



USE OF ICT AND ITS IMPACT ON THE QUALITY OF LIBRARY SERVICES AND FACILITIES: A CASE STUDY OF DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY (APJAKTU) AND AMBALIKA INSTITUTE OF MANAGEMENT AND TECHNOLOGY CAMPUS (AIMT) IN LUCKNOW

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Abstract

Information and Communication Technology (ICT) has revolutionized the way academic libraries operate and provide services to their users. ICT has transformed academic libraries into dynamic institutions that offer a wide range of digital resources and services to their users. In this section, we will explore the role of ICT in the development of academic libraries. A library is a place where individuals can access various types of information and knowledge resources. In the context of education, libraries play a crucial role in promoting learning, research, and innovation. A well-equipped library can enhance the quality of education and provide students with the tools they need to succeed academically and professionally. ICT has transformed academic libraries into dynamic institutions that offer a wide range of digital resources and services to their users. By facilitating access to digital resources, collaborative learning, library management, information literacy, and research support, ICT has played a crucial role in the development of academic libraries. The present study mainly emphasis on the quality of ICT based Services in Dr. A.P.J. Abdul Kalam Technical University (APJAKTU) And Ambalika Institute of Management and Technology Campus (AIMT) In Lucknow.

Keywords: ICT, Quality Indicators, Library Services, Library Facilities, engineering Colleges

Introduction

The role of the library in education has been extensively studied and documented in academic literature. Research shows that libraries can:

Promote academic success: Studies have shown that students who have access to a well-equipped library are more likely to achieve academic success. According to a report by the American Library Association, students who frequently use libraries score higher on standardized

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tests than those who do not.

Encourage independent learning: Libraries provide students with access to various resources, including books, journals, and multimedia materials, which can be used for independent learning. This encourages students to take responsibility for their own learning and develop critical thinking skills.

Facilitate research and innovation: Libraries play a crucial role in facilitating research and innovation. They provide researchers with access to a wide range of resources, including books, databases, and archives. This helps researchers to stay up-to-date with the latest developments in their field and promotes innovation.

Promote digital literacy: Libraries also promote digital literacy by providing access to computers, internet, and digital resources. This helps students to develop digital literacy skills and prepares them for the digital age.

Libraries play a vital role in promoting education and supporting lifelong learning. A well-equipped library can enhance the quality of education, promote academic success, encourage independent learning, facilitate research and innovation, and promote digital literacy.

Quality of Libraries

Quality is a crucial concept in the context of libraries, as it relates to the ability of libraries to meet the needs and expectations of their users. In the past few decades, there has been a growing emphasis on the importance of quality management in libraries, with many libraries adopting quality management practices to enhance their services and operations.

The quality concept of libraries has been extensively studied and discussed in academic literature. Some of the key aspects of quality in libraries include:

1. **User satisfaction:** The ability of libraries to meet the needs and expectations of their users is a crucial aspect of quality. Libraries that focus on user satisfaction are more likely to attract and retain users.
2. **Collection development:** The quality of the collection is another crucial aspect of library quality. A well-curated collection that meets the needs of the users can enhance the reputation of the library and promote user satisfaction.
3. **Accessibility:** The accessibility of library services and resources is a crucial aspect of quality. Libraries that are accessible to all users, including those with disabilities, can promote equity and inclusion.
4. **Staff competencies:** The competencies of library staff are a crucial aspect of quality. Libraries that invest in the training and development of their staff are more likely to provide high-quality services and resources to their users.
5. **Technology:** The use of technology is another crucial aspect of library quality. Libraries that adopt and leverage technology to enhance their services and operations can provide users with innovative and efficient services.

The quality concept of libraries is a multifaceted concept that relates to the ability of libraries to meet the needs and expectations of their users. By focusing on aspects such as user satisfaction,

collection development, accessibility, staff competencies, and technology, libraries can enhance their quality and provide high-quality services and resources to their users.

Impact of ICT on Library Services and Facilities

The impact of ICT on library services and facilities has been widely studied and documented in academic literature. Some of the key findings include:

Improved user satisfaction: Studies have shown that libraries that leverage ICT to provide digital resources and services to their users have higher levels of user satisfaction (Hernon & Altman, 2010).

Enhanced library efficiency: ICT has enabled libraries to streamline their operations and improve efficiency, resulting in cost savings and improved service quality (Johnson, 2013).

Increased library usage: The availability of digital resources and services has resulted in increased library usage, with many libraries reporting higher levels of user engagement (O'Connell, 2013).

The use of ICT has had a significant impact on library services and facilities. By facilitating access to digital resources, library management, user services, information literacy, and space utilization, ICT has transformed libraries into dynamic institutions that offer a wide range of digital resources and services to their users.

Significance of the Study

Quality of library resources and services can be measured in two different ways. 1. Assessing the library service performance and comparing it with the available service standards and 2. Asking the users about their perceptions and expectations of library resources and services, and comparing them with what to find the service quality gaps. In the first case, library professionals decide the quality, but in the latter, it is the users who decide the quality. In most cases, users are more reliable than library professionals in measuring library service quality as it may bring correct results as opposed to a biased one from the other.

This study has attempted to measure the library service quality from the side of users in Dr. A.P.J. Abdul Kalam Technical University (APJAKTU) and Ambalika Institute of Management and Technology Campus (AIMT) in Lucknow.

Objectives of the Study

1. To measure the service quality in ICT of Libraries of engineering colleges in Lucknow;
2. To assess the quality of physical facilities, document collection, personnel employed, technical processes carried out and the services offered by Libraries of engineering colleges in Lucknow.
3. To assess and compare the quality of library service of ICT in between the Government and Private engineering colleges in Lucknow.

Hypothesis of the Study

H1: There exists the difference in quality of services in engineering colleges' libraries in Lucknow.

H2: There engineering college libraries need total up to up gradation.

H3: There technology used in college libraries in infantile stage.

Research Methodology

- **Research method:** The present study has used Descriptive research method.
- **Sources of Data:** The data for this study was collected from primary sources of information and secondary sources as per need of the study.
- **Sample:** As, there are only two engineering colleges viz. Dr. A.P.J. Abdul Kalam Technical University (APJAKTU) and Ambalika Institute of Management and Technology Campus (AIMT) are available in Lucknow. All the teachers and students as library users of Dr. A.P.J. Abdul Kalam Technical University (APJAKTU) and Ambalika Institute of Management and Technology Campus (AIMT) in Lucknow under study were selected as sample.
- **Questionnaire:** Questionnaire administered to the chief librarian, post graduate students and teachers of the college libraries under study and all data were collected through Google form as a means of data collection due to COVID-19 pandemic and links were available to all users through mail and other means of social media.
- **Statistical Analysis:** The SERVQUAL data includes the users' views on Expectations (E) and Perceptions (P). The mean score and standard deviation score are derived for each category.

Data Analysis and interpretation

General Analyses

User Expectations about the Libraries of engineering colleges in Lucknow

The overall mean score of the expectations (4.297 with SD 0.752) shows that most of the students and teachers agree/ strongly agree with all the items and dimensions of the expectations about the 'quality of the libraries of engineering colleges' in Lucknow. Similar results are obtained in the case of students (mean 4.293 with SD; 0.756) and teachers (mean 4.3114 with SD 0.729) and the male (mean 4.268 with SD 0.181) and female users [mean 4.309 with SD 0.738).

User Perception about the Libraries of engineering colleges in Lucknow

The average score of users' perceptions about the libraries of engineering colleges in Lucknow (mean 3.546 with SD 1.045). shows that more than half of the users have high perceptions and the remaining are having low perceptions about their Libraries of engineering colleges. Similar levels of perceptions are found in the case of students (mean 3.57, SD 1.042) and teachers (mean 3.448, SD 1.048) and the male (mean 3.445, SD 1.081) and female (mean 3.588, SD 1.025) users.

Quality of Libraries of engineering colleges in Lucknow

The analysis of the gap between expectations and perceptions of users about the libraries of engineering colleges shows that the quality of the Libraries of engineering colleges in Lucknow under study in general is low. It is evident from the gap (0.751) between the overall mean score of the user expectations (4.297) and the perceptions (3.546). It indicates that users' expectations are above their perceptions. Same view is expressed by the students (gap score -0.723) and the teachers (gap score -0.886), and the male (gap score -0.822) and female users (gap score -0.722) of the Libraries of engineering colleges in Lucknow.

Table -1
Libraries of engineering colleges in Lucknow

Variables		Perceptions (P)		Expectations (E)		Gap (P-E)
		Mean	SD	Mean	SD	
Status	Students	3.57	1.024	4.293	0.756	-0.723
	Teachers	3.448	1.048	4.314	0.729	-0.866
Gender	Male	3.445	1.081	4.268	0.733	-0.822
	Female	3.588	1.025	4.309	0.738	-0.722
Overall		3.546	1.045	4.297	0.752	-0.751

The gap score shows that the quality perceived by all the categories of users is much below to their expected quality. There are so many differences in the quality perceived by the user group from that of the others.

DIMENSION WISE ANALYSIS

In addition to the general analysis of the users' responses about the quality of the Libraries of engineering colleges in Lucknow, further analysis is made on the five dimensions of the quality of Libraries of engineering colleges in Lucknow. The perceived quality of each of these five dimensions, namely Physical Facilities, Document Collection, Library Staff, Technical Processes, and Library Service are further analyzed according to the user categories, such as status (students and teachers) and gender (male and female). The results are as follows:

Dimension 1: Physical Facilities

A library of engineering colleges is supposed to have the physical facilities like, easily accessible location, good layout, sufficient reader space, good lighting and ventilation, neat and clean library premises, spacious building and furniture etc. Adequate physical facilities are necessary for the effective use of the library resources and services. A good building with adequate space, lighting and ventilation, furniture etc. will attract the students and teachers to the library. If not, the users may hesitate to enter into the library, which in turn may affect their academic work. Not only that, the library may fail to meet the aim of maximum exploitation of the resources and services by users. Therefore, Physical Facilities is considered as one of the important dimensions of the quality of the Libraries of engineering colleges.

User Expectations

The overall user expectations shows that, majority of the users have great expectations (mean 4.456 with SD 0.636) about the physical facilities of the Libraries of engineering colleges. Similar results are obtained in the case of male (mean 4.539 with SD 0.645) and female users (mean 4.549 with SD 0.632). The expectations of the different categories of users with regard to the dimension 'Physical Facilities' in the Libraries of engineering colleges in Lucknow is shown in the table 2:

User Perception

The analysis shows that more than half of the users have good perceptions (mean 3.805 with

SD 1.032) about the Psychological Facilities available in the Libraries of engineering colleges in Lucknow. Similarly the students (mean 3.822 with SD 1.025) and teachers (mean 3.735 with SD 1.057) and the male (mean 3.759 with SD 1.048) and female users (mean 3.825 with SD 1.024) also have more or less the same view with regards to the physical facilities available in the Libraries of engineering colleges in Lucknow as given in table 2.

Quality

The analysis of the gap between the user expectations and perceptions about the dimensions 'Physical facilities' in the Libraries of engineering colleges in Lucknow shows that it has a low perceived quality (-0.741). The gap score of the different categories of users shows that the students (-0.703) and teachers (-0.895) and male (-0.781) and female (-0.724) users have a similar view with regard to the perceived quality of the dimension 'Physical Facilities' in the Libraries of engineering colleges in Lucknow.

The expectations and perceptions and the perceived quality of the dimension 'Physical Facilities' in the Lucknow is shown in the table 2:

Table -2

Physical Facilities in the Libraries of engineering colleges in Lucknow: Quality Analysis

Variables		Perceptions (P)		Expectations (E)		Gap (P-E)
		Mean	SD	Mean	SD	
Status	Students	3.822	1.025	4.525	0.657	-0.703
	Teachers	3.735	1.057	4.63	0.53	-0.895
Gender	Male	3.759	1.048	4.539	0.645	-0.781
	Female	3.825	1.024	4.549	0.632	-0.724
Overall		3.805	1.032	4.546	0.636	-0.741

It is observed that, the majority of the Libraries of engineering colleges in Lucknow functions not in separate buildings. The libraries having separate buildings are not ideally located. The reader space provided is inadequate due to lack of sufficient space.

Dimension 2: Document Collection

The Libraries of engineering colleges have to procure and maintain a good collection of textbooks, reference books, journals and other sources of information for supporting the academic work of students and teachers. Library collection is the basis of all information services offered in a library. The library use is greatly dependent on the collection available there. Hence the collection available in a Libraries of engineering colleges affects the quality of education imparted there. The collection should be organized properly and it must be easily retrievable also. The new documents acquired in the library should be exhibited separately and a list of new additions must be well circulated. Not only that, the Libraries of engineering colleges have to prepare necessary tools to connect each student and teacher with his/her needed documents easily. So, the collection, its organization, access, retrieval, provision for loan, etc. in the Libraries of engineering colleges are

very significant. Therefore, document collection is considered as an important dimension to be considered while assessing the quality of the Libraries of engineering colleges.

User Expectation

The overall expectations of the users with regard to the dimension 'Document Collection' in the Libraries of engineering colleges in Lucknow show that majority of the users have high expectations (mean 4.225 with SD 0.779) about the document collection in the Libraries of engineering colleges. Similar views are found in the case of the students (mean 4.223 with SD 0.776) and teachers (mean 4.192 with SD 0.773) and the male (mean 4.178 with SD 0.823) and female users (mean 4.25 with SD 0.758) in this regard.

User Perceptions

More than half of the users have perceived (mean 3.426 with SD 1.072) that adequate collection of documents are available in their Libraries of engineering colleges. Similar results are obtained in the case of the students (mean 3.466 with SD 1.067) and teachers (mean 3.226 with SD 1.075) and the male (mean 3.292 with SD 1.118) and female users (mean 3.483) with SD 1.047) with regard to 'Document collection' available in the Libraries of engineering colleges in Lucknow.

Quality

The analysis of the gap between the user expectations and the perceptions about the dimension 'Document Collection' in the Libraries of engineering colleges in Lucknow shows that it has a low perceived quality (-0.799) compared to their expectations. The gap score of the different categories of users shows that, the students (-0.767) and teachers (-0.926) and the male (-0.887) and female users (-0.762) also have similar views with regard to the perceived quality of the dimension 'Document Collection' in the Libraries of engineering colleges in Lucknow.

The user expectations, the perceptions and the perceived quality of the dimension 'Document Collection' in the Libraries of engineering colleges in Lucknow is shown in the table 3:

Table -3

Document Collection in the Libraries of engineering colleges in Lucknow: Quality analysis

Variables		Perceptions (P)		Expectations (E)		Gap (P-E)
		Mean	SD	Mean	SD	
Status	Students	3.466	1.067	4.223	0.776	-0.767
	Teachers	3.226	1.075	4.192	0.773	-0.926
Gender	Male	3.292	1.118	4.178	0.823	-0.887
	Female	3.483	1.047	4.245	0.758	-0.762
Overall		3.426	1.072	4.225	0.779	-0.799

The comparison of the gap score shows that, in different user categories, the perceived quality of the dimension 'Document Collection' in the Libraries of engineering colleges in Lucknow is comparatively higher to the students and female users in the category.

Dimension 3: Library Staff

Properly qualified and adequately experienced staff is a prerequisite for the efficient functioning of Libraries of engineering colleges. They procure, process, organize and provide needed document collection and render services to students and teachers. They are responsible for making the documents serviceable. They have to understand the user needs, develop the collection suitable for meeting these needs, process and organize the collection, help the users, answer user queries, develop confidence among users, provide needed attention to the users, etc. For that, the library staff should have sufficient general as well professional qualifications, knowledge and experience about the collection, facilities, library operations and services. The students and teachers, especially the new comers, need special attention from staff in the Libraries of engineering colleges. It is the duty of the library staff to provide the information requirements of students and teachers, otherwise their academic work will be adversely affected. As the performance of library staff greatly affects the use of library resources and services by students and teachers, the library staff is treated as one of the important dimensions of Libraries of engineering colleges' quality.

User Expectations

In the case of the dimension 'Library Staff', the majority of the users highly expect (mean 4.17 with SD 0.815) that the Libraries of engineering colleges should have adequate numbers of qualified and experienced staff to assist the users as well as to do the library works properly and timely. The users in the different categories such as students (mean 4.167 with SD 0.808) and teachers (mean 4.183 with SD 0.84) and the male (mean 4.13 with SD 0.848) and female users (mean 4.187 with SD 0.799) also have similar view with regards to Libraries of engineering colleges in Lucknow.

User Perceptions

The overall mean showed that more than half of the users have high perception (mean 3.568 with SD 0.989) about the dimension 'Library Staff' in the Libraries of engineering colleges in Lucknow. There are not much difference in the view of the different categories of users such as the students (mean 3.584 with SD 0.99) and teachers (mean 3.503 with SD 0.978) and the male (mean 3.438 with SD 1.031) and female users (mean 3.622 with SD 0.964) with regard to the library staff employed in the Libraries of engineering colleges in Lucknow.

Quality

The analysis of the gap between the user expectations and the perceptions about the dimension 'Library Staff' in the Libraries of engineering colleges in Lucknow shows that it has a low perceived quality (-0.602) compared to their expectations. Similar view are found to the different categories of users such as the students (-0.583) and teachers (-0.68) and the male (-0.692) and female users (-0.565) about the perceived quality of the dimension 'Library Staff' in the Libraries of engineering colleges in Lucknow.

The user expectations, the perceptions and the perceived quality of the dimension 'Library Staff' in the Libraries of engineering colleges in Lucknow is shown in table 4.

Table - 4

Library Staff in the Libraries of engineering colleges in Lucknow: Quality Analysis

Variables		Perceptions (P)		Expectations (E)		Gap (P-E)
		Mean	SD	Mean	SD	
Status	Students	3.584	0.99	4.167	0.808	-0.583
	Teachers	3.503	0.978	4.183	0.84	-0.68
Gender	Male	3.438	1.031	4.13	0.848	-0.692
	Female	3.622	0.964	4.187	0.799	-0.565
Overall		3.568	0.989	4.17	0.815	-0.602

The comparison of the gap score shows that, in different user categories, the perceived quality of the dimension 'Library Staff' in the Libraries of engineering colleges in Lucknow is comparatively higher to the students in the category.

Dimension 4: Library Service

Every library is aimed to provide possible documents and information services to its users. Similarly, the Libraries of engineering colleges are aimed to offer necessary documents and information services to support the teaching-learning processes in the college. Generally, a library of engineering colleges offers loan service, reference service. Current awareness service, and photocopy service. The working hours, user education program, interaction of librarians with users, library environment etc. is also related to library services, as it may affect the users in the exploitation of the library services offered. All these are very important matters to the students and teachers, as it may affect their academic work greatly. Therefore, Library Service is considered as one of the most important dimension that has to be considered very seriously while assessing the quality of the college libraries in the Lucknow

User Expectations

It is found that, majority of the users have high expectations (mean 4.168 with SD 0.799) about the dimension 'Library Service' in the Libraries of engineering colleges in Lucknow. Similar views are there to the users in the different categories such as the students (mean 4.176 with SD 0.796) and teachers (mean 4.132 with SD 0.802), male (mean 4.119 with SD 0.832) and female users (mean 4.188 with SD 0.782) in the matter.

User Perceptions

The overall perception score (mean 3.455 with SD 1.072) shows that more than half of the users have good perceptions about the dimension 'Library Service' in the Libraries of engineering colleges in Lucknow. The students (mean 3.474 with SD 1.068) and teachers (mean 3.376 with SD 1.076) and the male (mean 3.354 with SD 1.126) and female users (mean 3.498 with SD 1.042) also have more or less the same views on the perceptions of the 'Library Service' offered in the Libraries of engineering colleges in Lucknow.

Quality

The analysis of the gap between the user expectations and the perceptions about the

dimension 'Library Service' in the Libraries of engineering colleges in Lucknow shows that it has a low perceived quality (-0.713) compared to their expectations. The gap score of the different categories of users also shows that the students (-0.702) and teachers (-0.756) and the male (-0.765) and female users (-0.691) users have similar views with regard to the perceived quality of the dimension 'Library service' in the Libraries of engineering colleges in Lucknow.

The user expectations, the perceptions and the perceived quality of the dimension Library Service' in the Libraries of engineering colleges in Lucknow is shown in table 5

Table - 5

Library Service in the Libraries of engineering colleges in Lucknow: Quality analysis

Variables		Perceptions (P)		Expectations (E)		Gap (P-E)
		Mean	SD	Mean	SD	
Status	Students	3.474	1.068	4.176	0.796	-0.702
	Teachers	3.376	1.076	4.132	0.802	-0.756
Gender	Male	3.354	1.126	4.119	0.832	-0.765
	Female	3.498	1.042	4.118	0.782	-0.691
Overall		3.455	1.072	4.168	0.799	-0.713

The comparison of the gap score shows that, in different user categories, the perceived quality of the dimension 'Library Service' in the Libraries of engineering colleges in Lucknow is comparatively higher to the students and the female users than the others in the category.

Testing of Hypothesis

The basic assumption of the study is that the quality of the Libraries of engineering colleges in Lucknow in general is very low. The male and the female users have almost the same assessment about the quality of the Libraries of engineering colleges in Lucknow. The quality of the Libraries of engineering colleges with regard to the physical facilities, document collection, staff employed, technical processes carried out and the services offered is also low. It is also assumed that the quality of the government Libraries of engineering colleges compared to the private Libraries of engineering colleges is low. The hypotheses formulated are tested on the basis of the findings of the study

Hypothesis I

“There exists the difference in quality of services in engineering colleges’ libraries in Lucknow”

This hypothesis has been partially proved by the findings of the study. The overall perceived quality of the private Libraries of engineering colleges is higher than the government Libraries of engineering colleges in Lucknow. Similarly, findings show that the perceived quality of the dimensions, such as physical facilities; document collection; staff employed; technical processes carried out; and the services rendered, as well as the majority of the items in private Libraries of engineering colleges is higher to that of the government Libraries of engineering colleges. However, the finding states that the perceived quality of certain items in the government Libraries of engineering colleges is higher than the private Libraries of engineering colleges in Lucknow. In

contrast to the above, findings revealed that the perceived quality of the very few items in the government and private Libraries of engineering colleges in Lucknow is the same.

Hypothesis II and III

“There engineering college libraries need total up to upgradation”

“There is technology used in college libraries in the infantile stage.”

This hypothesis has been rejected. Findings proved that there are differences in the views of users regarding the quality of Libraries of engineering colleges in Lucknow. It discloses the quality of the libraries of engineering colleges in Lucknow perceived by users. However, the findings disclose that, the users have same perceived quality with regard to the items such as reader space; lighting and ventilation; easiness of using the library catalogue; the speed of issue and return process; and the period of loan of documents in the libraries of engineering colleges in Lucknow.

Conclusion:

Quality factor of the library service should be considered very seriously. Several measures are suggested for considering the quality factor in the academic library services and for the subsequent quality development of the physical facilities, document collection, library professionals and library services. Academic library authority and management should consider the quality of library service very seriously while planning and organizing the libraries of engineering colleges. A national level Quality Assurance Task Force should be set up under the Ministry of Human Resource Development, Government of India to develop a Quality Measurement Tool/ Scale for ensuring the quality library services in the colleges in the country. Taking into consideration the socio-educational development in the Lucknow, the Government of Uttar Pradesh should take action to appoint an expert committee with professionals from Library, Management, and Information Communication Technology to assess the quality of the library services in the academic institutions of higher learning in the Lucknow. A Quality Assessment Team should be developed in every college to assess the quality of the library services. The team should periodically assess the libraries of engineering colleges' services as part of the preparatory works for the assessment/ re-assessment and accreditation being conducted by the National Assessment and Accreditation Council (NAAC) of the University Grants Commission (UGC).

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