

## **Quality Techniques in Library and Information Services: A Practical Approach**

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### **Introduction**

Nowadays many business companies are increasingly adopting Total Quality management (TQM) tools and methods to enhance customer service, increase operational effectiveness, and also improve profitability. A key principle of TQM is to be customer-driven when developing new products/services as well as when enhancing existing ones (Aomar and Meer,2012). TQM integrates fundamental management techniques, existing improvements, and technical tools under a disciplined approach (Talukder and Ghosh, 2004). . There are three factors that dictate how a TQ organization is perceived. These have been described variously as culture, structure, systems (Lucas Engineering & Systems, 1988), or people, policy and strategy, resources (EFQM, 1992) and people, systems, tools (Smith and Angeli, 1995). There are number of TQM techniques available. These include benchmarking, departmental purpose analysis, design of experiments, failure mode and effects analysis, quality function deployment, statistical process control and six sigma which are most widely used by firms.This paper focuses on, how we could use the TQM techniques in Library and Information Services (LIS) to improve the service quality. In this contest concern is given to Quality Function Deployment (QFD) and Six-Sigma.

### **Application of TQM Techniques in Library Services**

#### **Six sigma**

The Six sigma is being the tool for assessing the quality of the services, in addition function as a problem solving tool for corporate sectors. It is applicable in the library system too (Dutt, 2013). User satisfaction with regard to the services offered is the ultimate goal of a library system (Zubi *et al* 2010) .This goal can be achieved with the help of the six sigma tool. It uses a set of quality management and statistical methods to obtain the maximum user satisfaction. Further, Six sigma helps in continuous appraisal and delivery of quality services by the library system, in order to satisfy the needs of the library users (Agrawal, 2011).

We can implement Six sigma in the evaluation of library management activities and assessment of services offered would have an impact on user satisfaction. Moreover, application of Six sigma helps to provide quality library services in the present competitive world to accomplish the needs of the users.

The potential areas of a library system, where the Six sigma tool could be applied are as follows:

- Acquisition of materials for the library
- Technical (Classification & Cataloguing) and physical processing of acquired materials
- Circulation of library materials
- Maintenance of library collection
- Library services

Reference service in another process in library system. It can be divided into two divisions, direct service and indirect services. Direct service can be depending on counter services, user interview, and library instructions. By considering these three factors Six sigma levels for direct reference service of a library can be calculated.

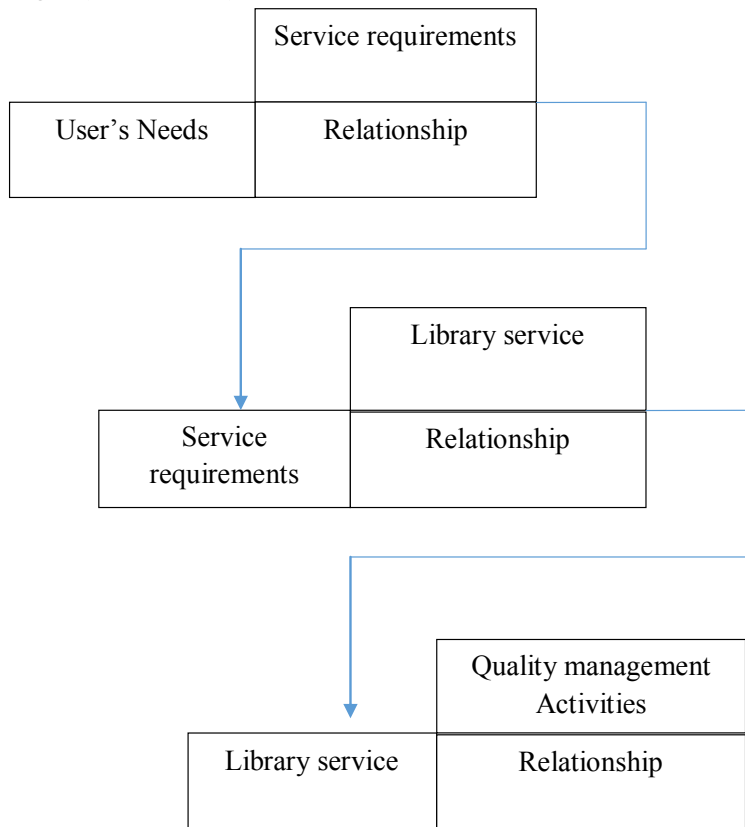
There are two types of Six sigma process methods, namely Six Sigma DMAIC and Six Sigma DMADV.

1. Six sigma DMAIC is a process that Defines, Measures, Analyzes, Improves, and Controls existing processes that fall below the Six sigma specification. Hence, it is used to improve an existing business process.
2. Six sigma DMADV Defines, Measures, Analyzes, Designs, and Verifies new processes or products that are trying to achieve Six sigma quality. Therefore, it is employed to design a new process.

Among the two process methods mentioned above, Six sigma DMAIC method is generally applied to improve the existing library system and which is discussed below.

**Quality Function Deployment (QFD)**

QFD is a system for designing a product or service, based on customer demands (Oakland,1993). In this paper the principles of traditional product design by QFD are translated into a service design QFD methodology by a three matrices approach. Each metric consisting of a vertical column of “*what*” and a horizontal row of “*Hows*”. “*What*” are the user’s requirements; “*hows*” are the ways of achieving them. By use of matrix charts, “*what*” means will be used to accomplish the ends are determined. In interactive steps, the prioritized customer needs are translated into identifiable and measureable product specification and designs (Ermer, 1998).



**Figure 1 - Modified Frame Work of Service Quality Deployment**

Figure 1 displays the modified framework for library services referred to as service quality function deployment. This frame work was developed based on *Ermer and et al* works. There are four phases

to facilitate communicating service requirements from the users to the activities related to quality management in respect of the library services delivering (Whitlach, 1990). The first as usual, is to identify the user’s needs and requirements, second phase, translate into service terms, is to define the requirements of the service and to design the co-service system. The third phase 3 consists of process planning. This is a matter choosing the co-service process which produces what the user requires. Phase four involves the planning of the quality management activities. Special attention has been given to translating user service process into quality activity (Willam, 1995).

Importance rating serves as weighting factors and plays a key role in the QFD process. In general, 1 represents low importance and 9 or the highest value high importance. Relationships are determined by asking if a service requirement can be achieved a readers needs. The relationship within the matrix are depicted according to “strong”, “medium”, and “weak” and are assigned conventional weightings of “9”, “3”and “1” respectively. Absolute score was calculated by sum the each reader need’s important factor in to relation weight. Relative score was calculated by absolute score for all demanded qualities were summed and each one divided in to the sum and multiplied by 100 to yield a percentage. The requirements with the lowest scores have been dropped before develop the second matrix (Hauser, 1993).

			SERVICE REQUIREMENT															
			Response								Process							
			Out come				Source				Enthusiasm of the librarian				Competence of the librarians			
			Precision	Adaptability	Up-to dateness	Confidentiality	Credibility	Acceptability	Accessability	Availability	Responsiveness	Approachability	Attentiveness	Reliability of the librarians	Courtesy of the librarians	Professional skills	Subject knowledge	Resource Knowledge
READER'S NEEDS			Importance Rating															
Primary	Secondary	Tertiary																
Good Staff	Good Approach	Gentle and good mannered	9								9	1		9	3			
		No delay	8								9	3						
		Staffs support readers in looking up information	7	3	1					3		9			3			
	Good Ability	Knowing user's real need	9	3	9	1			3		1		3			9		1
		Way of communicate	9								1	1	3	3	9	9		1
		Familiar with keywords	8	9	3									9		1	9	
		Awareness about resources	8	9	3	3			9	9				9				9
		Ability to troubleshoot new technology	7		9	9	3							3			9	
	Enthusiasm to learn	7				3						9	3		3			

Figure 2 - Translating customer needs into service requirements

SERVICE	QUALITY MANAGEMENT ACTIVITIES														
	Importance rating	Staff				Technology					System				
		Employee selection	Employee skill development	Supervisor employee relation	Reader's relation	Hardware selection	Software selection	Facilities arrangement	Substitution	Vendor relation	Process planning	Service standardization	Scheduling of duties	Service recovery	Functional coordination
<b>1. Counter Service</b>	2														
<b>1.1 General Assistance</b>	6.4	3	1	1	1		1	9	9		9	9	3	9	3
<b>1.2 Technical Assistance</b>	5	9	3	1	3	9	9		9	9	3	9	9	3	
<b>1.3 looking the material</b>	8.1	3	1	1	1	1	3	9	3		3	1	1	3	
<b>2. User interview</b>	2														
<b>2.1 Location of material</b>	7.3	3	9	3	1	1	9	3	3		9	3	3	3	9
<b>2.2 Specific search</b>	8.9	3	3	9	3	1	9				3	1	3	3	3
<b>2.3 Research collection</b>	9.4	9	9	9	9	1	9				3	1	3	3	3
<b>2.4 Assessment and Recommendation</b>	5	3	3	9	3		1			9	3	1		1	3
<b>3. Library Instruction</b>															
<b>3.1 Bibliographic instruction</b>	5.4	3	3	3	1	1	3	3	9		3	9	3	1	3
<b>3.2 Database searching</b>	3	3	9	3	3	3	9		3	3	3	9	3	1	

Figure 3 - Linking reference process to quality management activities.

The reader’s expectations and needs must be regarded as critical throughout the whole process of service planning and delivering. The strength of the QFD method is that it systematically translated the “Voice of the reader’s” into service requirements, process, and quality management activities. The framework presented in this paper can be customized to reflect the requirements of individual libraries, and will help libraries to highlight where resources and efforts should be used and where time and money should not be spent, in an objective and integrative manner.

**Conclusion**

This paper has discussed the application of TQM techniques and modified frame works for incorporating quality management into the Library and Management Services. Libraries willing to continuously improve their service quality and completely satisfy users must create a user oriented culture in their organisation. First, a framework of total quality management must be established for the library by promoting a quality culture before applying any particular technique. The techniques must be considered as an integral part of the total quality system. QFD and Six sigma are also facilitating to quantify the user satisfaction numerically in services provided by libraries.

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