

# Re-engineering of Systems and Services of Selected Technical Institute Libraries in Assam: A Qualitative Study

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*The purpose of the paper is to touch upon the basic principles and importance of re-engineering and its impact on quality management of libraries in some selected technical institutes of Assam in aspects of users' satisfaction. Libraries have always had the ability to respond to the challenges of technology, from the printing press of the middle age to the print explosion of 20<sup>th</sup> century and to the digital 'print' of today. With the changing world ICT plays a dominant role in today's library and information centers. But the academic libraries of Assam especially in technical institutions except few are lagging behind. Explains the status of re-engineering of some major libraries and their services lacuna. Suggests some remedial measures for improvement in the context of digital environment. The paper provides ideas how a quality system can be established through re-engineering of library setup and services.*

**Keywords :** Re-engineering, Library Services, User Satisfaction, TQM, Technical Institutes, ISO, Quality Assessment, Accreditation

## 1. Introduction

Today's technical library must be multi-disciplinary, multi-mode, multi-media as the technical education demands of it to play the supporting role. Achieving effectiveness in library services is a basic responsibility of library management. On other side, the user satisfaction is the challenging concept in the field of library and information science. [5]Technology has impacted libraries significantly and especially the academic libraries have faced a great deal of change in recent years. Users have more options than ever for filling their information needs. The role of library is becoming less that of collecting and more that of a knowledge navigator, a facilitator of retrieval and dissemination. Due to the internationalization of higher education the role of library is becoming very much crucial in respect of information availability and its retrieval.

The technical libraries except few of Assam are facing two major threats: a global digital environment and increasing competition. They must improve the quality of their services in order to endure. The need to understand what library customers expect in terms of service quality is now necessary for good management. ISO 9001 is one of the possible ways to manage quality in a library which emphasize the continuing improvement of services, a process oriented approach and user oriented focus.

Re-engineering of library service stands for and focuses on infrastructure and organizational development, collection development, quality control and management, identification of shortcoming and fulfillment of their requirements, application of automation and ICT, Electronic and online Information Services, Internet Information Services, Digital library, Inter-Library Loan/ Document Delivery Services, maintenance, Importance and active role of parent body and government's policy, professional development, training- workshop and orientation program both for professional staff and end users, importance on social and societal responsibility, sustainable development, etc.[9] Re-engineering is a principle and technique of quality management practice which is equivalent to TQM, and Continuous Quality Improvement (CQI) though it is very slow in our Assam in comparison to other parts of the country.

## 2. Concept of Re-engineering of Library & Total Quality Management (TQM)

Re-engineering can be defined as the fundamental rethinking and radical redesign of a system and process to achieve dramatic improvements and performance, such as a cost, quality, service and speed. In other words, it is not the technology itself which defines re-engineering, but rather how that technology is used as part of the redesign of a system and services. [11]

Re-engineering is an approach, which involves radical re-structuring in the systems, processes or philosophy of the organization in the face of an environmental change. The re-defined goals of engineering education should focus on: Quality, Excellence, World- class, International competitiveness, appropriate engineering education, identification of stakeholders, and fulfillment of their requirements, emerging demands of profession, professional ethics and human values, social and societal responsibility, sustainable development, etc. [2]

### ⇒ Re-engineering vs. TQM Programs

- ☞ Re-engineering seeks improvements.
- ☞ TQM seeks ongoing incremental improvements.
- ☞ Reengineering and TQM are not mutually exclusive.

TQM is another zero-error approach towards management of change and improving the quality of processes and systems in an organization. TQM calls for the principle of 'continuous improvement' with regard to all the areas of the organization. [1] Re-engineering of engineering institute library for the 21st century is a challenging option for better and maximum use of collection holding available in both print and online version. There is a basic difference between the libraries of 20<sup>th</sup> century and 21<sup>st</sup> century relating to reengineering and human resource development. [5] These are as follows-

<b>Library as supportive (20th Century)</b>	<b>E-Library as supportive (21st Century)</b>
☞ Skill & Technology	+ Knowledge & Management
☞ Formal education learning	+ Non-/in-formal education +Lifelong
☞ Passive participation	+ Active participation
☞ Educational technology	+ Information technology
☞ Institutional component	+ Industry component
☞ Education	+Education +Training, Workshop, Seminar
☞ Quantitative expansion	+ Quality assurance and control
☞ Traditional instruction & Print media	+ Web-based instruction & E-media
☞ Traditional libraries	+ Electronic and Digital Libraries
☞ Stand alone idea	+ Consortia idea

### 3. Strategies of Re-engineering for Automation and Digitization of Library Service

In today's library re-engineering entails automation, introduction of online journals, in-house databases of different collections, Internet information services, man power development, sufficient financial grants, proper planning and management, bar-coding or RFID tags use in books and back vols. of journals for expeditious transactions in circulation counter or with the re-engineering of networking technology, the library could be extended to the users community at their desktops without much physical environ to justify the realization of five laws of library science laid down by Dr. S.R. Ranganathan [6]. With the help of library automation package, the house keeping tasks can be performed faster with extra benefits in terms of time saving and multiple report generation which is unattainable so easily in the manual system. The automation system facilitate users to use the library resources and services with very little staff assistance if the collection is properly arranged in the stacks and orientation program is conducted for users for better use of resources. Library's another responsibility is to create a web site as a forum to brief about its activities, rules and regulations, details of contact person to avail each and every service [5]. Digital library comprises of electronic resources subscribed to consortia in-house databases.

### 4. Quality Assessment and Accreditation for Re-engineering of Library Service

The ISO 8402 defines: "Quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied need." [1] The concept of quality assessment of library service in libraries of technical institutes of India is developing. But in Assam, the same is not visible particularly in libraries of technical Institutions except few numbers is a very slow. The reasons for this slowness are the lack of quality policy as well as responsibility of quality assurance and accountability of the parent body. Two regulatory bodies in the field of higher education – The University Grant Commis-

sion (UGC), and the All India Council for Technical Education (AICTE) had created in 1994, two autonomous agencies, viz., the National Assessment and Accreditation Council (NAAC) and the National Board of Accreditation (NBA), respectively. Re-engineering is also defines the quality assessment and accreditation of the library system and services. [5]

## 5. Objective of the Study

The study has been conducted with the following objectives:

- To collect and understand the status of organization, management, facilities of selected libraries.
- To asses the existing state of affairs of the libraries in respect of its services and general satisfaction of users regarding the library services in selected technical institutes of Assam.
- To find out the ways and means to improve library services.

## 6. Methodology

The study was conducted by collecting data during the month of July 2009 with the help of a questionnaire followed by personal interview. The selected libraries were personally visited by us to ascertain the real situation prevailing in this regard. The data was collected from 240 users and six librarians of first grade technical Institutes of Assam. The data so collected was tabulated in 3 tables and inferences have been drawn from the analysis of these tables.

## 7. Selected Technical Institute Libraries and Their Existing Resources

Status of infrastructure development and services of some selected libraries of Assam are discussed below in brief:

- **Assam Engineering College Library (AEC Library), Guwahati:** The Assam Engineering College recognized by the AICTE was established in 1955 and was the first undergraduate college in the entire North Eastern India. The college library equipped with good furniture with insufficient space, manpower, and lack of budget even to purchase required new editions of books and print journals. The library has just moved for automation that too unhurried in progress. The present scenario at AEC with regard to the ICT infrastructure position is very dismal.
- **Jorhat Engineering College Library (JEC Library), Jorhat:** The JEC established in 1960 is also one of the premier technical colleges recognized by the AICTE. The college library is without its own building attached to administrative building having insufficient funds for purchasing new books and journals. The library is suffering from space problem even for keeping book stacks and reading

tables. Though the library is very old in terms of years still the library has no sign of library automation. The basic problem is lack of financial grants. [12]

- **North East Institute of Science and Technology (NEIST) Library, Jorhat:** The NEIST formerly (RRL), Jorhat was established in 1961, as one of the multidisciplinary laboratories of CSIR New Delhi. The Institute is ISO 9001:2008 certified for its R&D, consultancy and excellent services in different sections. The library is very rich in collection of print as well as online journals, research papers, theses and project reports. Though, the book processing and circulation counter is yet to be fully automated, the library is very good enough as of feedback from research scholars and faculties. It has its own building with sufficient space, furniture and fully air conditioned.[10]
- **National Institute of Technology, Silchar (NIT Silchar) Library:** The NIT Silchar, an Institute of National Importance under the NIT Act was established in 1967 as a Regional Engineering College (REC), as a joint venture of Government of India and Government of Assam under the administration of a society registered under society registration Act XXI of 1860. In year 2002, it was upgraded to the status of an NIT from REC and bestowed with the status of Deemed University by the Ministry of Human Resource and Development. The Central Library, one of the important central facilities of the Institute, currently has the subscriptions of e-resources through INDEST consortia and E-Books facilities. [8]
- **The Central Library, IIT Guwahati:** The Central Library, IIT Guwahati, established in 1994, a gateway to knowledge resources is being built to international standards and spreads over four floors with centrally air- conditioned, well -protected with fire alarm, bar-coded circulation counter, specialised collections of Books, Journals & Non-book materials as well as online resources. The library has computerized all its operations using LibSys 4 software and provides open access to the collection through OPAC, Web OPAC and library web page. It is equipped with good furniture, sufficient stacks and ICT infrastructure. This is the very much used library among all the surveyed libraries. There are 5 nos. of OPAC for users inside library. The computer lab is in the same building equipped with 130 nos. of terminals for users for accessing Internet and online resources. JCCC- J Gate Custom Content for Consortia, is a portal for accessing and sharing journal literature subscribed by IITs, IISc and IIMs, individually and collectively through INDEST Consortium. This is a common gateway to access 6326 e-Journals from 1309 publishers. The library LAN is connected to the institute intranet, thus providing accessibility of library resources to all parts of the campus including students' hostel, faculty wing and residential area. [3]
- **The Central Library, Tezpur University:** The Tezpur University established in the year 1994 by the Government of India is an institute of national importance with well established library. The library has its own building equipped with sufficient furniture and collection of books and journals both in print and online database. The university authority is very much intent regarding re-engineering of the library with sophisticated equipments and required ICT infrastructures. 740 titles of e jour-

nals, two databases and one knowledge portal are available through INDEST-AICTE Consortium and other publishers. The UGC-Infonet Consortia of INFLIBNET Center is providing access facility to 5888 e journals, eight databases and one gateway portal. Library users can access book database, theses database, journal database, e-journals and other e-resources from any terminal within the University campus. [4]

## 8. Data Collection and Response Rate

The survey was conducted in the above mentioned technical institutes' libraries during June July, 2009. During that period 366 printed journals were distributed to the group of users i.e. under graduates, post graduates, research scholars, and faculties of the Institutes. A total of 246 questionnaires were received. The overall response rate was 67%.

## 9. Organizational Status of Surveyed libraries:

Table- 1: Organizational Status of the Surveyed Libraries (as on July 2009)

Physical Facilities & Equipments	Measuring Statements	AEC Library	JEC Library	NEIST Library	NIT Library	IITG Library	TU Library
	Excellent (%)	---	---	56	---	54	48
Very Good (%)	---	---	17	3	30	30	
Good (%)	75	40	27	77	16	22	
Poor (%)	25	50	---	20	---	---	
Very Poor (%)	---	10	---	---	---	---	
Can't Say (%)	---	---	---	---	---	---	
Automation, Internet & E-resources	Excellent (%)	---	---	49	---	50	45
	Very Good (%)	---	---	34	---	37	35
	Good (%)	12	---	17	13	23	20
	Poor (%)	50	---	---	30	---	---
	Very Poor (%)	38	---	---	57	---	---
	Not available (%)	---	100	---	---	---	---
Users' Satisfaction	Highly Satisfied (%)	---	---	25	---	20	30
	Satisfied (%)	38	10	75	20	80	70
	Satisfied to some extent (%)	62	50	---	17	---	---
	Dissatisfied (%)	---	40	---	50	---	---
	Strongly Dissatisfied (%)	---	---	---	3	---	---
	Can't Say (%)	---	---	---	---	---	---

### 9.1 Survey Findings

A qualitative and quantitative survey was conducted during July 2009 in some selected technical institute libraries of Assam regarding infrastructure and equipments, services provided, automation, digital environment, collection both in print and electronic version, provision of online database, total quality

management, etc. The organizational data and status are tabulated in the table no.1 and found that the libraries governed and managed by the central govt. are reflecting good results due to rich financial grants. But the libraries of colleges namely AEC and JEC are not even in a position to purchase new editions of books. Still it is a distant dream to purchase the required equipments for online resources and institutional repository consequential to digital library. Though the NIT library is funded by central government the collection development is not satisfactory according to users. They are deprived of new editions of books according to course curriculum. The libraries of AEC, JEC, and NIT have no internal quality audit system. Due to sufficient budget the collection of IITG library and Tezpur University Library is good enough in comparison to other libraries. The IITG library is looking to strengthening and formalizing the student feedback process. As on direct interview there are no sufficient professional staffs in all libraries. The table no. 1 shows that the IITG library has more users in number than any other surveyed libraries due its expeditious services, fully ICT environment, and congenial atmosphere wherein the users gets more convenient to find out the required books and journal articles within a short span of time. Due to sufficient fund books and journals purchasing and processing is ongoing process over the year.

#### 10. Status of Physical Facilities and Services of Surveyed Libraries

Table -2: Status of facilities and services provided in the selected technical libraries of Assam as on July 2009

Sl.No	Facilities & Services	AEC Library(Y/N)	JEC Library(Y/N)	NEIST Library(Y/N)	NIT Library(Y/N)	IITG Library(Y/N)	Tezpur University Library(Y/N)
1	Library rules & regulations	Y	Y	Y	Y	Y	Y
2	Sufficient furniture	Y	N	Y	Y	Y	Y
3	Adequate space for collection	N	N	Y	N	Y	Y
4	Sufficient professional staff	N	N	N	N	N	N
5	Photocopying facility	N	N	Y	N	Y	Y
6	Library automation	O P	N	Y	OP	Y	Y
7	Library software	Y	N	Y	Y	Y	Y
8	Internet service to users	N	N	Y	N	Y	Y
9	OPAC / WebOPAC	N	N	Y	N	Y	Y
10	Orientation & User education	N	N	Y	N	Y	Y
11	Institutional R- database	N	N	N	N	N	N
12	Web resource service	N	N	Y	N	Y	Y
13	Bar-coded circulation system	N	N	N	N	Y	N

14	Library equipped with RF-ID	N	N	N	N	N	N
15	Campus networking	N	N	Y	N	Y	Y
16	Digital library module	N	N	Y	Y	Y	Y
17	Open source software	N	N	N	N	N	Y
18	Users' feedback system	N	N	Y	N	OP	Y
19	Internal quality audit system	N	N	Y	N	Y	Y
20	ISO certified or registered?	N	N	Y	N	N	N
*OP= On Process; Y=Yes; N= No							

Source: Questionnaire, Personal interview, and Institutes' webpage

### 10.1 Survey Findings

The facilities and services provided in AEC, JEC and NIT libraries are not sufficient. There is dearth of furniture i.e. seating arrangement, book stacks, and space for collection. The JEC library is equipped with very old arrangements for keeping its collection. There is no reading room. The library is very congested. All the libraries are facing shortage of manpower to bestow quick services to the users. The libraries of AEC, JEC and NIT have no photocopy facility inside for users. There is no sign of automation, Internet service, campus networking in JEC library after 50 years of its establishment. Though the AEC and NIT libraries already have started automation it is not moving in full swing. No Internet service, campus networking for extended library services such as web OPAC for users community staying in the campus. The facilities required for IT infrastructure is very poor in these libraries and the libraries are yet to be users' oriented regarding electronic and digital services. The physical facilities and services provided in IITG, NEIST and Tezpur University libraries are in satisfactory level. All three libraries with regular collection development are satisfying its users. The libraries are automated and equipped with in-house databases and online resources which can be accessed through LAN connected to all wings of the campus. There are adequate collection of books and journals both in print and online. Internet and online services are open to all users according to their convenience. The digital sections of these libraries are contributing a lot to the users in terms of latest knowledge in their respective fields. No libraries surveyed have Institutional repository. Sufficient nos. of Internet access points are facilitated to the users in these three libraries. Among the institutes mentioned above only NEIST library is ISO certified for its excellent service and holdings fulfilling the users' needs and dynamic role towards the achievements of institute's goal. The IIT Library is automated and circulation activities are acted upon barcode software which minimizes the time of transactions and users.

## 11. Users' Sample Feedback on Infrastructural Component of Surveyed Libraries

Table- 3: Users' Feedback on Infrastructural Components (as on survey during July 2009)

Physical Facilities & Equipments	Measuring Statements	AEC Library	JEC Library	NEIST Library	NIT Library	IITG Library	TU Library
	Excellent (%)	---	---	56	---	54	48
Very Good (%)	---	---	17	3	30	30	
Good (%)	75	40	27	77	16	22	
Poor (%)	25	50	---	20	---	---	
Very Poor (%)	---	10	---	---	---	---	
Can't Say (%)	---	---	---	---	---	---	
Automation, Internet & E-resources	Excellent (%)	---	---	49	---	50	45
	Very Good (%)	---	---	34	---	37	35
	Good (%)	12	---	17	13	23	20
	Poor (%)	50	---	---	30	---	---
	Very Poor (%)	38	---	---	57	---	---
	Not available (%)	---	100	---	---	---	---
Users' Satisfaction	Highly Satisfied (%)	---	---	25	---	20	30
	Satisfied (%)	38	10	75	20	80	70
	Satisfied to some extent (%)	62	50	---	17	---	---
	Dissatisfied (%)	---	40	---	50	---	---
	Strongly Dissatisfied (%)	---	---	---	3	---	---
	Can't Say (%)	---	---	---	---	---	---

Source: Questionnaire, Personal interview and Institutes' webpage

### 11.1 Survey Findings

- **Physical facilities & Equipments:** The table no.3 shows that 75% of users' remarks go for good and 25% for poor in AEC library regarding physical facilities and equipments. It means that users are satisfied to some extent. While according to 40% users feel physical facilities as good and 50% say poor as well as very poor according to 10% indicates that users in general are not satisfied. The NIT library is somewhat good in physical infrastructure. The 77% of users go off good and 3% go off very poor in support of physical facilities. It means the NIT library is a little ahead in comparison to AEC and JEC Library. The table indicates that the libraries of NEIST, IITG and TU have very good physical facilities and ICT equipments. We can observe that 48% to 56% users out of total respondents remark the infrastructural facilities as excellent. It shows that these three libraries are well established in respect of physical facilities and required equipments.
- **IT Application:** The status of IT applications in the libraries of AEC and NIT are very dismal. The AEC library has just started its automation after a long gap from its inception. The service is yet to

open to the users due to insufficient computer terminals and shortage of manpower. There is no sign of IT application in the JEC library. It looks as if there is no stair to go for automation as well as digitization for another one decade.

The NEIST, IITG and TU libraries are progressing in application of IT in every aspect of its services. Around 50% users out of respondents are saying that the IT application for automation, Internet service, and e-resources retrieval is excellent and around 35% says very good IT infrastructure and a very less nos. of users (around 20%) go off good in this respect.

- **Users' Satisfaction:** As of overall satisfaction regarding library systems and services 38% users out of respondents of AEC library are satisfied and 62% are satisfied to some extent. In JEC library 50% users are no so satisfied and 40% are satisfied while only 10% are satisfied with collection of book bank in particular. Though the NIT is of national importance, 50% users are dissatisfied with its physical facilities, collections, It applications and library staffs attitude. Only 20% users are satisfied with the library as a whole while 3% are strongly dissatisfied. From 20% to 30% users are highly satisfied with library in NEIST, IITG and Tezpur University. A very reasonable percentage of users are satisfied with the libraries. It is from 65% to 80% are in favor of satisfaction. It means the users of these three libraries are satisfied as a whole on infrastructural components.

## 12. The Problems Users Encountered

The study reveals that most problems users encountered in AEC, JEC and NIT libraries are concerned to insufficient and out dated collection, library material inadequacy, inconvenient accessibility, and insufficient space for study as well as service mind. The problems the users found the books are not properly arranged in shelves and not re-shelved in time.

The users in the Libraries of, IITG and Tezpur University libraries are also in trouble to retrieve the books on shelves, though OPAC shows availability of in the library. In the libraries of JEC and NIT the few users are not satisfied with staff's attitude and behavior. The comments are like" Some staff are impolite; some staff don't have service mind' or "some are not courteous". The common view of all the users of AEC, JEC, and NIT libraries are that the libraries are lagging behind in application of modern technology to the systems and services which can feed the users with recent edition of new knowledge in their respective fields.

Few users of NEIST, IITG and Tezpur University are not fully satisfied; the reason is that it is natural tendency of people to wish for more than they have.

### 13. Conclusion and Suggestions

The library and information setting is rapidly undergoing radical change to meet the users' requirement very fast and accurately. The digital age changed the face of libraries forever and libraries must continue to change if they are to remain viable and respected part of education.

The results reveals that most problems users encountered are related to library materials, inadequacy, outdate resources, inconvenient accessibility. The AEC library, JEC Library and NIT Library are facing two threats: a global environment and increasing competition. They should improve the quality of their systems and services in order to subsist. Re-engineering is the need of hour in all three Institutes' libraries to reduce the gap between users' expectations and actual service provided. In addition, the users want more effective remote service access with sufficient computer networking, online database facility in the two engineering colleges and NIT library. Nevertheless, we hope that the government and concerned institute authority should re-focus on library systems and services for reengineering to achieve the actual goal. The technical colleges should have good infrastructure facilities and scopes of necessary assessment and step forwarding planning and management to survive in the era of competition so that quality and quantity go hand in hand. If there is no decent infrastructure in institutes, they would not be able to turn out decent man power.

After reviewing the results it is found that the library should allocate resources to improve for good service quality. In AEC and NIT libraries more computer terminals, Internet access points should be provided. The JEC library should give proper force to implement IT in the library as early as possible. The LIS professionals must be creative and innovative in order to serve their users community to the fullest. They have to provide their users greater access to in-house as well as online resources. The IITG, TU, and NEIST libraries have implemented maximum facilities to reach out to the users to draw them into the library either physically or virtually. The users also need to be trained how to utilize the library resources for maximum result. How the library workers meet the above challenges in the next decade and beyond will determine the viability of the library. In conclusion it may be suggested that one must be think of library systems and services to take advantage of, and cope with, the digital age in the present day global context.

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