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**Awareness and Implementation of Total Quality Management: Medical
Libraries' Perspective**

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Abstract

The study intended to assess the level of awareness and the status of applications of total quality management (TQM) in medical libraries. A survey method was used to collect data from the library professionals serving in the libraries of medical colleges/institutes/universities of the Punjab, Pakistan. The findings revealed that majority of the respondents claimed a good level of awareness and understanding about TQM applications for medical libraries. TQM applications including “committed leadership and management support; continuous improvement; team work; involvement of everyone; and employee empowerment” were practiced in medical libraries to achieve “customer satisfaction”. The medical library professionals (MLPs) considered the indicators of performance measures such as “PMDC registration requirements, staff evaluation criteria, and users’ complaints” as necessary elements. However, the MLPs did not aware of the performance indicator method, benchmark, and ISO 9001 certification application. The study suggested that the leadership and medical library professionals should focus on devising mechanisms

for TQM standards/norms for quality library services and facilities, allocating budget, and providing training opportunities for professional development.

Keywords: Total Quality Management, Medical libraries, TQM Applications, TQM Awareness

Introduction

From the last two decades of 21st century, both public and private organizations have been experienced a rhetoric instilled by Quality Management Systems (QMS) and ISO 9000 for a new order of things. Quality is perceived as ‘closeness to customers’, and in addition to this, quality management has been acknowledged as essential to the success of business enterprises and more competitive and productive by the reduction of waste and delay (Dearlove, 1996; Dobyns & Crawford-Mason, 1991; Younger, 1993). Moreover, Total quality management (TQM) is substantially important vision for the organizational success, cutthroat marker of competition and successful survival of a firm in national and international business markets (Dahlgaard, Kristensen, & Kanji, 1998).

The concept of quality encompassed all the aspects of product or service of an organization rather than mere a single attribute. The quality concept is deliberately described under the umbrella of “TQM” and it has become an essential component of corporate management on a global scale (Alentejo, Lobin, & Baptista, 2017). This management approach was emerged in 1950s and steadily familiarized among the organizations since 1980s. The philosophy of TQM as quality evolved over decades, and had been described as a structured and holistic method to organizational management which sought to enhance the quality of productions through the continuous refinements in reference to perpetual feedback (Westgard, 2016). Whatever, 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 (Hashmi, 2007).

Raja and Mahalakshmi (2016) express that the TQM is an approach of management focusing on quality ensured through the collaborative efforts of all the members of the organization to retain customer satisfaction for long term services and to provide benefits to individuals of the company and the society. Yapa (2012) declared the TQM as the procedure of constant enhancement in quality to meet the

customer satisfaction. ISO (1994) defined TQM as “a management approach of an organization, centered on quality, based on participation of all members and aimed at long-term success through customer satisfaction, and benefits to all members of the organization and the society”.

TQM pursues to integrate the aims of a corporation including product and service design, marketing, manufacturing, finance and customers services along with other functions in order to achieve customer satisfaction through meeting customer needs and the objectives of an organization (Hashmi, 2007; Obeidat, Hashem, Alansari, Tarhini, & Al-Salti, 2016). TQM involves with the process of continuous development within the corporations in order to deliver for meeting customer need and maintaining customers’ value on a larger scale. Corporations perform a chain of processes for meeting the customer needs. These processes include taking feedback, exploring ideas, sharing information and delivering to customers undertaking the concept of marketing (Wang, Chen, & Chen, 2012).

Keeping this phenomenon in view, library is the hub of all academic activities of any institute. Collection in libraries is the part for organizing all such pursuits. Acquisition, organization and dissemination of information and thought content are the main jobs of the libraries. Libraries are the institutes being established on the philosophy of delivering of services and public good. These services-oriented institutes serve as not-for-profit to their community. Every library is established to achieve the main objective of fulfilling the needs of its clientele along with anticipating and meeting their demands as well. Libraries are always expected to serve with quality services through exploiting its available resources.

Negi and Srivastava (2015) reported that in “present world, the popular buzzword is customer is the king or customers are our God”. In the modern philosophy of management, users of library services are declared as customers and entitled to rights of awareness. Every academic library has a key function to provide quality services to its customers. Whereas, quality is a perpetual and never-ending process of continuous improvement in any function of a library especially for service orientation. In this journey of improvement, a library professional can never stay satisfied and say the ultimate destination is achieved. To enhance the quality of library services being provided to its clients an information specialist is required to device new techniques for taking feedback from the library patrons.

Academic libraries make efforts to design new information products and services apropos to their user needs from time to time. However, applying the concept of TQM in designing at the stage of new services is essential in order to prevent the inherent problems which may occurs during the phase of changing or improving the information products and services. To provide efficient and effective information services TQM turns out to be an outstanding instrument for limiting the effect of occurring problems. TQM is a far-reaching framework for the delivery of effective services and related aspects as well. The library professionals working in medical libraries are expected to explore the emerging developments and adopt imaginative and innovative techniques to deliver high quality services among the health and medical users of libraries. For this purpose, the professionals working in academic libraries, especially in medical sector are needed to be equipped with current knowledge and skill through proper training. Consequently, after the acquisition of needed competency, they will be in position to perform such kind of services. As TQM comprises corporation wide endeavors to introduce and create a stable atmosphere for continuous improvement in the capacity of organization for delivering high quality products and services to clients. Customers are now becoming the most important stakeholders and critical partners within service-oriented organizations.

The application of quality management provides comprehensive system in medical libraries to establish quality of products and services, continuous enhancement and customer care in all the aspect of information services. In addition to this, TQM approach is adopted by organizations for creating quality products and services and enhancing its performance on continues bases. It is assumed that medical libraries are applying the modern strategies for library administration at the aims of delivering quality products and services among their customers. Therefore, this study aimed at investigating the applications of TQM in medical libraries of Punjab, Pakistan. The medical institutes which are offering medical education usually defined as medical college. In Pakistan a medical college is required to be affiliated with a university. These medical colleges work independently and established in separate campuses from university. This study may help to clarify the concept of TQM and support to implement it in libraries to achieve more user care. This study may help to improve the library management system in medical libraries. There is no such type of research already carried out to determine the status of TQM applications in medical

libraries. Therefore, it is needed significantly to explore the status of TQM in medical libraries.

Objectives of the Study

The study has achieved the following objectives

1. To understand the concepts of TQM through literature.
2. To identify the level of awareness about TQM among the medical library professionals.
3. To examine the status of applications of TQM in medical libraries of Punjab.
4. To determine the differences based on demographic variables in TQM awareness and application among medical library professionals.

Literature Review

Much has been written on TQM in an attempt to not only define it, but to show how it is being used in industry. As a powerful tool for improving organizational performance, principles and practices of TQM have been adopted and implemented in all type of organizations and have grabbed the attention of many researchers from diverse areas (Talib, Rahman, & Qureshi, 2013).

Concept Development of TQM

Total quality management and libraries do "fit" together. The obstacle, here as in the for-profit sector, is generating enthusiasm among the organization's workers. People are averse to change. Librarians today are surrounded by change. To change management models requires an almost superhuman effort, but the rewards of TQM are worth it. Once a person grasps a full understanding of TQM the concept is much easier to embrace. Total Quality Management can help libraries span the tremendous leap that technology has brought forth. With faith, commitment, and enthusiasm, TQM can provide libraries with clearer vision and a brighter future (Babalhavaeji, Moghaddam, Aqili, & Shakooii, 2017).

Since early 1980s, TQM phrase has been urged in management circles incepted in Japan four decades ago. TQM is set of concepts and tools which brought a paradigm shift in management styles whether to provide another management approach for better management and productivity enhancement. This philosophical management approach was adopted by for-profit companies first for many years but it

grabbed the attention of librarians as well and they started to adapt this management approach in libraries. As the major premise of TQM, customer service and libraries traditionally exist to serve users (customers), therefore, TQM properly adapted to "fit" in libraries(Adjei & Mensah, 2016).

TQM Practices in Library and Information Sector

The sector of library and information has practiced the applications of “quality management” since its inception and existence of the subject itself except the use of terminology as it varied generally. The area of studies including “performance indicators; performance evaluation; evaluation of reference sources using check-list of criteria; Evaluation of information retrieval systems using precision and recall ratios; cost-benefit and cost effectiveness studies; user surveys electing opinions on library services” have been part and parcel of quality management research employing different techniques, methods and mechanisms for evaluation.

Several research studies were carried out on authority control, error rates and patterns, automated data validation which were part of quality control research in electronic databases. However, the major and most important stakeholders including users and staff satisfaction were focused rarely. Furthermore, such type of research i.e., quality assurance, were usually confined to academic and special libraries. These research studies of quality assurance were grounded on ISO 9000 and other recognized frameworks were carried out in the information centers of advanced countries including UK, USA and Canada whereas such type studies have not been carried in Pakistani libraries.

Singh (2013) highlighted that every type of institution or organization is transforming towards “customer-oriented organizations” in order to survive and remain in competition of world. Thus, it has become essential to produce quality products and render effective services to the customers. TQM endorses the tools and techniques with right direction to provide quality products and services and enhance quality. In this connection, libraries have always been dedicated to render services to their patrons with high quality and standard.

Chauhan (2014) describes that library sector is the last to accept and follow the TQM practices among the business-oriented industries including banking institutions, insurance companies’ airlines and healthcare givers. Libraries were serving as knowledge keepers and providing traditional passive services for a long time rather to be dynamic and active agents for transferring information. Whereas, the

libraries are based on the main objective to meet and satisfy needs and demands of their customers but this notion is generally forgot by library professionals. On the other hand, the current libraries are derived to rationalize their survival through rendering quality services to the clientele and to get a position in service-oriented market. Consequently, information centers have to accept and embrace TQM practices and applications in response to other types of service industries. Although the success or failure of system cannot always be estimated with customer satisfaction, it is a key source to identify the loopholes and gaps in system and its services. Furthermore, the feedback from users, learners, staff and faculty is indispensable in order to maintain quality or for consistent improvement in quality of services.

Primarily, the parent organizations cause to bring the quality assurance initiatives in LIS sector in which the libraries are providing services. However, the system of quality assurance has become one of the necessary and important characteristics of LIS management. The typical research studies conducted on various facets of library management, user satisfaction, services, etc. in LIS sector are isolated from TQM. However, a few empirical evidences of LIS studies produced with TQM cases have indicated that TQM is the most relevant management theory for library and information sector.

Kostagiolas and Kitsiou (2008) investigated problems and awareness for quality management systems (ISO 9001) implemented in libraries. The authors carried out semi-structured interviews to collect data for this study from the directors of libraries of Greek institutions. This investigation identified that the respondents finally took advantages through following standards of TQM. Through this activity, responsibilities were properly perceived, instructional methods improved, inadequacies removed, and enhancements initiated. The certified libraries exhibited that taking feedback made it apparent that quality management is necessary for improvement.

SHoghpour and Gholami (2012) reviewed that the most significant and foremost concern of different organizations is to enhance the quality standard of their products and services and to meet the customer needs. Academic libraries are the major stakeholders to promote education and research and these information centers have key role in improving quality standard in various areas of services. Organizations aim to meet the needs and demands of their customers with cost-

effective efforts and desire to provide high-quality services for the total customer satisfaction. TQM endorsed smart and steady approach for satisfying customers' demands and achieving organization's goals. These authors also assessed level of TQM among academic libraries manager through a descriptive study. The findings revealed that all the facets of TQM were found quite desirable and necessary for libraries management effectively and concluded that TQM could achieve the desired goals. Whereas, Opoku (2012) conducted a survey study among postgraduate students focusing on the perceptions and expectations on TQM in academic libraries of Ghana. The study applied survey method to collect data regarding the main features of TQM including "efficiency, effectiveness excellence, and continuous improvement of service". The findings of this study disclosed that libraries were not applying the terms TQM practically as a management technique. Therefore, this study concluded that the students were not addressed according to the philosophy of TQM and did not anticipate growing demands of users in this fast-changing environment of service delivery. The study suggested that academic library should arrange training for staff.

Dadzie (2003) used case study approach to examine the initiatives taken for quality management by top management in Balme Library of Ghana. The study found that library professionals were committed to quality management; however, the issue of financial resources created barrier to execute strategies and policies practically.

Begum and Nissa (2003) conducted a comparative review on customer of library sector and manufacturing sector. The objective of this comparative study was to find difference between academic library where the clients meet "face-to-face" to the producers and service providers and manufacturing industry where the customers remained at "remote".

The authors identified that service organizations compounded with complexity due to playing at multiple dimensions. They also deduced that customer satisfaction required to meeting the demands of clients. The library professionals would have to dedicate their capacities to discover what their users/customers need, and outlining the methods to address those requirements keeping in mind the end goal to give ultimate satisfaction. In addition to this, it is suggested that the management should concentrate on the important TQM factors to customers. As indicated that service delivery is supposed to be imaginary performance and customers should be trained to exploit maximum and to get more benefit. User training and development is a necessary mechanism in academic libraries for users/customer. Through this process,

the support systems could focus on customer's priorities, keep personal touch and deliver high-quality services (Arys, 2000).

Mullin (2001) expressed that library managers required to invest higher premium on developing the manners and behavior of library staff towards customers due to the fact of new challenges to the hegemony of traditional setup of libraries. Traditionally, the librarians enjoyed as guardians of information and literature. The libraries would be more customer-oriented than processed focused and needed create flexible organizational structure by making staff self-directed and adaptable to face the internal and external threats independently. Staff should be developed to establish effective communication system, perform collaboratively, stimulate creativity, face risk and to be more innovative and initiative-oriented.

User education and training is necessary in academic libraries designed with strategic planning. Users as well as library staff should participate in training as it maximizes the benefits from the products and services provided by academic libraries. Quality and the methods to manage it can be administered through education properly and long-term planned of users. User education and training can generate the results which create impact on the successful and effective operations of academic libraries. Furthermore, it can arouse the consciousness towards quality management and develop understanding regarding quality control management. It is also highlighted that well-trained staff could be a “competitive weapon” to pave the path for good quality service in libraries (Begum & Nissa, 2003).

A most recent study carried out by Babalhavaeji et al. (2017) among libraries of Islamic Azad University to assess their performance using gap analysis method. This formulated a questionnaire based on quality standards and quality assessment tools and ISO 11620 standards encompassing five dimensions of service quality. This study revealed a significant difference between expected and perceived quality service regarding five selected dimensions based on users' opinions. It was recognized that five dimensions would be essential for better performance and quality standard according to users' perspective in academic libraries. Similarly, Alentejo et al. (2017) measured the health information quality in health academic libraries in Brazil and Germany through document analysis and survey method among health academic libraries. The study unfolded that quality standards could be possible to be accepted and implemented in any academic health library as quality management model could

offer various information quality perceptions for professionals and library's users to adopt.

Applications of TQM in Libraries

Raja and Mahalakshmi (2016) analyzed and evaluated the variance in practices of TQM applications in management and professional college libraries. This study carried out a survey questionnaire among libraries. Through literature review, the study found a deep impact of TQM on library performance and ISO standardization tools for quality related to the implementation of TQM in libraries. The study found that those management libraries with ISO certification had higher TQM practices as compared to management libraries without ISO certification. The study concluded that TQM applications needed to be improved in management libraries.

Bhatt (2012) has conducted a study to correlate the importance of TQM with library and information sector. The author analyzes that the concept of "customers' satisfaction" has got prime importance in LIS sector as it has become users oriented and consequently TQM is associated to information sector. Furthermore, TQM applications are essential to be adopted by libraries in order to meet customers' needs effectively. This research study further concludes that users expect more from the libraries due to technological proliferation and libraries are required to develop and enhance their products and services with high quality. Similar to industrial sectors, libraries would also integrate quality management techniques into its products and services for improving service quality. All the aspects of library management including administration, building architecture, collection arrangements, services to users and others need proper attention from management for effective and efficient services to library patronage. TQM is the best approach for libraries to select appropriate method according to the need and demands of users, and the implementation of TQM with patience can provide right direction and guarantee of high-quality services. Only the TQM practices can create a conducive and collaborative culture through establishing strong leadership, interactive communication among all units and developing the staff. The current modern period requires to manage libraries with advanced techniques of management. Obviously, TQM is best choice to enhance library processes, embrace new technology, understand library system, developing staff, and promoting users' satisfaction in cost-effective methods.

Moghaddam and Moballeghi (2008) found the roots of TQM in LIS sector. This study reviewed that initially the concept of TQM was applied in manufacturing sector as a management philosophy. The philosophy of TQM was progressively being pragmatic in service-oriented sectors comprising information centers or libraries due to its vast success in all sections of industry. Similarly, Thakkar, Deshmukh, and Shastree (2006) explored that what did the potential of TQM to meet customer the demands and challenges in self-financed technical institutions. This study found technical and students' demands for contemporary academic and educational system. The study highlighted the information regarding educational set-up. It declared that various technical requirements were critically needed for competitive education system. It was recognized that effective use of financial resources could bring constant improvement, cultural change, improve services, and add value to level.

Yapa (2012) investigated the use of TQM practices, techniques, tools and concepts in service organizations of Sri Lanka. The study reported that managers of these service organizations wanted to implement TQM applications with enthusiasm in their organizations and one third of the selected organizations had already adopted and implemented. Nonetheless, lack of comprehensive awareness regarding TQM concept were found identified through a deeper analysis among managers.

Galyani Moghaddam and Moballeghi (2008) presented an overview of application of TQM in LIS sector concentrating on experiences of TQM adoption and implementation in libraries. This study identified the barriers in order to implement TQM in libraries including people's attitudinal resistance for change, budget and time for developing the staff through training in order to sustain present services of library. The also summarized that TQM can transform the culture of an organization with establishing and improving quality infrastructure and removing middle management players. Without restructuring an institution, organizational structure cannot be changed as required by TQM. Therefore, an increased focus to bring organizational change for TQM was need direly. The study highlighted that TQM would demand time and persistence.

For successful and effective performance of an organization, the support and commitment of top management is essential at all levels. Furthermore, collaborative efforts are necessary from all the groups, individuals and staff of an organization in the execution of services. Although the adoption and implementation of TQM applications is a time-consuming process and it requires great tolerance as bringing

organizational change is not easy but it can be guarantee undertaking the right direction of leadership, interactive communication and training of employees. However, TQM can be profitable when it is implemented with thorough understanding, considering all the critical success factors, removing obstacles, and applying managerial tools and methods to overcome such hurdles in the success. The research carried in advanced countries reported key determinants of successful TQM implementation in organizations including a commitment of top management for TQM applications, staff development for TQM acceptance in the organization, continuous improvement, customer-oriented approach, involvement of all employees and empowerment.

Dimensions and Elements of TQM

With advanced technologies and increased level of expectations of users, the responsibility of implementing TQM effectively with its entire dimensions is being shouldered on the service-oriented organizations. The imperative components sensitize the procedure of enhancing and sustaining the service quality provided by the various institutions, corporations or organizations. According to, Besterfield (2003) TQM model consists of six dimensions as illustrated in Figure 1.

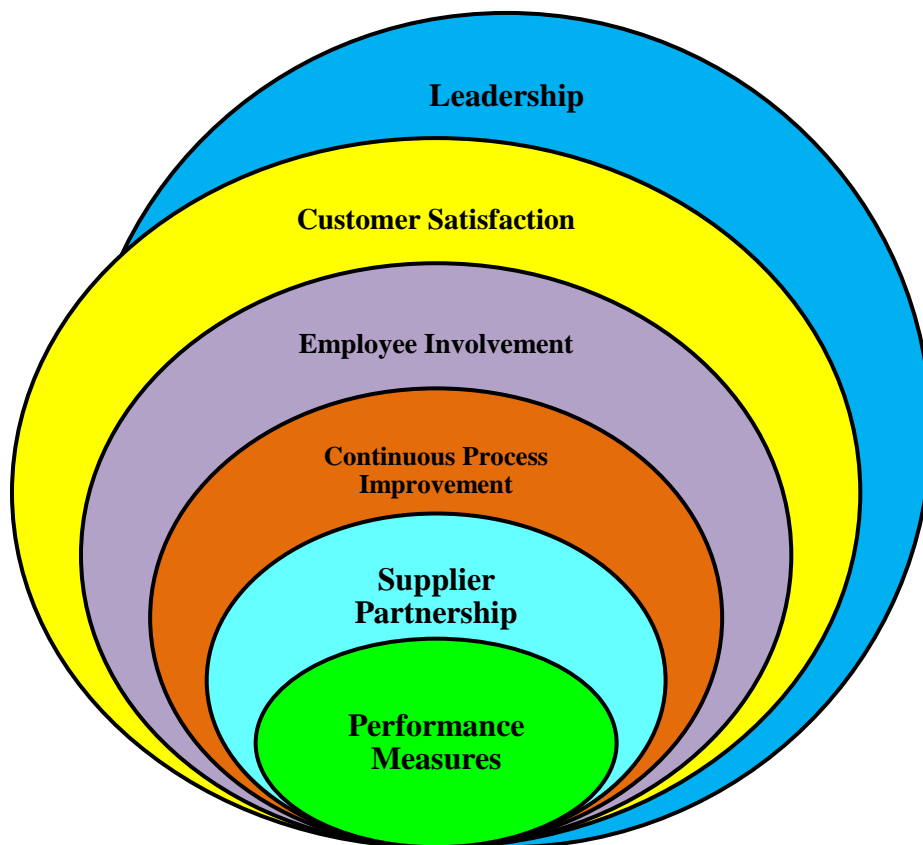


Figure 1. Dimensions of TQM

Leadership

The implementation of TQM applications can be guaranteed of successful life of an organization. TQM is being introduced, implemented and led by top management in organizations with a prime commitment otherwise it failed –“instead it delegates and pays lip service”. In the case of TQM philosophy, top management is required to be more committed and personally involved in developing and employing clear quality values and goals corresponding to the objectives of organization and establishing well-defined systems, approaches and performance indicators to accomplish those goals. These well-established systems can lead to quality activities with appropriate methods and inspire all the employees to participate in every activity of success.

The fulfillment of customer demands and customer satisfaction are directly or indirectly associated with the development and use of performance measures to management and employee remuneration. Effective leadership is the foundation of TQM. Top management should provide the leadership for quality awakening in the organization. They should evolve effective plans and provide leadership in achieving the objectives.

Continuous Process Improvement

American Society for Quality (2017) defined this process as “continuous improvement is an ongoing effort to improve products, services or processes”. The efforts involved in this procedure can seek “incremental enhancement over time or revolutionary improvement all at once”. There is a “four-step quality model: plan, do, check, act (PDCA) cycle” among commonly accepted and employed as a tool for the continuous improvement. This four-step model is also familiar with the name of “Deming Cycle or Shewhart Cycle. This cycle consists of four steps including:

- a) Plan, to identify an opportunity and plan for change, b) Do, to implement the change on a small scale, c) Check, to use data to analyze the results of the change and determine whether it made a difference and d) Act, to implement it on a wider scale and continuously assess your results if the change was successful (p. 85).

Employee Involvement

One of major TQM dimensions is employee involvement. All the members of staff require participating in the execution of successful process of working to achieve predetermined common goals. The sense of empowerment and provision of

comfortable environment can ensure the “total employee commitment” and consequently it can be obtained through driving the fear from the workplace. Performing business operations in normal environment incorporates efforts for continuous improvement and integrates high quality performance.

Customer Satisfaction

Formally, this term is related to marketing process. Customer satisfaction measures how products or services offered by an organization fulfill or exceed a customer’s expectation. Customer satisfaction is the constituent part of marketing mechanism as it delivers market stakeholders and business holders with a metric which helps to improve their products and services.

Customer satisfaction is acknowledged highly important in TQM deployed organizations and focused more on customer-oriented approach. Additionally, “TQM stresses a customer focus and continuous improvement as core values (Chen, Hsu, & Wu, 2017).

Supplier/Partnership Management

Supplier/Partnership relationship management (SRM) is the discipline of strategically planning for, and managing, all interactions with third party organizations that supply goods and/or services to an organization in order to maximize the value of those exchanges. The SRM involves with established closer, cooperative and collaborative interactions with major providers for unfolding and recognizing new values and decrease threat of failure.

The supplier partnership is also a major component of the core philosophy of TQM and in each step of production process. Supplier creates relationship between a customer and a liaison entity; it may be internal or external to the organization. The suppliers will have to meet the customer’s requirements, both stated and implied, at the lowest cost. Waste elimination and continuous improvement are ongoing activities. It is also considered a powerful tool for creating a quality culture since it focuses on leadership, communications, training and continuous improvements (Abdallah, 2014). Suppliers can contribute to maintain substantial quality through supplying high-quality and defect-free materials (Kaynak, 2003). Suppliers have to be involved in product development, and process improvement; therefore, collaboration with suppliers is a key TQM practice (Salaheldin & Mukhalalati, 2009).

Performance Measures

Besterfield (2003) describes the “performance measurement is generally defined as regular measurement of outcomes and results which generate reliable data on the effectiveness and efficiency of programs, input, resources (human resources, employee time, funding) used to conduct activities and provide services”.

It is widely accepted that overall customer satisfaction can be measured through total employee involvement in the delivery services of any organization. The organizations cannot implement TQM applications without the increased employee interaction with customer and suppliers. Furthermore, employee training is essential factor for improving quality performance.

The review of literature confirms that TQM is an imperative approach for effective library management. Many studies mentioned that libraries are practicing quality in the form of quality assurance, continuous quality improvement, user satisfaction, etc. using the dimensions of TQM in different methods and ways. The success of TQM applications and awareness about TQM vary from library to library. A number of research studies have been conducted in advanced country to measure TQM practices. Whereas, there is a single study found to be carried out in local scenario to explore the two applications of TQM (user satisfaction, continuous improvement) in universities libraries. A gap exists which need to be bridged up in the literature. Therefore, this study aimed at investigating the six applications of TQM (Leadership, Continuous improvement, employee involvement, customer satisfaction, supplier partnership, performance measures) in medical libraries. The present research study made efforts to address all of these major TQM dimensions/elements in order to evaluate TQM applications and practices in medical libraries of Punjab, Pakistan.

Research Methodology

The present study used quantitative research design to investigate the applications of TQM in academic libraries. For data collection, the survey approach was employed to explore TQM’s awareness and applications among library professionals of public and private medical colleges, institutes and universities existed in Punjab province of Pakistan.

All registered medical colleges have independent and functional medical library to serve their students and faculty. A medical institute is more often referred to as a medical college, required to be affiliated with a university as a department or as separate campus. All these medical institutes are regulated by the central regulatory

authority called Pakistan Medical and Dental Council (PMDC) after meeting set criteria. According to PMDC and Higher Education Commission (HEC) criteria, every medical institute should have state of the art library in the premises. A list of 55 registered (private and public) medical colleges and institutes of Punjab was identified from PMDC website. All the medical library professionals or non-professionals possessing the status or designation of Incharge/Head of medical library were approached using census sampling method for data collection. Census approach observes everyone or every unit in a population, known as “complete enumeration survey method”. The reason to use census sampling method was that it could provide insightful and accurate data alongside multiple characteristics of a small and limited demographic group (Baffour, King, & Valente, 2013). Therefore, the researcher collected data from all the medical libraries of selected medical colleges.

Table 1. *Breakup of Survey Tool*

SN	Domains	No. of items	Scale used	α^1	α^2
1	Personal Profile	3	Qualitative	-	
2	Awareness of TQM	8	5-Pointes Likert type	0.52	
3	Applications of TQM	6 Sub-domains			
3.1	Leadership	10	5-Pointes Likert type	0.55	
3.2	Continuous-Process Improvement	9	5-Pointes Likert type	0.56	
3.3	Customer Satisfaction	12	5-Pointes Likert type	0.65	0.68
3.4	Employee Involvement	5	5-Pointes Likert type	0.58	
3.5	Supplier Partnership	9	5-Pointes Likert type	0.57	
3.6	Performance Measures	5	5-Pointes Likert type	0.54	
Total		61			

α^1 . Segment-wise Cronbach's alpha (CA)

α^2 . Overall Cronbach's alpha (CA)

A survey tool was formulated through the help of literature review, experts of the field and working librarians. A recent study on TQM (Akhtar & Sanghera, 2014) also collected the data from its sample using survey questionnaire for the investigation of TQM applications in academic libraries. After incorporation of pre-testing feedback and recommendations, the final instrument consisted of 61 items was framed. The final questionnaire was segmented into following three domains and third

domains was disintegrated into six sub-domains as presented in Table 1 alongside the scale used.

Content, face and construct validity of the survey instrument were ensured with the help of professionals and experts of the field. Furthermore, Cronbach's alpha (CA) reliability test was applied to observe internal consistency and reliability of 58 scaled items of the questionnaire that was determined 0.68; which is reasonable rate (George & Mallery, 2014) for internal consistency and reliability.

The questionnaire was administered personally with required ethics of research. The questionnaire along with a cover letter was presented to all the members of the population. After preliminary screening of the completed responses, the usable responses were entered into SPSS 22.0 for descriptive and inferential analysis.

Results and Discussion

The data analysis and interpretation based on 55 returned questionnaires from the librarians, in-charges or other staff of medical libraries. The demographic information included the institute category, gender, qualification, designations, professional experience, total manpower including LIS professionals and non-professional staff available in the medical libraries of Punjab province.

Table 2. *Demographic information (N=55)*

Groups		Frequency	Percentage (%)
Institute Category	Public	19	35%
	Private	36	65%
Gender	Male	33	60%
	Female	22	40%
Academic Qualification	BLIS	3	5%
	MLIS	41	75%
	MPhil	8	15%
Designations	Chief Librarian	2	3.6%
	Librarian	47	85.5%
	Assistant Librarian	3	5.5%
	Not Available	3	5.5%
Experience	01- 05 year	32	58%
	06 –10 years	12	22%
	11- 15 years	8	15%

The results (Table 2) showed that 33(60%) male participants and 22(40%) females responded the survey. Majority of the medical libraries were run and administered by

male library professionals than their female counterparts in the medical institute of the Punjab.

Institute Categories

The researcher has explored 55 libraries of medical institutions (Table 2) registered by PMDC from its website www.pmdc.org.pk.

The survey showed that majority of the medical libraries (n=36) were found in private medical institutes. Furthermore, out of 55 libraries, four libraries in each category were found in university medical colleges.

Status of Academic Qualification

The findings (Table 2) showed that 41(75%) library professionals working in medical libraries were holding qualification of master degree in LIS and eight (8%) M. Phil. in library and information science. The results also explored that a shortage or insufficiency was identified in medical libraries regarding professional library staff.

Library Experience

The results (Table 2) revealed that majority of the professional librarians (n=40) were holding experience from 1-5 years in the field of librarianship.

Manpower in Medical Libraries

A question was included in the survey questionnaire to explore the job categories of library workers in medical libraries as well as to identify the designations of medical library professionals working as head or in-charge of respective medical library along with the status of non-professional staff.

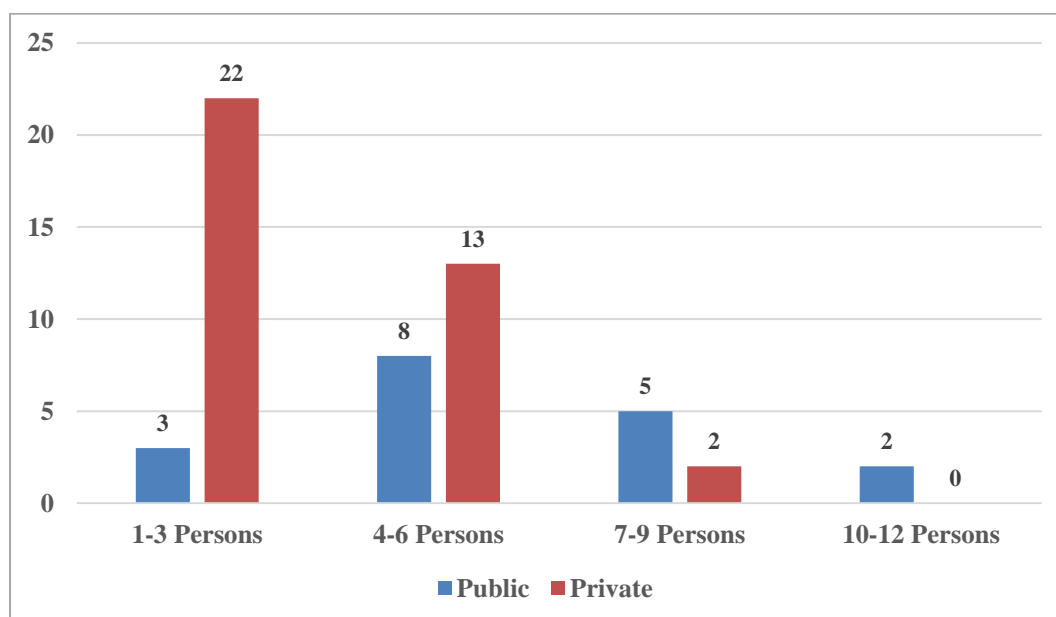


Figure 1. Status of non/paraprofessional staff in medical libraries

Professional Staff

The results (Table 2) showed that a large number of medical libraries, 47(85.5%) were run by qualified library professionals possessing the designation of “Librarian”. On the other hand, a few medical libraries 3(5.5%) were not having qualified library professionals by designation and education. The medical libraries without LIS professionals are working under the charge of LIS paraprofessionals, non-professionals or allied staff. These statistics exposed that medical libraries had good qualified professional staff except a few ones.

Status of Non/Paraprofessionals Staff in Medical Libraries

The findings (Figure 1) illustrated that the libraries of public sector medical institutes had a greater number of non-professional staff than the private sector.

Awareness among MLPs regarding TQM

The objective of this study was to explore the concept of TQM, awareness regarding TQM, examine applications and determine demographic differences on TQM in medical libraries. The survey instrument explored the level of awareness among medical library professionals (MLPs) regarding TQM applications in medical libraries. The respondents showed their behavior regarding the parameters of understanding of TQM in medical libraries. The respondents were asked different questions relating to the leadership and management support, customer satisfaction, continuous education and training, employees’ empowerment, quality control, quality assurance, etc. Table 3 showed the level of agreement of respondents on 5-point Likert-type scale alongside the significance level of one sample t-test.

Table 3. Level of awareness regarding TQM among MLPs (N=55)

Sr.	Awareness about TQM Applications	One-sample t-test				
		<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
1	Committed leadership & management support	4.13	0.77	54	4.013	.000**
2	Customer satisfaction	4.02	0.85	54	2.690	.009**
3	Continuing education and training	3.98	0.73	54	2.752	.008**
4	Continuous improvement	3.95	0.71	54	2.477	.016*
5	Team work	3.89	0.81	54	1.658	.103
6	Involvement of everyone	3.62	0.83	54	-.823	.414
7	Employee empowerment	3.55	0.92	54	-1.327	.190
8	Quality control of products and services	3.31	0.86	54	-3.466	.001**
9	Quality assurance and maintenance	2.93	0.84	54	-6.946	.000**

** . Level of awareness is significant at $p \leq 0.001$

* . Level of awareness is significant at $p \leq 0.05$

The consolidated and computed results of Table 3 presented the self-assessed perceived level of awareness regarding TQM in the medical library professionals (MLPs). The findings revealed that majority of the respondents had good understanding of TQM applications necessary for medical libraries. The respondents were found with well aware of “committed leadership and strong top management support” (M=4.13), “primary focus upon customer satisfaction” (M=4.02); “continuing education and training” (M=3.98); “continuous improvement” (M=3.95); team work (M=3.89); “involvement of everyone” (M=3.62) and “employee empowerment” (M=3.55). It can be suggested that medical library professionals have sufficiently high perceived level of awareness and understanding about the TQM applications necessary for medical libraries. Hence, the MLPs are quite familiar with the TQM principles and applications.

Moreover, a one sample t-test is also conducted to identify whether a significant difference existed between the level of awareness from the mean of a sample and the average mean of the population (i.e. test value = 3.71). The results of one sample t-test shows that the participants have statistically high level of awareness and knowledge about the TQM applications at significance value of $p \leq 0.05$.

Status of TQM Applications in MLs

The literature review showed that application of TQM cannot be determined without the constituent components of TQM philosophy including leadership, continuous process improvement, customer satisfaction, employee’s involvement and supplier partnership. Therefore, this section investigated the status of application of TQM according to its fundamental parameters. Table 4 summarizes the results for Latent variables of TQM applications.

Table 4. Status of TQM Application in Medical Libraries

SN	TQM Applications	Mode	Median	M	SD
1	Leadership	4	4	3.53	0.76
2	Continuous Process Improvement	4	3	3.51	0.96
3	Customer Satisfaction	4	3	3.26	0.88
4	Employee Involvement	4	3.5	3.40	0.94
5	Supplier Partnership	3	4	3.53	0.92
6	Performance Measures	3	3	3.12	0.76

Leadership

Under this section of the survey instrument, 10 statements were asked to get the level of agreement on five-point Likert-type scale. The descriptive statistics analyzed the overall responses of the participants regarding status of Leadership as TQM applications in medical libraries. The findings revealed that the concept of Leadership as TQM applications is practiced ($M=3.53$) as “the top and middle management and employees are committed to TQM with the ability of distributing the responsibilities for quality among department heads and “supporting for total quality in organization culture through task definition, budgeting, and measurement”.

Continuous Process Improvement

Table 4 summarizes the results of continuous process improvement (CPI) in library facilities and services. The study indicates that the CPI application of TQM is practiced ($M=3.51$) in medical libraries. The respondents make efforts for improving library facilities and services in terms of “chasing new technology, improving CAS services, providing online digital information resources, receiving ample budget and providing WiFi service with continuous maintenance”.

Customer Satisfaction

This construct of TQM was consisted of 11 statements relating to customer satisfaction on a five -point Likert-type scale. The results exhibit that the MLPs give prime importance to “customer satisfaction” in medical libraries to apply TQM philosophy. They are used to meet customer satisfaction in “providing adequate and comfortable furniture, arranging ample information resources, rendering efficient circulation service, making library easily accessible for special persons and handling user queries promptly” in medical libraries.

Employee Involvement

This parameter of TQM was assessed through 12 statements on a five-point Likert-type scale. The summary of results reveals that the TQM application of “employee involvement” is achieved in terms of “good working relationships among team members, providing training opportunities, appreciation from boss, creating interest-oriented working circumstances and being recognized or praised for good performance.

Supplier Partnership

This parameter of TQM were investigated through five statements on a 5-points Likert-type scale. The computed results reveal that MLPs have created

sustainable supplier partnership through “proper selection and evaluation procedures of suppliers, overall rating and performance of supplier as an important tool to measure their performance, and sourcing policy to be considered for making purchase agreement.

Performance Measures

The parameter of “performance measures” was explored through 9 statements among respondents on a 5-points Likert-type scale. The findings indicate that different “performance measures” are used in medical libraries including “PMDC registration requirements, staff evaluation criteria and complaint management” systems. Whereas, the medical libraries do not follow any “Bench marking application, performance indicator method or ISO 9001 certification, respectively”.

Results of Independent Sample t-Test

The independent sample t-test was applied to find difference of opinion between two types of medical libraries including public and private on awareness level about TQM applications and the six dimensions of TQM with an alpha level of 0.05. Generally, the results of t-test showed insignificant difference between public and private medical institutional libraries except two dimensions of TQM as presented in the Table 4.13. The respondents of both type of libraries (public and private) had a significant difference of opinion on “Leadership” ($p=0.001$) and “Continuous Process Improvement” ($p=0.001$) approximately. It could be concluded that the library professionals of public medical institutes found with better understand and practices in two TQM applications including “Leadership and Continuous Process Improvement” than the library professionals serving in private medical colleges/institutes.

Table 4.13. *Independent sample t-test*

Statements	Type of Library		t	p-value
	Public	Private		
Awareness about TQM	3.66	3.73	-1.11	0.27
Leadership	3.29	3.66	-3.65	0.001**
Customer Satisfaction	3.42	3.57	-1.48	0.14
Employee Involvement	3.33	3.22	1.64	0.11
Continuous Process Improvement	3.16	3.53	-3.82	0.001**
Supplier Partnership	3.44	3.58	-1.26	0.21
Performance Measures	3.09	3.14	-.42	0.67

Furthermore, an independent sample t-test was also applied to check the gender effect on awareness level about TQM applications and the six dimensions of TQM with an

alpha level of 0.05. There was no significant difference of opinion on the presented factors between male and female respondents except the performance measures as presented in the Table 4.14. The findings disclosed that both the male and female respondents had significant difference of opinion on the statement of “performance measures” It is could be concluded that the male respondents found with better understanding and practicing of “Performance Measures” indicator of TQM than the female respondents of medical colleges/institutes.

Table 4.14. *Independent sample t-test*

Sr.	Statements	Gender		<i>t</i>	<i>p</i> -value
		Male	Female		
1	Awareness about TQM	3.71	3.68	0.41	0.68
2	Leadership	3.53	3.52	0.07	0.94
3	Customer Satisfaction	3.53	3.41	0.94	0.35
4	Employee Involvement	3.26	3.23	0.32	0.75
5	Continuous Process Improvement	3.40	3.42	-.15	0.91
6	Supplier Partnership	3.53	3.58	-.35	0.73
7	Performance Measures	3.17	2.89	2.24	.029**

Major Findings of the Study

Findings of this study were summarized according to research questions in the following sections.

Demographic Information

The present study identified 55 medical libraries in Punjab province of Pakistan under the categories of public (n=19) and private sectors (n=36). The librarians, incharge or other staff of medical libraries including 46(84%) males and 9(16%) females responded the data collection instrument. Majority of library heads were found male persons in the medical libraries.

Manpower in Medical Libraries

The survey found out that majority of the medical libraries were run by the qualified and experienced library professionals possessing the designation of “Librarian”. On the other hand, a few medical libraries were not having qualified library professionals by designation and education and working under the charge of LIS paraprofessionals, non-professionals or allied staff available in medical libraries. Medical libraries had a good of non/paraprofessional staff to run library functions smoothly.

What is the level of awareness on TQM among the MLPs?

The results showed that majority of the respondents claimed good level of awareness and understanding about TQM applications in medical libraries. The respondent agreed that “committed leadership and strong top management support” and “primary focus upon customer satisfaction” would require utmost for the implementation of TQM practices in medical libraries. The respondents might be required to update their awareness about parameters of TQM including quality control and quality assurance.

What is the status of application of TQM in MLs in Punjab province?

Leadership

The findings regarding the status of TQM expressed that the majority of respondents claimed that the top management of their medical institutes committed to TQM applications and had the ability to distribute the responsibilities for quality among department heads. Whereas, the respondents required the proper support and involvement from top management for TQM culture, allocation of budgeting and measurement. The middle management and employees were also required to be committed for TQM practices.

Continuous Process Improvement

The descriptive results indicated that majority of the respondents claimed that the continuous improvement and innovation in library facilities and services would be essential. The respondents affirmed that the medical library professional strived to chase new technology, provide CAS, arrange digital information resources, receive ample budget and maintain internet/WiFi service for the continuous improvement and innovation in library.

Customer Satisfaction

Customer satisfaction is acknowledged highly important in TQM deployed organizations and focused more on customer-oriented approach. Most of the respondents considered customer satisfaction for TQM as prime important. The medical library professionals used to meet customer satisfaction by providing adequate and comfortable furniture in library, arranging ample information resources, giving efficient circulation service, making library easily accessible for special

persons and handling user queries promptly. It could be inferred that all the dynamics would be achieved systematically to maintain TQM applications efficiently.

Employee Involvement

It is widely accepted that the overall customer satisfaction can be ensured through total employee involvement in the delivery of library services. Without employee interaction with customer and suppliers, the organizations could not implement TQM applications. The respondents agreed with the factors for better employee involvement including good working relationships among team members, training opportunities for employee, appreciation from boss in returns of solving work problems, interest-oriented working conditions and recognition for good performance. It can be concluded that the medical library professionals considered that employee involvement is essential for TQM applications.

Supplier Partnership

The supplier partnership is also a major component of TQM philosophy. However, the present study explored that medical library professionals were found unaware of this parameter of TQM. The respondents were found uncertain about the proper selection and evaluation procedures, overall rating and performance of suppliers. Moreover, the medial librarians did not consider the sourcing policy for purchase agreements. It can be concluded that the medical library professionals and authorities would focus on supplier partnership to get quality materials and avoid wastage of resources.

Performance Measures

The results showed that the medical library professionals considered that performance measures include meeting the PMDC registration requirements, applying staff evaluation criteria and receiving and managing complaints from users. However, the respondents did not aware of performance indicator method, bench mark and ISO 9001 certification application.

Recommendations

The researcher presented the following recommendations on the basis of results.

1. Medical institutes are required to focus especially on leadership style in medical libraries.
2. Mechanism for the promotion of TQM awareness should be devised for effective implementation.

3. TQM related network should be established among medical libraries in Punjab for continuous the improvement and innovation.
4. Medical library professionals should identify continuously strengths and weaknesses for TQM practices and applications among their libraries.
5. Opportunities for professional development would be provided for the training of staff in order to enhance customer service skills and TQM practices.
6. Medical institutes should invest to provide adequate equipment, physical facilities, and continuously upgrade computers to achieve effective TQM applications.
7. Medical library professionals would work closely with IT professionals for continuous maintenance and adequate bandwidth of internet/wifi for online digital services.
8. Effective and user-centered library and information services (e.g. CAS, SDI, etc.) should be introduced to achieve customer satisfaction in order to practice TQM applications effectively and efficiently.

Conclusion

The study concludes that the medical library professionals have sufficiently high perceived level of awareness and understanding about the TQM principles and applications necessary for medical libraries. Leadership and top management of medical institutes is committed to TQM applications and have the ability to distribute the responsibilities for quality among department heads. Whereas, the medical libraries require proper support and involvement from top management for TQM culture, allocation of budgeting and measurement, and to motivate the middle management and employees for their commitment with TQM practices. The continuous improvement and innovation are essential through chasing new technology, providing advanced services and arranging digital information resources with ample budget resources in medical libraries. Customer satisfaction is acknowledged and considered as prime important factor for successful TQM applications which can ultimately be ensured through employee involvement, supplier partnership and performance measures. However, the respondents did not aware of performance indicator method, bench mark and ISO 9001 certification application. This study may contribute in overall quality management and enhance the TQM services in medical libraries.

References

- Abdallah, A. (2014). Implementing quality initiatives in healthcare organizations: drivers and challenges. *International journal of health care quality assurance*, 27(3), 166-181.
- Adjei, E., & Mensah, M. (2016). Adopting total quality management to enhance service delivery in medical records: Exploring the case of the Korle-Bu Teaching Hospital in Ghana. *Records Management Journal*, 26(2), 140-169.
- Akhtar, U., & Sanghera, K. M. (2014). Application of Total Quality Management Approaches in the Academic Libraries of Public Sector Universities. *European Academic Research*, Vol. I(Issue 12).
- Alentejo, E., Lobin, H., & Baptista, S. G. (2017). Health Information Quality Management System: Academics Health Libraries Perspectives. *Qualitative and Quantitative Methods in Libraries*, 3(1), 283-294.
- American Society for Quality. (2017). Continuous Improvement. doi:<http://www.asq.org/learn-about-quality/continuous-improvement/overview/overview.html>
- Arys, R. (2000). Customer Delight in University Environment. *University News*.
- Babalhavaeji, F., Moghaddam, A. I., Aqili, S. V., & Shakooii, A. (2017). Quality assessment of academic library performance: the case of an Iranian academic library. *Malaysian Journal of Library & Information Science*, 14(2), 51-81.
- Baffour, B., King, T., & Valente, P. (2013). The modern census: Evolution, examples and evaluation. *International Statistical Review*, 81(3), 407-425.
- Begum, S., & Nissa, S. (2003). Total quality management in the academic library. *Library philosophy and practice*, 5(2), 1-3.
- Besterfield, D. H. (2003). *Total quality management*. Upper Saddle River, N.J.: Prentice Hall.
- Bhatt, S. (2012). Total Quality Management: An Effective Approach for Library System. *International Journal of Information Dissemination and Technology*, 2(4), 266.
- Chauhan, H. (2014). Use of Total Quality Management in Academic Library: A Special Reference to Library System and Services. *Social Science Research Network*. doi:<http://dx.doi.org/10.2139/ssrn.2539470>
- Chen, S.-H., Hsu, C.-C., & Wu, I.-P. (2017). The effects of total quality management implications on customer satisfaction and customer loyalty: an empirical study

- in the Taiwanese security industry. *European Journal of Industrial Engineering*, 11(1), 1-21.
- Creswell, J. W. (2011). *Educational research : planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Upper Saddle River, N.J.: Pearson/Merrill Prentice Hall.
- Dadzie, P. S. (2003). Quality Management Institution in Balme Library: Possibilities, Challenges, Constraints for Top Management Commitment. *Library Management*, 25(1), 56-61.
- Dahlgaard, J., Kristensen, K., & Kanji, G. (1998). Fundamentals of Total Quality Management—Process Analysis and Improvement. In: Chapman & Hall: London.
- Dearlove, D. (1996). 'Has British business had its fill of management fashions?' in. In *The Times* 5.
- Dobyns, L., & Crawford-Mason, C. (1991). Quality or else: The revolution in world business. *Regional Business*, 1, 157-162.
- Frazer, L., & Lawley, M. (2000). *Questionnaire design & administration: a practical guide*. New York: Basic Books, Inc.
- Galyani Moghaddam, G., & Moballeghi, M. (2008). Total quality management in library and information sectors. *The Electronic Library*, 26(6), 912-922.
- Gay, L. R., Mills, G. E., & Airasian, P. W. (2009). *Educational research: Competencies for analysis and applications* (9th ed.). Upper Saddle River, N.J.: Merrill/Prentice Hall.
- George, D., & Mallery, P. (2014). *IBM statistics 21 step by step : a simple guide and reference*. In (pp. 76). Retrieved from http://www.pearsonhighered.com/george/SPSS_21_Step_by_Step_Answers_to_Selected_Exercises.pdf
- Hashmi, K. (2007). Introduction and implementation of total quality management (TQM). *Journal of Electronics and Quality Management*, 6(1), 45-57.
- International Organization for Standardization. (1994). *ISO 8402: 1994: Quality management and quality assurance-vocabulary*: ISO.
- Kaynak, H. (2003). The relationship between total quality management practices and their effects on firm performance. *Journal of operations management*, 21(4), 405-435.

- Kostagiolas, P., & Kitsiou, M. (2008). Issues and perceptions for ISO 9000 implementation in Greek academic libraries. *Library Management*, 29, 583-599.
- Mertler, C. A., & Vannatta, R. A. (2002). Advanced and multivariate statistical methods. *Los Angeles, CA: Pyrczak*.
- Moghaddam, G. G., & Moballeghi, M. (2008). Total quality management in library and information sectors. *The Electronic Library*, 26(6), 912-920.
- Mullin, J. (2001). People-Centered Management in a Library Context. *Library Review*, 5(6), 305-309.
- Negi, A. S., & Srivastava, J. P. (2015). Total quality management (tqm) and its applications in academic library and information services. *International Journal in Management and Social Science*, 3(2).
- Obeidat, B. Y., Hashem, L., Alansari, I., Tarhini, A., & Al-Salti, Z. (2016). The effect of knowledge management uses on total quality management practices: A theoretical perspective. *Journal of Management and Strategy*, 7(4), 18.
- Opoku, D. (2012). Total quality management in academic libraries: The perception and expectations of graduate students of the University of Ghana, Legon. *Journal of Research in Education and Society*, 3(3), 1-7.
- Oppenheim, A. N. (2000). *Questionnaire design, interviewing and attitude measurement*: Continuum International Publishing Group.
- Raja, P., & Mahalakshmi, M. (2016). Total quality management practices in accredited and ISO certified management college libraries: A comparative study. *IJAR*, 2(5), 116-118.
- Salaheldin, S. I., & Mukhalalati, B. A. (2009). The Implementation of TQM in the Qatari Healthcare Sector. *Journal of Accounting, Business & Management*, 16(2).
- Sayeda, B., Rajendran, C., & Lokachari, P. S. (2010). An empirical study of total quality management in engineering educational institutions of India: Perspective of management. *Benchmarking: an international journal*, 17(5), 728-767.
- SHoghpour, D., & Gholami, Z. (2012). Evaluation of total quality management in library of Islamic Azad University in District 13. *Life Science Journal*, 9(4).

- Singh, K. (2013). Total Quality Management To Library And Information Services In Indian Open Universities. *Journal of Business Management & Social Sciences Research*, 2(6).
- Talib, F., Rahman, Z., & Qureshi, M. (2013). An empirical investigation of relationship between total quality management practices and quality performance in Indian service companies. *International journal of quality & reliability management*, 30(3), 280-318.
- Thakkar, J., Deshmukh, S. G., & Shastree, A. (2006). Total quality management (TQM) in self-financed technical institutions: A quality function deployment (QFD) and force field analysis approach. *Quality Assurance in Education*, 14(1), 54-74.
- Wang, C.-H., Chen, K.-Y., & Chen, S.-C. (2012). Total quality management, market orientation and hotel performance: The moderating effects of external environmental factors. *International Journal of Hospitality Management*, 31(1), 119-129.
- Westgard, J. O. (2016). Useful measures and models for analytical quality management in medical laboratories. *Clinical Chemistry and Laboratory Medicine (CCLM)*, 54(2), 223-233.
- Yapa, S. (2012). Total quality management in Sri Lankan service organizations. *The TQM Journal*, 24(6), 505-517.
- Younger, A. (1993). 'Introduction' in HERTIS Information and Research Total Quality Management.