

Towards Quality Culture in the Digital Environ: Management and Optimization of Services in Research Libraries of India

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National Assessment and Accreditation Council (NAAC) has been established in India for ensuring quality and excellence in higher education and has developed a set of objective indicators for the library, as it is the fulcrum of support for the community of academic and research pursuits. This resulted a general consensus for rising demands of evaluation and accountability of academic and research libraries to develop performance evaluation and measure service quality and thereby build quality culture. Advancements in Information and Communication technology, transforming the world into the global village, contributed significant scope for development of electronic information resources and Internet resources in the Library for continuous quality improvement. Library and information centers needs to map the information needs of the customers; well-defined quality policy and Quality Circle and translating into quality information services, by making use of various Information Technology based information retrieval tools. The quality gurus especially Parasuraman, Barry, and Zeithaml have developed the SERVQUAL to measure the quality dimension in the academic and research environ to measure the perceptions of service quality.

In view of the emerging challenges for building quality culture in the techno-environ, a total of 1200 questionnaires were distributed to the user community in Indian research libraries to go deeper into the realm of Quality

Assessment and Use Techniques with a sincere effort to assess the performance of academic and research libraries in rendering their quality services to the users both from Librarians and users perceptions. Further, attempts were made to develop an instrument of acceptance of Internet technology known as Technology Acceptance Model (TAM) among faculty and Research scholars in India using the original constructs i.e. Perceived and Perceived Ease of Use. In this paper, efforts were also made to examine the relationship between the variables Use of Internet (UOI) and Level of Satisfaction (LOS), that resulted in coming out with a mathematical - regression model in which the results of Regression analysis shows that, the four variables age, teaching and research experience and level of satisfaction put together explains 39 per cent of variance in variable Use of Internet (UOI).

The paper concludes based on research findings, valuable suggestions to develop a National Information Policy for quality control as a mandatory to provide due importance in establishing Library and Information Centers as Centers of Learning and research. Of necessity, the strategies must be situation specific, but some possible strategies for libraries to use are identified for planned organizational change to quality improvement.

1. Introduction

In the age of a techno-scientific revolution, the sheer quantity of knowledge and information is expanding exponentially and increasingly varied student population are burgeoning, the quality of training for teachers and the quality of teaching in higher education institutions demand top priority. Feigenbaum (1994) believes that “quality of education” is the key factor in “invisible” competition between countries, since the quality of products and services is determined by the way that managers, teachers, workers, engineers, and economists think, act, and make decisions about quality. Education, and in particular, higher education itself, is also being driven towards commercial competition imposed by economic forces (Seymour, 1992).

The concept of Total Quality Management (TQM) is an emerging new management technique used in most of the disciplines and the Library and Information Centre is not an exception to it. Its application in service sectors like Library and Information Service (LIS) started in the late 1980's is an American response aiming at customer satisfaction by way of meeting the requirements and expectations of customers. This concept has become more relevant in the current technological era, especially due to the emergence of application of Information technology in Libraries and changes in the information

consciousness among users. The application of Total Quality Management in Library and Information Centres seems to be a very recent origin but it is not so in the Indian context wherein DR. S.R Ranganathan, father of Library and Information Science stated in his fourth law 'save the time of the User' has direct implication to what is advocated in TQM approach to conformance to the customer expectations (Raina, 1995).

More specifically, the Internet technology has become integral part and parcel of Library and Information service acting as a supplement to the library information resources. The importance of Internet technology has further strengthened due to the networked consortia resources extended to the universities and technical institutes in India under UGC-Infonet and INDEST consortia programs. In view of the challenges of Information technology and desire for digital information services to the Library professionals in India, attempts were made to measure the quality based services extended to the users and to analyze the Use of Internet and Level of Satisfaction among users in India.

The timeliness and importance of studying use of the Internet were described by Silva and Cartwright (1993): 'As use of the Internet continues to grow, educational systems will be faced with increasing user demand for help and instruction ... As students become linked to virtual libraries, on-line catalogues and databases, it is incumbent upon institutions to provide the means for students to optimally exploit these resources'. So also, in India, hardly any studies were conducted on Total Quality Management (TQM) in the University Library System. Certainly we do find few studies attempted on Corporations R&D Libraries and fewer Special Libraries. This study is undertaken with a hope that Total Quality Management (TQM) is a way of management helps to improve the effectiveness, efficiency, flexibility and competitiveness among the technical universities in rendering the quality based services to the users including Internet services as a whole by way of involving everyone in the organization towards improving the ways in which things are done.

2. Objectives of the Study

The present study in question is conducted with the following objectives:

- To study the professional Staff Attitude towards Quality Work Culture To identify Professional Staff Attitude towards Librarian's Leadership Qualities To evaluate the quality based services based on the opinion of teaching faculty and scholars To determine the relationship between Level of Satisfaction (LOS) towards Internet use Vs. Learner Characteristics of respondents by evaluating the dimensions of variables of Use of Internet and Level of Satisfaction of Internet technology as an information

source

3. Methodology

A stratified Sampling technique has been adopted to distribute the questionnaire for eliciting the data from the study population, in which a total of 1200 questionnaires were distributed to the user community of ten university libraries of Karnataka of which 768 (64%) (Faculty - 204 and Research Scholars - 214) were duly received and to study and evaluate the Total Quality Management based services offered to the users and 62 professional staff have been interviewed to understand the quality culture. Further, to evaluate the use of Internet as an Information Source by engineering faculty and research Scholars of National Institutes of Technology in India, Survey method has been employed to study with a total feedback of 665 questionnaires (78.24%) covering 12 National Institutes of Technology representing south, north, east and west regions of India. The data so collected has been tagged using Statistical Package for Social Science SPSS and to substantiate the data, statistical tests have been conducted namely Skewness and Chi-Square Test of Goodness of Fit Test.

The Skewness Index and Chi-Square on Goodness Fit Test used for analysis and interpretation of data is given below.

Degree of Skewness and Interpretation*

Interpretation	Degree of Skewness
1. Highly Not Satisfied	+0.6 and above
2. Not Satisfied	+0.3 to +0.6
3. No Conclusive Opinion	+0.3 to -0.3
4. Satisfied	-0.3 to -0.6
5. Highly Satisfied	-0.6 and above

Significance of Chi-Square on Goodness Fit Test (df=4)*

Significance Level	Chi-Square Value
For 0.95%	9.49 and below
For 0.98%	Above 9.49 to 11.67
For 0.99%	Above 11.67 to 13.28
For 0.999%	13.28 and above

- Extracted from Glass, G.V and Hopkin, K.D Statistical Method in Education and

4. Data Analysis and Interpretations

4.1 Professional Staff Attitude towards Quality Work Culture

Institutionalizing TQM in a university library requires a quality culture among the library team that prompts customer delight through continuous improvement involving participatory and creative problems solving approaches and a team ethos. Table 1 shows the Professional Staff attitude towards quality work culture.

Table-1: Professional Staff Attitude towards Quality Work Culture

Descriptions	Scale					Skewness	Chi-Square
	1	2	3	4	5		
Proudness of Library Profession	4 (6.5%)	8 (12.9%)	14 (22.6%)	36 (58.1%)	0 (0%)	-1.707	39.41
Cordial Atmosphere at Work Place	1 (1.6%)	7 (11.3%)	22 (35.5%)	16 (25.8%)	16 (25.8%)	-0.177	22.35
High Performance Targets	3 (4.8%)	5 (8.1%)	19 (30.6%)	22 (35.5%)	13 (21%)	-0.558	22.51
Prompt Reshelving	4 (6.5%)	5 (8.1%)	19 (30.6%)	16 (25.8%)	18 (29%)	-0.539	17.9
Fast Processing	2 (3.2%)	7 (11.3%)	19 (30.6%)	11 (17.7%)	23 (37.1%)	-0.420	23.80
Staff Commitment	2 (3.2%)	2 (3.2%)	1 (1.6%)	21 (33.9%)	36 (58.1%)	-2.161	78.80
Acceptance of Assignments	3 (4.8%)	2 (3.2%)	5 (8.1%)	22 (35.5%)	30 (48.4%)	-1.620	52.67
Effective Supervision - Subordinate	2 (3.2%)	6 (9.7%)	27 (43.5%)	27 (43.5%)	0 (0%)	-1.690	34.64
Staff Work Accountability	2 (3.2%)	1 (1.6%)	3 (4.8%)	20 (32.3%)	36 (58.1%)	-2.103	75.90
Awaiting for Holidays	26 (41.9%)	8 (12.9%)	11 (17.7%)	9 (14.5%)	8 (12.9%)	0.492	19.12

N=62

From the table it is very clear that none of them are fully satisfied with the work culture in their library as per the skewness value. However, they are satisfied to a greater extent (Level 4) with respect to performance targets of library professionals (sk-0.558), prompt reshelving of books (sk-0.539) and processing of newly acquired books within a month (sk-0.420). This study further highlights that, most of the professional staff has expressed their neutrality towards feeling proud to be part of the library profession (sk-1.707) by developing trust and confidence and healthy atmosphere at workplace (sk-0.177). And further, their commitment to the library goals and values (sk-2.161) accepting the work assignments (sk-1.620), effective supervision and performance of subordinate staff (sk-1.690) and accountable to the job assigned (sk-2.103). It is happy to note that, the professional staff are desired to work and do not wait for Sunday/holidays (sk0.492). This shows the professional staff interest in the developmental activities of the library in providing services to the library users.

4.2 Professional Staff Attitude towards Librarian's Leadership Qualities

As a leader of the university library, the librarian will have to bring a shared sense of vision of the desired future and willing to risk errors rather than loss opportunities. For, it is through unleashing the power of co-library professionals working together in the library for a common cause-that the bulk of the worlds best work gets done. The librarian's leadership quality should be committed and should create co-ordinate relationship among the library staff and subsequently the library staff should be satisfied with the leadership skill of the librarian. Figure 1 shows the professional staff attitude towards the Librarian's leadership quality.

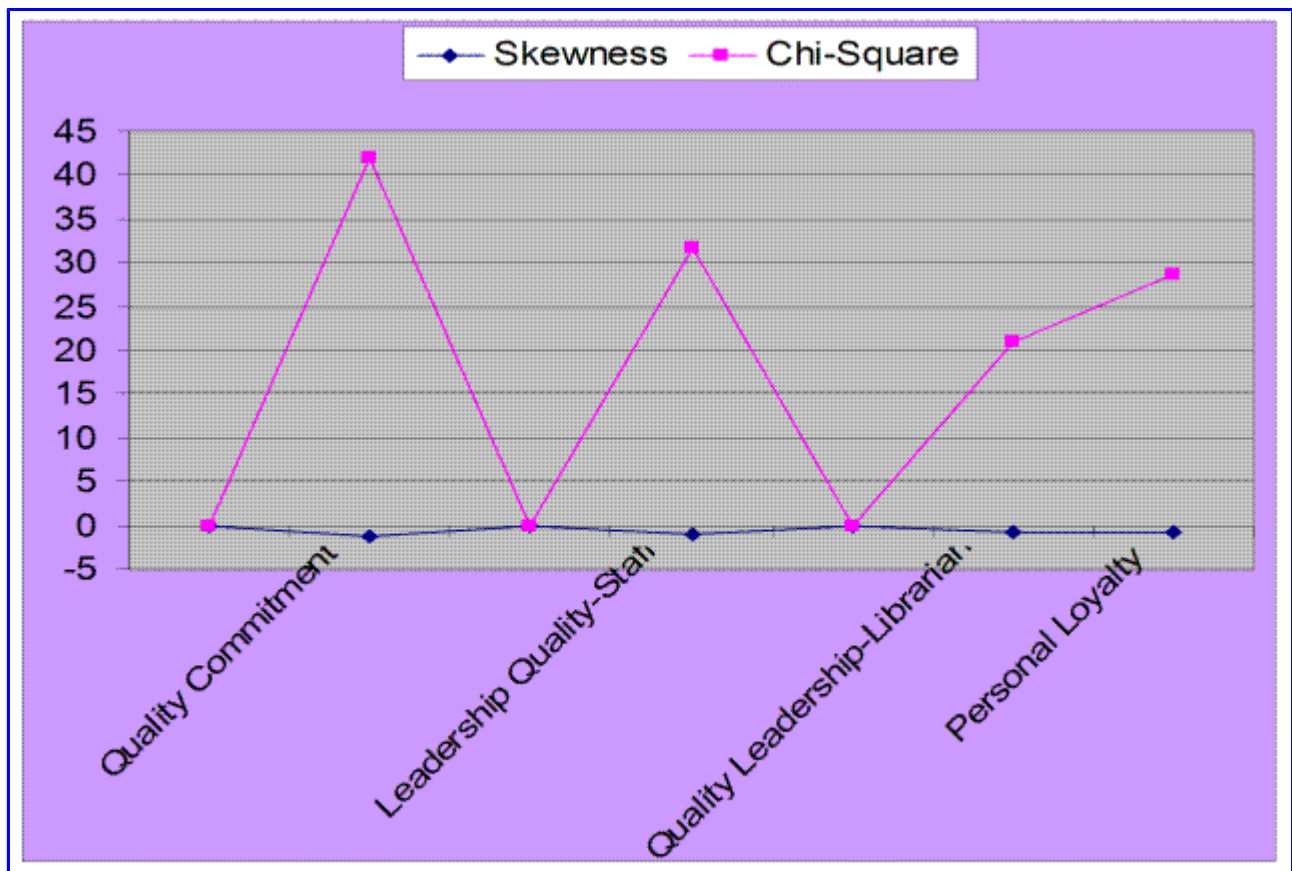


Figure 1: Professional Staff Attitude towards Librarian's Leadership Qualities

The figure describes that majority of the professional staff are highly satisfied with the librarian's leadership quality creating and maintaining cordial relationship amongst library professionals (sk-0.993) and they are also fully satisfied with the leadership skill of the librarian (sk-0.874). Similarly, majority of library professionals of the university libraries have expressed that, personal loyalty is considered as an important virtue (sk-0.833); it is surprised to note that, the majority of the professional staff responded fully satisfied to the personal loyalty as an important virtue.

But however the library professionals of the university libraries remained neutral in expressing their views on librarian's commitment and dedication to the service quality in the library (sk-1.321). To substantiate the above statements, the data was computed with the chi-square test, which reveals that all the facets in the above table found to be significant at 0.01 level of significance.

4.3 University Library Services

A key observation is that, in services there is a direct interaction between a customer and

the library staff and fulfilling their requirement through service delivery process is both challenge and an opportunity. The university library adopting total quality management in its activities and services needs to emphasize the importance of quality management to services. Since quality management is itself focused on the customer needs, hence an interface between the customer and the library. The major information services offered by the university libraries are indexing, abstracting, bibliographic, CAS, SDI, Internet and CD-ROM.

Table-2: Information Retrieval Services - ' Faculty and Research Scholars Opinion'

Information Services	Faculty Opinion		Research Scholars Opinion'	
	Skewness	Chi-Sqare	Skewness	Chi-Sqare
Service Awareness	-0.439	150.65	-0.342	87.63
Indexing and Abstracting	-0.473	79.57	-0.174	35.43
Bibliographic	-0.261	56.98	-0.080	39.87
Newspaper Clipping	-0.226	47.96	-0.220	36.88
Current Awareness	-0.179	54.87	-0.112	34.45
SDI	-0.226	93.69	-0.006	35.25
Photocopying	-0.717	110.39	-0.519	28.66
Reference	-0.363	102.91	-0.332	69.55
Online Catalogue	-0.075	15.9	-0.064	14.41
CD-ROM	0.055	5.65	-0.090	5.48
E-Mail	0.053	3.89	-0.090	13.71
Internet	-0.107	4.92	-0.303	29.87
Users Education	0.104	21.93	-0.094	40.72
Retrieval Efficiency	0.108	97.81	-0.027	101.98
Resource Sharing	0.216	35.51	0.229	19.08
Circulation Service	-0.755	60.36	-0.620	38.33

Table 2 shows the responses of teaching faculty members and research scholars towards Information Retrieval Services offered by the University Libraries in Karnataka. It is traced from the study that, majority of the Teaching faculty members are well aware about the information services extended to the user community by the university libraries in Karnataka (sk-0.439). From the table, it is clear that, the Teaching faculty are fully satisfied with the effective library services mainly Photocopying (sk-0.717) and Library

Circulation services (sk-0.755). Further Teaching faculty also satisfied to a greater extent with Indexing and Abstracting (sk-0.473) and Reference Services (sk-0.263) offered by the university libraries in Karnataka. However, the Teaching faculty could not make any demarcation about the satisfaction or dissatisfaction of information services viz. Bibliography (sk-0.261), Newspaper Clipping (sk-0.276), Current Awareness (sk-0.179), SDI (sk-0.226), Online Catalogue (sk-0.075), CD-ROM (sk0.055), E-mail (sk0.053), Internet (sk-0.107), User education (sk0.104), Retrieval efficiency (sk0.108) and Resource sharing (sk0.216). This reveals that there is a contradiction in their statement about the awareness of services vs. their neutrality about these said services, which needs to be taken care by the Library to improve the efficiency of services and thereby provide timely user education, and orientation programmes to the user community at large. The computed Chi-square values for the information retrieval services are found to be significant at 0.01 level of significant except CD-ROM ($\chi^2=5.65$), E-mail ($\chi^2=3.89$) and Internet service ($\chi^2=4.92$).

As regards to the responses from the Research Scholars on the Information Retrieval Services offered by the University Libraries in Karnataka, majority of the Research Scholars are aware about the information services (sk-0.342). Circulation service (sk-0.620) is the most satisfied service offered by the university libraries to the Research Scholars, followed by Photocopying (sk-0.519), Reference Service (sk-0.332) and Internet service (sk-0.303). But however, the Research Scholars have failed to express their clear ideology about the many of the information retrieval services rendered by the university libraries in Karnataka namely Indexing and Abstracting services (sk-0.174), Bibliography (sk-0.080), Newspaper Clipping (sk-0.220), Current Awareness (sk-0.112), SDI (sk-0.006), Online Catalogue (sk-0.064), CD-ROM (sk-0.090), E-mail services (sk-0.090), User education (sk-0.094), Retrieval efficiency (sk-0.027) and Resource sharing services (sk0.229) as per the skewness values of the table. Most of the information retrieval services are found to be significant at 0.01 level of significance except CD-ROM Service ($\chi^2=5.48$).

4.4 Level of Satisfaction (LOS) towards Internet use Vs. Learner Characteristics

Level of satisfaction towards Internet is directly proportional to the use of Internet by the respondents. This is because, once the respondents perceive Internet as valuable information source and of research value (i.e. perceived usefulness) and easy to use, then usage of Internet will certainly increase. As the demand and expectation from Internet technology to meet their information need is met, consequently the level of satisfaction also increases.

The learner characteristics of respondents i.e. designation, age, qualification, teaching and research experience and formal training are the significant factors, that are likely to influence the level of satisfaction towards Internet, and therefore it was necessary to summarize and explore whether the change in these characteristics affects the level of satisfaction of the respondents towards Internet or not. In this context, the null hypotheses formulated for the various variables have been tested using Chi Square Test at 0.05 level of significance vide Table 3.

Table 3: LOS Vs. Respondent Characteristics

Level of Satisfaction Vs.	Chi Square Tests			Null Hypothesis
	X ² Calculated Value	Degree of freedom	Significance	
Designation	24.31	6	*	Rejected
Age	5.18	4	**	Accepted
Qualification	13.161	2	*	Rejected
Teaching Experience	13.52	6	*	Rejected
Research Experience	4.71	4	**	Rejected
Formal Training	13.85	4	*	Accepted

* Results are significant ** Results are not significant

Thus from the results, it is revealed that, except age and formal training, there is a strong relationship between Level of satisfaction and respondent characteristics and are dependent on each other.

4.5 Use of Internet Vs. Level Of Satisfaction

The variables Use of Internet (UOI) and Level of Satisfaction (LOS) are the two major dependent variables of the research study. The results of the test show that, there is very high correlation between variables UOI and LOS. The co-efficient of correlation is also statistically significant showing high positive correlation, which implies that higher the level of satisfaction, higher will be the use of Internet.

Higher UOI > Higher LOS

Lower LOS < Lower UOI

In this context, the Technology Acceptance Model (TAM), perhaps one of the most frequently tested models in MIS literature, can be cited. TAM defined the constructs of perceived usefulness as 'the degree to which a person believes that using a particular system would enhance his or her job performance', and perceived ease of use as 'the degree to which a person believes that using a particular system would be free of effort' (Davis, 1989).

To evaluate multiple effects a set of four variables age, teaching and research experience and level of satisfaction were put to Regression Analysis to see the multiple effects on variable Use of Internet. The results of regression analysis are presented in Table 4. The result of Regression analysis shows that, the four variables age, teaching and research experience and level of satisfaction put together explains 39 per cent of variance in variable UOI. The variable LOS has emerged as the most affecting the dependent variable. That means affecting the dependent variables i.e. use of Internet. Therefore, utmost care has to be taken so that users derive maximum satisfaction.

By taking regression co-efficient, a mathematical model can be proposed as

$$\text{UOI} = 30.749 + 0.772(\text{LOS}) + 0.491(\text{RE}) + 0.384(\text{TE}) + 0.0992(\text{Age})$$

Table 4: Regression Analysis of Use of Internet in relation to Independent Variables

Independent Variables	Un-Standardized Co-Efficient		Standardized Co-Efficient	T	Sig.	R Square
	b	Std. Error	b			
Constant	30.749	2.936	-	10.474	0.000	0.394
Age	9.921e-02	0.070	0.074	1.417	0.157	
Research experience	0.491	0.187	0.134	2.622	0.009	
Teaching experience	0.384	0.145	0.168	2.652	0.008	
Level of satisfaction (LOS)	0.772	0.042	0.571	18.398	0.000	

R Square value (0.394) shows that, the four variables taken together explain 39.4% of variance in the Use of Internet. These four variables are significant with respect to use of Internet. The model suggests that, the most contributing factor is LOS (Level of satisfaction). Hence any step to improve the UOI, LOS should be given high priority, followed by other variables. One unit increased in level of satisfaction will increase seven units in use of Internet (Jange and Others, 2006).

5. Conclusion

The success and sustenance of libraries in future depends upon their capability to be more dynamic and continually to prove their value in academic and research endeavor. The only alternative left to the libraries is to adopt TQM in all the integrated library activities and services and thereby contribute to the productivity and accomplishments of the patron needs. The future will require the librarians to reorient themselves, think creatively and adopt the new technology to generate services and resources where skills of structuring and organizing resources are put to its best use. The agencies of Government of India like National Assessment and Accreditation Council (NAAC) and AICTE should make sincere efforts for framing National Information Policy that act as not merely a base but mandatory on the part of libraries in the country to meet the standards to ensure quality based services and use of technology for development and visibility of librarianship. With myriad of disorganized and unverified information, the web is in need of librarians who are trained in the structuring and organizing information, have the ability to locate and evaluate information resources and have in-depth subject expertise to create digital culture with a motto to provide timely and comprehensive information at the desk top of the users. This will enhance the optimization of IT based resources especially Internet resources and derive satisfaction towards Internet accessibility.

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