionary Study means “to investigate or examine by observation and research”.

1.12 Objectives of the study

The specific objectives of the study are:

1. To examine the opinion on the application of Total Quality Management components, viz., Leadership, Policy and strategy, Staff management, Team work, Training and development strategy, Resources and Processes to Library and Information Science Sector (LIS), with reference to management college libraries.
2. To compare opinion on the extent of application of TQM components among NAAC, NBA and EQUIS accredited management college libraries.
3. To analyse opinion on the extent of applications of TQM components among Govt., Private, UCC, Deemed University and Minority Institute of Management College Libraries
4. To examine the extent of facilities available at Management College Libraries for implementation of TQM components.
5. To examine the extent of services available at Management College Libraries for implementation of TQM components.
6. To compare opinion on the extent of TQM components applications in libraries with and without ISO 9001:2000 certification.
7. To examine the influence of various demographic factors on the opinion on TQM components applications in Management College Libraries.
8. To examine the influence of extent of facilities and services on adoption of TQM components among Management College Libraries.

1.13 Hypotheses

Following hypotheses were formulated for the study;

- H1:** TQM applications in management colleges are up to the mark.
- H2:** Management colleges accredited by different agencies differ significantly in their TQM Scores.
- H3:** Management college libraries selected for the study have adequate facilities.
- H4:** Management college libraries selected for the study have adequate services.

H5: Different types of management college libraries differ significantly in their opinion on TQM scores.

H6: Management colleges with and without ISO certifications differ significantly in their opinion on TQM.

H7: Secondary variables such as establishment year, qualification, experience, gender and age significantly influence the perception on TQM.

H8: Management college libraries with inadequate, adequate and excellent infrastructural facilities differ significantly in their TQM adoption.

H9: Management college libraries with inadequate, adequate and excellent library services differ significantly in their TQM adoption.

1.14 Scope and Limitations

Fifty three Management college libraries located in Bangalore city were included in the present study. The colleges who have got ISO /NBA/NAAC were approached. The names of the management colleges are obtained from the website and in the University Handbook.

List of management college libraries in Bangalore along with their accreditation are given in appendix-I. The researcher approached these college libraries with a structured questionnaire. The data collection had to be restricted to one geographical area in Karnataka state i.e. Bangalore in view of operational constraints. This study is confined to the Libraries of self-financing Aided and Unaided institutions. The study further extended to Govt. Aided institutions throughout Karnataka State. The study extended by making cross comparisons between various states in India and other countries.

1.15 Methodology

1.15.1 Development of the questionnaire

The investigator carried out the literature search primarily using LISA, LISTA and Emerald databases. Further, the researcher consulted both printed and electronic journals, reports and conference proceedings, etc. related to the research topic.

The structured questionnaire for the present study was developed by the researcher in consultation with the research guide and other experts in the field, including management experts, since the topic was related to TQM.

1.15.2 Details of the questionnaire

Part-I dealt with general information, library staff strength, total collections, yearly addition of books and e-books, library budget, library facilities, library services, library networking, user statistics and training programmes attended.

Part-II dealt with application of TQM in management libraries and was measured under following headings.

Components of TQM	No. of Questions
Leadership	12
Policy and strategy	14
Staff management	14
Team work	6
Training and development strategy	6
Resources	5
Processes	4
Total	61

The respondents asked to rank the factors on a five point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neither Agree nor Disagree, 4=Agree, 5=Strongly Agree).

The researcher adopted a survey method in the present study. The questionnaires were designed after pilot study and the same were administered to the librarians, based on selected academic and special management libraries which have got ISO certification as well as without ISO certification and approved by the National Board of Accreditation(NBA) of AICTE and National Assessment and Accreditation Council (NAAC) of UGC.

Structured questionnaires were distributed to 60 Management college Librarians out of which 53 (88.33%) librarians responded. The respondents were asked to disclose whether they have installed various processes in their libraries e.g. service level agreements, customer charts, performance measures, customer feedback mechanisms and service audits. A subsequent paper, which was produced in due course, attempted to analyze quality management with regard to the particular processes in LIS. The responses received were analyzed in the light of the objectives stated. Necessary statistical techniques and methods-both descriptive and inferential statistics were adopted using S.P.S.S. package in analyzing the research data.

1.15.3 Sample and sampling

Within Bangalore city limits, there are 60 management colleges fulfilled inclusion and exclusion criteria fixed by the researcher, which truly represented population for the study. Using online samples size calculator (www.surveysystem.com), the sample size was calculated. For a population of 60, with 95% confidence level and 5% level confidence interval, the required samples size was found to be 52.

However, researcher wanted to collect data from all the 60 management colleges, but only 53 colleges responded positively which amounted to 88.33% of the total population.

1.15.4 Pilot-Study

A Pilot Study is conducted on 15 management college libraries for the suitability of the tools employed for the study. 15 management colleges were selected randomly for this study. The purpose of the pilot-study was;

- a. To check the clarity of the items enlisted in the selected questionnaires.
- b. To get an approximation of time required to complete the questionnaire.
- c. To ensure the feasibility of the tools selected for the study.
- d. To obtain an fair idea of the respondents reaction, towards research study and questionnaires

The researcher adopted a survey method in the present study. The questionnaires were designed after pilot study and the same were administered to the librarians, based on selected academic and special management libraries which have got ISO certification as well as without ISO certification and approved by the National Board of Accreditation(NBA) of AICTE, National Assessment and Accreditation Council (NAAC) of UGC and (EQUIS) of European Quality Improvement Systems. Questionnaire was distributed to selected management college libraries.

The questionnaire for librarians to analyze the data and elucidate the data on which systems has been installed, e.g. TQM/ISO/NBA/NAAC/EQUIS. Further, the information was gathered on when the systems had been introduced; to indicate whether they were initiated within the library only or were part of the institution wide initiative; and whether the library likely to adopt a TQM in the future and if so which one.

1.15.5 Establishing psychometric properties

The term content validity refers to how well the content of a test measures the entire domain and is related to characteristic being measured. It describes the extent to which the sample of items or situations is a reflection of the dimensions, domain or characteristic to which a researcher wishes to generalize. To establish its content validity, the researcher sent the questionnaire to 4 experts along with a page-long description of the purpose and nature of the study. They were asked to comment on the quality of the questionnaire in light of the nature of the study explained to them and suggest whatever modifications they considered necessary to enhance its quality. The experts suggested partial modifications in the wordings of some items which they described either as irrelevant to the purpose of the study or redundant. In compliance with their suggestions, finally the suggested items were retained. Next, the researcher sent the revised questionnaire to the same experts for their opinion about its suitability. They unanimously approved its appropriateness for the intended purpose. After validating the questionnaire it was administered for the main data collection. The responses corrected and coded and fed to the computer through SPSS for reliability analysis. The reliability coefficient obtained through “Cronbach-alpha” was found to be 0.931, which was significant and

found to be a reliable tool to measure TQM in selected management libraries of Bangalore.

1.16 Statistical methods employed

The researcher both descriptive and inferential statistics were employed in the present study to find out the objectives and verify the hypotheses formulated.

Descriptive statistics like mean, Standard Deviation frequencies and percentages were employed wherever required.

Following inferential statistics were applied in the present study;

- a. Independent samples 't' test
- b. ANOVA-one way Analysis of variables
- c. Contingency coefficient analysis (Cross tabs procedure)

A brief description of each of the above statistical methods is given below:

1.16.1 Independent sample 't' test:

The Independent-Samples 't' test procedure compares means for two groups of cases. Ideally, for this test, the subjects should be randomly assigned to two groups, so that any difference in response is due to the treatment (or lack of treatment) and not to other factors. This is not the case if one compares average income for male and female. A person is not randomly assigned to be a male or female. In such situations, one should ensure that the differences in other factors are not masking or enhancing a significant difference in means. Differences in average income may be influenced by factors such as education and not by sex alone.

In the present study Independent-Samples 't' test procedure was applied to see the significant difference between male and female in their TQM scores as well as influence of ISO status on TQM scores of selected management libraries.

1.16.2 One way ANOVA

The One-Way ANOVA procedure produces a one-way analysis of variance for a quantitative dependent variable by a single factor (independent) variable. Analysis of variance is used to test the hypothesis that several means are equal. This technique is an extension of the two-sample 't' test.

In the present study One-way ANOVA was used to find out the significance of difference between different types of management libraries, establishment year, age, experience, etc, on individual components and total TQM scores.

1.16.3 Contingency table analysis (Cross tabs procedure)

The Crosstabs procedure forms two-way and multi-way tables and provides a variety of tests and measures of association for two-way tables. The structure of the table and whether categories are ordered to determine what test or measure to use.

In the present study, contingency coefficient test was used to find out the association between ISO certification status (Yes/No) and responses by respondents on various statements of TQM.

1.17 Ethical issues

1. Written informed consent was obtained from each respondent participating in the study.
2. Confidentiality is being assured and maintained.
3. The subjects were explained about the nature of study and informed that participation in the study is voluntary and they have the right to opt out at any time.

1.18 Chapterisation

This research report consists of five chapters.

Chapter I Introduces the topic of research and explains the need and significance of the research problem in the present context. It further includes the statement of the problem, operational definition of different concepts, objectives and hypotheses of the study, methods adopted and techniques employed for collection and analysis of data. It also spells the scope of the study and determines its limitations. At the end, it gives brief summary of remaining chapters.

Chapter II Presents review of literature. It briefly discusses the studies carried on within India and outside about Total Quality Management of Library services and related areas.

Chapter III Provides over view of management college libraries in Bangalore like various facilities, services and budgetary allocation.

Chapter IV Presents the analysis and interpretation of the data collected from the selected management college librarians with regards to the Total Quality Management of library services.

Chapter V It is a concluding chapter where in the summary of findings of investigation is presented along with verification of hypotheses formulated. Based on the findings, constructive suggestions will be made for improving the quality and use of library services.