

ICT Infrastructures and Human Resource Pattern in Central Libraries of Jadavpur University and University of Calcutta: A Comparative Study



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Abstract

This research paper describes about need and implementation of latest, adequate ICT infrastructures in the University libraries for smooth functioning. This paper also describes about the roles of University libraries on modern education and research. To find out the actual scenario a comparative investigation has been conducted as practical issue. The Central Library of Jadavpur University and the Central Library of University of Calcutta have been selected as a sample in this respect. For proper functioning of the University libraries and their role of dissemination of information and knowledge to the potential users, latest ICT infrastructures are very essential. The impacts and effects of library automation in these libraries are shown. The requirements of qualitative ICT infrastructures and human resources for these libraries are essential for proper usage of library resources.

Keywords: West Bengal, University Library, ICT Infrastructures, Jadavpur University, University of Calcutta, Central Library, Education and Research, Library Automation, Quality Control, ICT Application, Electronic Resources, Human Resources

Introduction

The information explosion of 21st century bounds the University Libraries to move into the easy and compatible tools for managing them. On the other hand, to cope with the chronological new challenges on users' demand the library professionals are bound to use the ICT Applications in their professional fields like any other organizations. Not only that the users have lack of time also. In this critical situation ICT Infrastructure is the only way to manage them as easy method. The leading Libraries in the world like UK, Australia, USA, Canada, etc., Indian University Libraries are also to be developed to cope with the modern education and research. Though, the Indian University Libraries have already introduced the ICT Applications. But, it is the appropriate time to find out what is the actual scenario of this footstep. Not only the ICT Infrastructures, but up-to-date trained manpower is also required to manage them. To quest the actual situation, an in-depth investigation has been executed as a sample on the ICT Infrastructures and related staff who manage and use them in the Central Library of Jadavpur University, Kolkata-700 032 of West Bengal, India and the Central Library, University of Calcutta, 87/1, College Street, Kolkata-700 073 of West Bengal, India. To find out the needs of up-to-date ICT Infrastructures and related trained manpower the investigations have been done through questionnaires and face to face interview. It includes both hardware and software also. Because, the basic objectives of these Libraries are- collection, preservation and dissemination of information resources (both manual and electronic) to the potential users in the ICT environment.

Review of Literature

Some reviewed literatures relating to this paper for preparing it are as per following-

Dorcas Ejemeh Krubu & Kingsley Efe Osawaru have developed a methodology to derive the importance of Computing Technology, Communication Technology and Mass Storage Technology for the continuous development and reshape libraries' access, retrieve, store,

manipulate, and disseminate information to the potential users. The impact of Information and in the academic library activities like library collection development, library building and library consortia. Academic libraries use modern ICTs for automation, resource sharing and to develop institutional repositories. They also use it for the betterment of OPAC, user services, reference service, bibliographic services, current awareness services, document delivery services, inter-library loans, audio visual services and customer relations more efficiently and effectively. Though, the benefits of ICT have observed in the Nigerian University Libraries but the Nigerian academic libraries are facing some obstacles in the use of the ICT resources (Krubu & Osawaru, 2011).

Z. M. Abdullahi & I. Haruna have investigated about the extent of utilization of ICT for information service delivery in university libraries in Adamawa State. The paper reveals that the levels of utilization of ICT components like computers, internet, e-mails and CD-ROMs for information service delivery among university libraries in Adamawa State are significantly different. The level of major ICT trainings and development programmes organised by the libraries are like induction or orientation in nature. The major constraints to effective utilization of the ICT are frequent power failure and inability to provide alternative power supply. Provision of solar energy, hand wind computers and sufficient funding for the libraries are highly appreciated here (Abdullahi & Haruna, 2008).

Ruth Hoskins has described that the knowledge on ICT of subject librarians of the university libraries of Kwa Zulu-Natal which includes the Universities of Durban-Westville, Natal (Durban and Pietermaritzburg) and Zululand is in very low level. Their skills are also very low. They are suffering from the lack of formal training on ICTs (Hoskins, 2005).

Samuel Olu Adeyoyin has described about the levels of ICT literacy among the library staff like professionals, paraprofessionals and other members of Nigerian University Libraries. It has been found that approximately 32% professional librarians were ICT-literate and approximately 68% of professional librarians were ICT-illiterate. On the other hand, approximately 08% paraprofessionals of those libraries were ICT-literate and approximately 92% were ICT-illiterate. The survey also shows that approximately 06% other staff members of these libraries were ICT-literate and approximately 94% were ICT-illiterate. The author has also suggested for acquiring an enhanced level of ICT literacy in the form of staff training among the Nigerian University Library professionals and paraprofessionals and has recommended for adequate ICT infrastructures (Adeyoyin, 2005).

Okon E. Ani, Jacob E. Esin & NkoyoEdem have developed a methodology to derive the ideas about the adoption of Information and Communication Technology (ICT) in University Libraries of Nigeria. The completed Postal survey on 29 University Libraries have shown the results that

Communications Technology (ICT) has left its landmark

only 06 University Libraries are fully computerized, 09 University Libraries are about to be computerized, 07 Libraries have installed local area networks, 05 have Online Public Access Catalogue (OPAC) and only 04 Libraries provide Internet services. It also shows the major obstacles of adoption of ICT in the University Libraries of Nigeria are inadequate funds and lower state of electricity system. This paper also shows the light of hope for improvement of these ICT infrastructures and electricity system with the help of funding by the Federal Government of Nigeria. This paper also recommends for the development of the Nigerian University Libraries' network as well as academic libraries' network (Ani, Esin & Edem, 2005).

Chinwe Marie Therese Nwezah has described about the strength of Nigerian Universities in respect of modern day ICT applications in their Libraries. The author shows five basic assumptions on the application of automated techniques for library operations where it does not lack institution's local conditions/ needs. The paper also describes about the problems of automation process in the Nigerian University Libraries. The author has suggested about implementation of full internet connectivity in Nigeria. Suggestions have been made regarding progress of the Nigerian University Libraries for providing adequate information to the users (Nwezah, 2005).

W. O. Nkanu has described about the scenarios of various types of ICT facilities used for Library and Information Services in Nigerian University libraries. The difference between Southern and Northern Nigerian University libraries those are first, second and third generations relating to utilization of ICT facilities with their respective locations has been shown. As a result of study it has been observed that the Nigerian University libraries used ICT facilities for the sake of library and information services. But, no significant difference has been observed between Southern and Northern University libraries regarding utilization of ICT facilities in relation to their location. The investigator has recommended about the essentiality for setting up ICT facilities installation and monitoring committee in the University libraries for good maintenance and repair of broken ICT facilities for utilization effectively (Nkanu, 2008).

Braj Kishor Tiwari and K. C. Sahoo have investigated about the practical scenario of ICT Infrastructures and its use in the University Libraries of Rajasthan (India). They have attempted about the basic infrastructures of ICT and its use maintaining privation in the University Libraries of Rajasthan. Its basic focuses are information relating to collections, related staff, financial assistance, software, hardware, infrastructure for networking, housekeeping operations, user services, related trainings and the problems for implementation of ICT in these University Libraries. As a result, it has been found that the ICT activities are under-developing due to the lack of improper management, improper planning and frequent change of ICT leads to unsuccessful

implementation and development (Tiwari & Sahoo, 2013).

Lakshmikant Mishra and Jyoti Mishra have described about the overall scenario of ICT infrastructures, electronic resources and services in University Libraries. They have attempted to disclose the inherent qualities of ICT infrastructures, electronic resources and services provided by the University Libraries in this era to cope with the demand of the users in their education and research. Regarding various electronic processes and services like information management, collection, organization, dissemination and easy access through internet are the main focuses of this paper (Mishra & Mishra, 2014).

Objectives of the Study

The investigation has been done based on the following objectives-

1. To compare the ICT Infrastructures available in Central Libraries of Jadavpur University and University of Calcutta.
2. To what extent the ICT Infrastructures are maintained to maximize the output.
3. How far the staff pattern of those two Universities is capable to execute their responsibilities in context of ICTs.
4. To find out the gap between the existing staff pattern and the staff pattern recommended by Dr. S. R. Ranganathan.

Hypotheses of the Study

The hypotheses for this study are enumerated as follows-

1. Up-to-date and adequate ICT Infrastructure requirements in the Libraries of higher academic institutes.
2. Requirements of ICT skill for the staff in various sections of Libraries relating to higher academic institutes for working satisfactorily.
3. Up-to-date ICT training requirements for the staffs working in these Libraries.
4. Measurement of imbalance on staff distribution as per present requirements for these Libraries.

Methodology of the Study

Some related books, journals, websites, etc. have been followed for collecting information as primary and secondary sources for this study. The Survey Method of Research has been applied for this investigation. The survey has been conducted among the library staff, library administrators, students, faculty, researchers, etc. who are working and coming to these Central Libraries. Both Structured and Unstructured (sometimes called 'Semi-structured') Interview as the research technique have been applied for this study. Both Closed-end or Structured Questionnaire and Open (sometimes called Open-end) or Unstructured Questionnaire have been designed for this investigation. Sometimes, personal views of the users have also been collected in the informal way to find out the actual satisfaction of the users. Separate questionnaires have been designed for each section of these libraries based on their overall infrastructures including ICT facilities and qualifications, technical qualifications, pay scales, up-

to-date trainings, duty hours, job descriptions, promotional avenues, etc. of the staff. Some framed questions are as per following-

(i) Is it an automated Library?

Ans.: - (a) Yes (b) No (Tick Mark).

(ii) What types of Library Management Software are being used?

Ans.: - (a) SOUL (b) Koha (c) DSpace (d) Libsys (e) GSDL (f) Others (What type?.....).

(iii) Does your Library organise software training?

Ans.: - (a) Yes (b) No (Tick Mark).

(iv) What kinds of Network Connectivity are being used in this Library?

Ans.: - (a) Broadband (b) Leased Line (c) Wireless

(d) Others (What kind?.....).

(v) How many computers/ laptops are installed in your section?

Ans.:-(a) Computers.....Nos.

(b) Laptops.....Nos.

(vi) How many computers/ laptops are installed in your section within last 5 years?

Ans.: - (a) Computers.....Nos.

(b) Laptops.....Nos.

Need of ICT Applications

Today, it is the dynamic educational society. The educational and research backbones are basically depended on the University Libraries. Therefore, the information is to be reached to their hands with on click as their demands. To fulfil their demands, the University Libraries are to be modified with the application of up-to-date ICT Infrastructures. Computer technology including networking on the web is to be introduced as a medium of easy access. Besides, the manual information resources, electronic resources are also to be incorporated. In this regard digital technology is very essential. Not only hard wares, soft wares are also to be installed in modified nature. They have inter-relations with each-other. They are compatibility based. Like online document processing, online circulation facilities are also needed with OPAC and WEBOPAC facilities. On the other hand, digital medium of new and old documents are also to be preserved in the compatible ICT environment with their easy access facilities. In the context of new Library Management soft wares based on modern ideas, hard wares are also to be modified as per their requirements. Besides this, up-to-date ICT trained library personnel are needed to handle them and manage them as per requirements.

ICT Application and E- resources in the Central Libraries of Jadavpur University and University of Calcutta

The Central Libraries of Jadavpur University and University of Calcutta basically provide manual and electronic facilities to the users. These facilities may be provided by the application of modern Information and Communication Technology. The end users may get their information resources in their hands as per their demands by the help of modern computing. They maintain computer and related applications of Information and Communication Technology to manage them. In case of information processing, digitization of E-resources and

information retrieval they use some soft wares like Libsys, SOUL (Network Version), D Space, Proquest, etc. They provide adequate E-resources like E-books and E-journals. They have the separate units for Digital Building Process and Network Resource Centres for accessing the E-resources. But, they are basically depended on outsourcing for Digital Building Process. However, up-to-date ICT Infrastructures including trained library personnel are required to handle them and manage them.

Sampling based on the Need of ICT Applications for Proper Library Services

An attempt has been taken to find out the actual scenario of the up-to-date ICT Infrastructures and related trained library personnel for proper library services to the end users on their demands offering by the University Libraries. The investigations at face-to-face mode like an interview have been executed separately applying by the questionnaires for different

sections to find out the actual requirements of up-to-date and adequate ICT Infrastructures and related trained library personnel. As a miniature of other university libraries, the Central Library of Jadavpur University and the Central Library, University of Calcutta have been surveyed. The researcher has found the personal views, job satisfaction and day to day practical experiences of the respondents with their personal details. The actual scenarios of job environments have been observed by the researcher at the time of working period time to time in these Central Libraries. The user satisfaction opinions have also been accepted. The materials, tools and other resources of these University Libraries were also observed and touched by the hands as practical experiences as far as possible.

Details of the investigations are as per following –

Table – 1: Details of Library strength of the Central Library of Jadavpur University, Kolkata-700 032 of West Bengal, India (up to May, 2018)

Books (Printed)	E-Books	Journals (Printed)	Bound Volumes	E-Journals	Theses (Printed)	E-Theses
6,00,000 + Copies	1,700 + Numbers	400 Types (Approx)	83,000 + Numbers	12,000 Types (Approx)	10,000 + Numbers	1,250 + Numbers

Table – 2: Details of Library strength of the Central Library, University of Calcutta, 87/1, College Street, Kolkata-700 073 of West Bengal, India (up to May, 2018)

Books (Printed)	E-Books	Journals (Printed)	Bound Volumes+ Theses (Printed)	E-Journals	E-Theses
12,00,000 + Copies	3,00,000 + Numbers	100 Types (Approx) (Free)	51,668 + Numbers	14,000 Types (Approx)	13,597 + Numbers

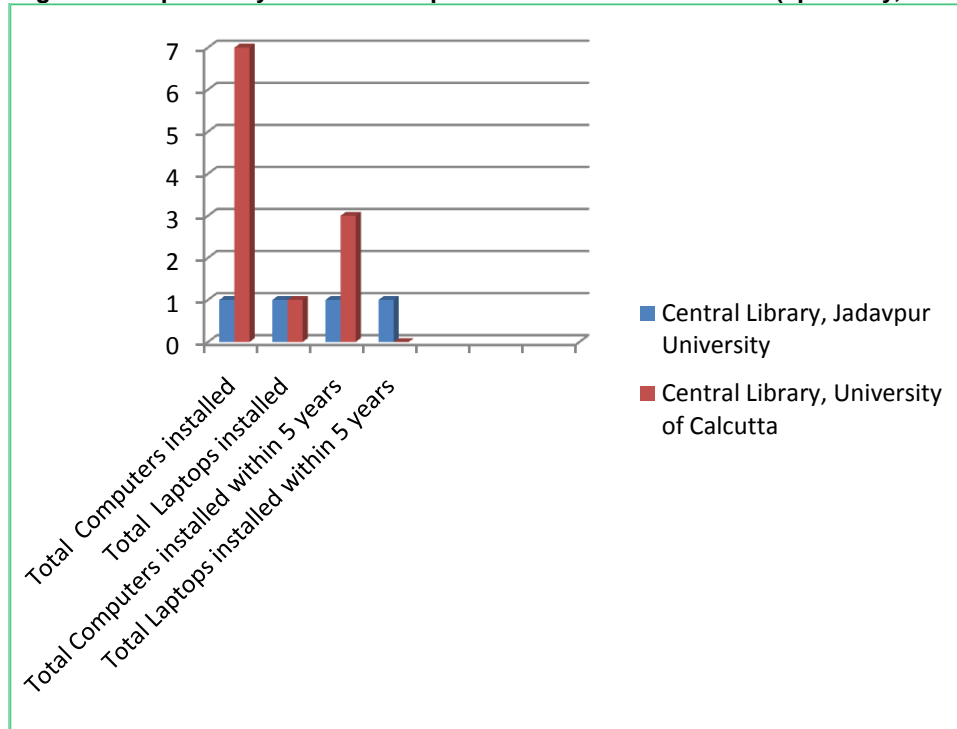
Comparison between Central Library of Jadavpur University and Central Library, University of Calcutta on ICT Infrastructures Including Related Staff Pattern (up to May, 2018)

Section wise comparisons on ICT Infrastructures including related staff pattern of these Central Libraries are given as far as possible as per followings-

Table – 3: Supervisory Section

Name of the Library	Designation	Permanent/ Contractual	Computers/ Laptops installed in the Section	Total Computers/ Laptops installed in the Section	Computers/ Laptops installed in the Section (within the last 5 years)	Total Computers/ Laptops installed in the Section (within the last 5 years)
Central Library, Jadavpur University	Chief Librarian (Officiating)	Permanent	Computer- 01 Laptop- 01	Computer- 01 Laptop- 01	Computer- 01 Laptop- 01	Computer- 01 Laptop- 01
Central Library, University of Calcutta	University Librarian	Permanent	Computers- 04 Laptop- 01	Computers- 07 Laptop- 01	Nil	Computers- 03 Laptop- 0
	Deputy University Librarian	Permanent	Computer- 01		Computer- 01	
	Deputy University Librarian	Permanent	Computer- 01		Computer- 01	
	Assistant University Librarian	Permanent	Computer- 01		Computer- 01	

Figure 1: -Supervisory Section: Comparison of ICT Infrastructures (up to May, 2018)



It has been found that in the Supervisory Section of Jadavpur University Central Library total amount of Computer- 01 and Laptop- 01, only 01 Computer and 01 Laptop have been installed in the Section within the last 5 years. On the other hand, in

case of University of Calcutta Central Library total amount of Computers- 07 and Laptop- 01, only 03 Computers and no Laptop have been installed in the Section within the last 5 years.

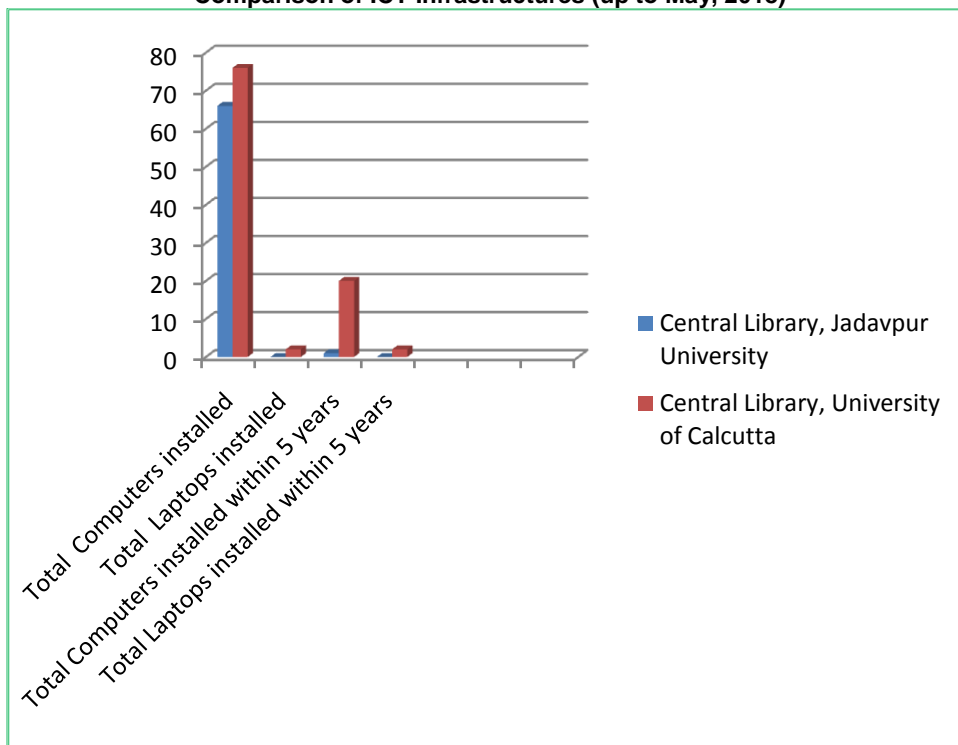
Table – 4: Network Resource Centre (Including Digital Repository Building)

Name of the Library	Designation	Permanent/ Contractual	Computers/ Laptops installed in the Section	Total Computers/ Laptops installed in the Section	Computers/ Laptops installed in the Section (within the last 5 years)	Total Computers/ Laptops installed in the Section (within the last 5 years)
Central Library, Jadavpur University	Information Scientist	Permanent	Computers: - Network Resource Centre- 60 & Digital Repository Building- 06	Computers- 66 Laptop- 0	Computer: - Network Resource Centre- Nil & Digital Repository Building- 01	Computer- 01 Laptop- 0
	System Administrator	Project Staff				
	Project Assistant (Under UGC-UPE Project)	Project Staff				
	Project Assistant (Under UGC-UPE Project)	Project Staff				
	Project Assistant (Under UGC-UPE Project)	Project Staff				
	Project Assistant (Under UGC-UPE Project)	Project Staff				
	Project Assistant (Under UGC-UPE Project)	Project Staff				
	Laboratory Attendant Gr.-III	Permanent				
Central	Information Scientist	Permanent	Information	Computers-	Information	Computers-

Periodic Research

Library, University of Calcutta	Assistant Librarian Gr.-I (For Digital Repository Building)	Permanent	Scientist:- Computers-08	76 Laptops- 02	Scientist:- Computers-04	20 Laptops- 02	
	Junior Library Attendant (For Digital Repository Building)	Permanent	Laptops- 02 & Network Resource Centre:- Computers-09		Laptops- 02 & Network Resource Centre:- Computers-07		
	Junior Library Attendant (For Digital Repository Building)	Permanent	Digital Repository Building:- Computers-09		Digital Repository Building:- Computers-09		
	N.B.: - Outsourcing is provided for Digital Repository Building Process.				ManjulaBejoy Computer Centre:- Computers-50		Manjula Bejoy Computer Centre:- Nil
	Assistant Librarian Gr.- I (For ManjulaBejoy Computer Centre)	Permanent					
	Senior Peon (For ManjulaBejoy Computer Centre)	Permanent					
	Senior Assistant (For ManjulaBejoy Computer Centre)	Permanent					

Figure 2: - Network Resource Centre (Including Digital Repository Building): Comparison of ICT Infrastructures (up to May, 2018)



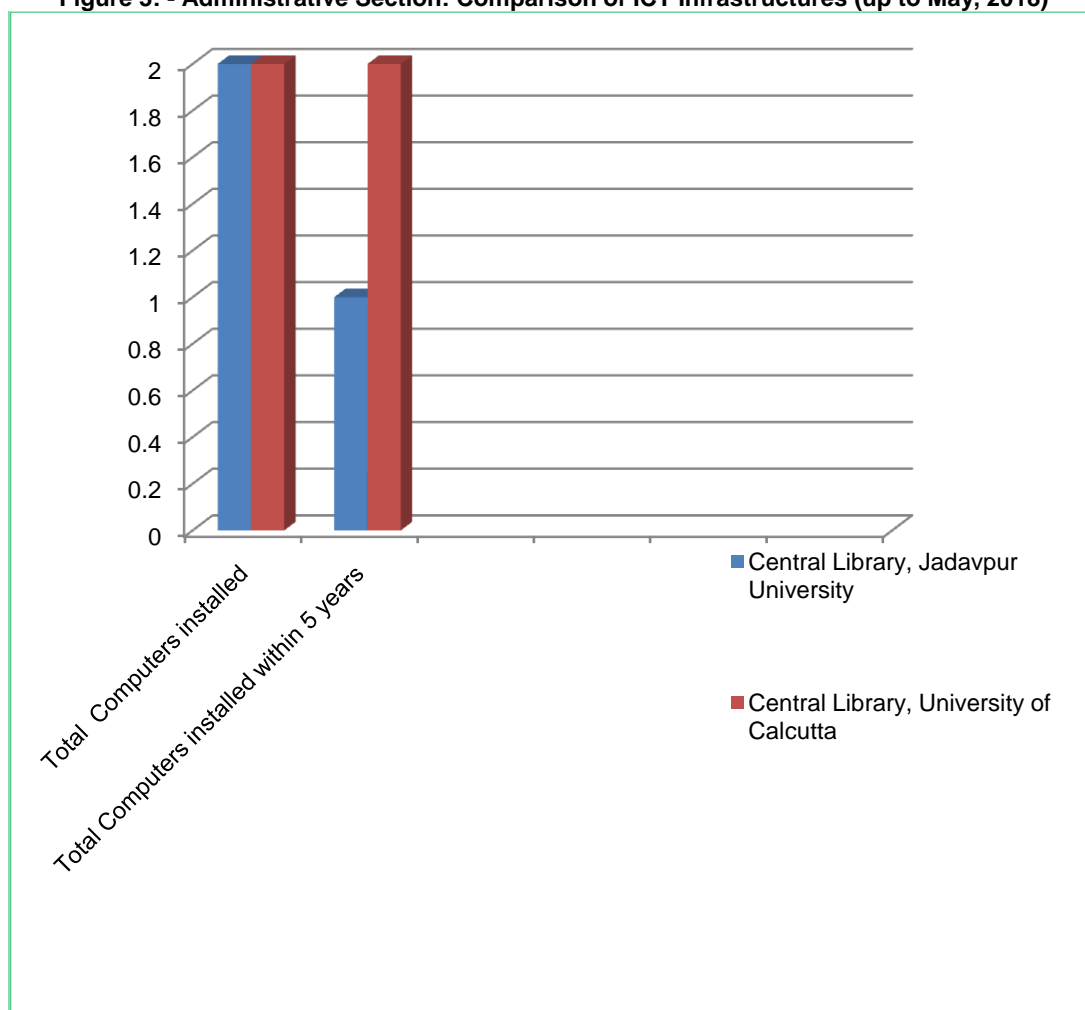
It has been found that in the Network Resource Centre (Including Digital Repository Building) of Jadavpur University Central Library total amount of Computer- 66 and no Laptop, only 01 Computer has been installed in the Section within the

last 5 years. On the other hand, in case of University of Calcutta Central Library total amount of Computers-76 and Laptops- 02, only 20 Computers and 02 Laptops have been installed in the Section within the last 5 years.

Table – 5: Administrative Section

Name of the Library	Designation	Permanent/ Contractual	Computers/ Laptops installed in the Section	Total Computers/ Laptops installed in the Section	Computers/ Laptops installed in the Section (within the last 5 years)	Total Computers/ Laptops installed in the Section (within the last 5 years)
Central Library, Jadavpur University	Senior Assistant	Permanent	Computers- 02	Computers- 02	Computer- 01	Computer- 01
	Senior Assistant	Permanent				
	Senior Sorter	Permanent				
	Senior Peon	Permanent				
Central Library, University of Calcutta	Junior Superintendent	Permanent	Computers- 02	Computers- 02	Computers- 02	Computers- 02
	Senior Assistant	Permanent				
	Senior Assistant	Permanent				
	Senior Assistant	Permanent				
	Senior Peon	Permanent				
	Senior Peon	Permanent				
	Junior Library Attendant	Permanent				

Figure 3: - Administrative Section: Comparison of ICT Infrastructures (up to May, 2018)



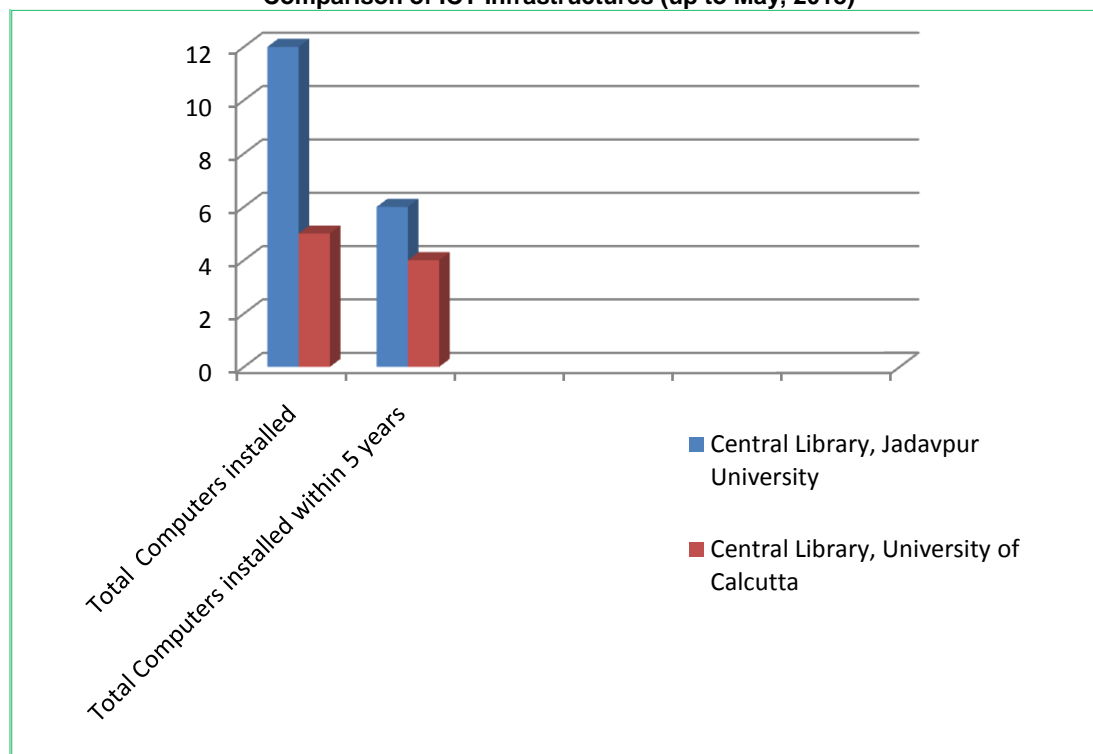
It has been found that in the Administrative Section of Jadavpur University Central Library total amount of Computers- 02 and only 01 Computer has been installed in the Section within the last 5 years.

On the other hand, in case of University of Calcutta Central Library total amount of Computers- 02, only 02 Computers have been installed in the Section within the last 5 years.

Table – 6: Acquisition Section (Book Section) & Technical Section

Name of the Library	Designation	Permanent/ Contractual	Computers/ Laptops installed in the Section	Total Computers/ Laptops installed in the Section	Computers/ Laptops installed in the Section (within the last 5 years)	Total Computers/ Laptops installed in the Section (within the last 5 years)
Central Library, Jadavpur University	Acquisition Section (Book Section)		Computers-04	Computers- 12	Computers- 03	Computers- 06
	Superintendent Library Service	Permanent				
	Assistant Librarian Gr.-I	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Binder	Permanent				
	Technical Section (Including Theses Section)		Computers: - Technical Section- 06 & Theses Section- 02			
	Assistant Librarian Gr.-I	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
Junior Peon	Permanent					
Central Library, University of Calcutta	Acquisition Section (Book Section)-Cum-Technical Section		Computers-05	Computers- 05	Computers- 04	Computers- 04
	Junior Super	Permanent				
	Superintendent Library Services	Permanent				
	Superintendent Library Services	Permanent				
	Assistant Librarian Gr.-I	Permanent				
	Assistant Librarian Gr.-I	Permanent				
	Assistant Librarian Gr.-I	Permanent				
	Senior Assistant	Permanent				
	Junior Library Attendant	Permanent				
	Junior Library Attendant	Permanent				

**Figure 4: - Acquisition Section (Book Section) & Technical Section:
Comparison of ICT Infrastructures (up to May, 2018)**



It has been found that the Acquisition Section (Book Section) & Technical Section of University of Calcutta Central Library are combined together. But in Jadavpur University Central Library these are different. Here, these are combined for the sake of data analysis. In the Acquisition Section (Book Section) & Technical Section of Jadavpur University

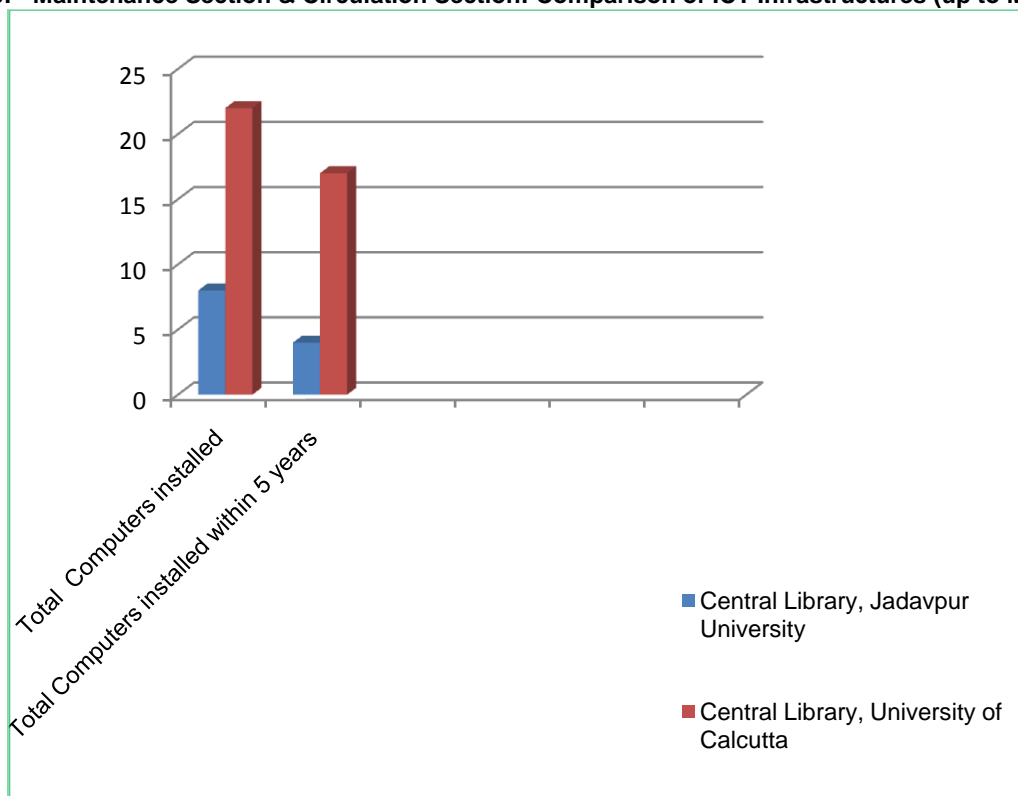
Central Library total amount of Computers- 12 and only 06 Computers have been installed in the Sections within the last 5 years. On the other hand, in case of University of Calcutta Central Library total amount of Computers- 05, only 04 Computers have been installed in the Section within the last 5 years.

Table – 7: Maintenance Section & Circulation Section

Name of the Library	Designation	Permanent/ Contractual	Computers/ Laptops installed in the Section	Total Computers/ Laptops installed in the Section	Computers/ Laptops installed in the Section (within the last 5 years)	Total Computers/ Laptops installed in the Section (within the last 5 years)
Central Library, Jadavpur University	Maintenance Section (Including Bound Volumes)- Cum-Circulation Section		Computers: - For Circulation- 04 & For OPAC- 04	Computers- 08	Computers: - For Circulation- 02 & For OPAC- 02	Computers- 04
	Superintendent Library Service	Permanent				
	Assistant Librarian Gr.-I	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Junior Sorter	Permanent				
	Senior Sorter	Permanent				
	Junior Peon	Permanent				
	Junior Peon	Permanent				
Central Library, University of Calcutta	Maintenance Section (6th & 7th Floors)		Computers- 02	Computers- 22	Computer- Nil	Computers- 17
	Superintendent Library Services	Permanent				

	Junior Library Attendant	Permanent			
	Junior Library Attendant	Permanent			
	N.B.: - Outsourcing security personnel are performing a major role in the Library services.				
	Circulation Section				
	Assistant Librarian Gr.-I	Permanent	For Circulation:- Computers- 04 For OPAC:- Computers- 16	For Circulation:- Computer- 01 For OPAC:- Computers- 16	
	Assistant Librarian Gr.-I	Permanent			
	Junior Library Attendant	Permanent			
	Junior Library Attendant	Permanent			
	Junior Library Attendant	Permanent			
	Junior Library Attendant	Permanent			
	Junior Library Attendant	Permanent			
	Senior Peon	Permanent			

Figure 5: - Maintenance Section & Circulation Section: Comparison of ICT Infrastructures (up to May, 2018)



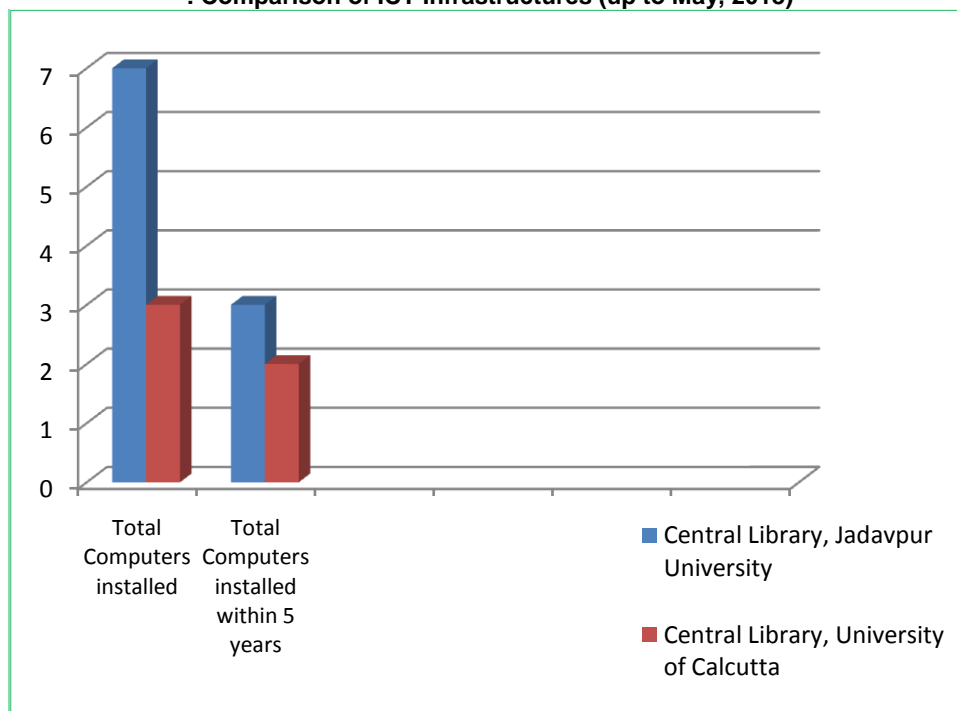
It has been found that the Maintenance Section & Circulation Section of Jadavpur University Central Library is combined together. But in University of Calcutta Central Library these are different. Here, these are combined for the sake of data analysis. In the Maintenance Section & Circulation Section of Jadavpur University Central Library total amount of

Computers- 08 and only 04 Computers have been installed in the Section within the last 5 years. On the other hand, in case of University of Calcutta Central Library total amount of Computers- 22, only 17 Computers have been installed in the Sections within the last 5 years.

Table – 8: Reference Section & Periodical Publications Section

Name of the Library	Designation	Permanent/ Contractual	Computers/ Laptops installed in the Section	Total Computers/ Laptops installed in the Section	Computers/ Laptops installed in the Section (within the last 5 years)	Total Computers/ Laptops installed in the Section (within the last 5 years)
Central Library, Jadavpur University	Reference Section		Computers-02	Computers - 07	Computer- 01	Computers-03
	Assistant Librarian Gr.-II	Permanent				
	Junior Peon (Supported from Technical Section)	Permanent				
	Periodical Publications Section		Computers-05			
	Superintendent Library Service	Permanent				
	Assistant Librarian Gr.-I	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
	Assistant Librarian Gr.-II	Permanent				
Binder	Permanent					
Central Library, University of Calcutta	Reference Section-Cum-Periodical Publications Section (Free Copy) (Including Theses Section)		Computers- 03	Computers - 03	Computers- 02	Computers-02
	Assistant Librarian Gr.-I	Permanent				
	Junior Library Attendant	Permanent				

Figure 6: - Reference Section & Periodical Publications Section : Comparison of ICT Infrastructures (up to May, 2018)



It has been found that the Reference Section & Periodical Publications Section of University of Calcutta Central Library is combined together. These Section is also combined with this. But in Jadavpur University Central Library these are different. Here, these are combined for the sake of data analysis. In the Reference Section & Periodical Publications

Section of Jadavpur University Central Library total amount of Computers- 07 and only 03 Computers have been installed in the Sections within the last 5 years. On the other hand, in case of University of Calcutta Central Library total amount of Computers- 03, only 02 Computers have been installed in the Section within the last 5 years.

Table – 9: Documentation Section

Name of the Library	Designation	Permanent/ Contractual	Computers/ Laptops installed in the Section	Total Computers/ Laptops installed in the Section	Computers/ Laptops installed in the Section (within the last 5 years)	Total Computers/ Laptops installed in the Section (within the last 5 years)
Central Library, Jadavpur University	(Does not exist in the Central Library) (Through online resources only)	-	-	-	-	-
Central Library, University of Calcutta	(Does not exist in the Central Library) (Through online resources only)	-	-	-	-	-

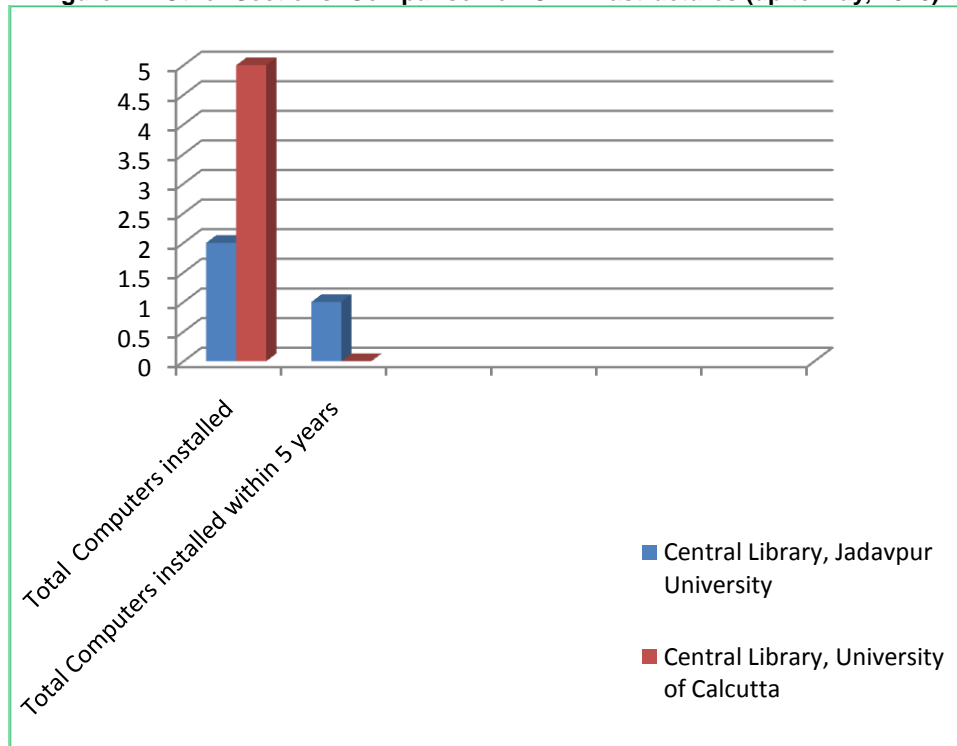
It has been found that there is no Documentation Section in the Jadavpur University Central Library and the University of Calcutta Central

Library. Digital resources are only helpful in this regard.

Table – 10: Other Sections

Name of the Library	Designation	Permanent/ Contractual	Computers/ Laptops installed in the Section	Total Computers/ Laptops installed in the Section	Computers/ Laptops installed in the Section (within the last 5 years)	Total Computers/ Laptops installed in the Section (within the last 5 years)
Central Library, JadavpurUni versity	Rare Book-Cum- Reading Section (Attached to the Reference Section)		Computers- As per Reference Section (02)	Computers- As per Reference Section (02)	Computers- As per Reference Section (01)	Computers- As per Reference Section (01)
	Maintained by the staff of the Reference Section	Permanent				
	Reprographic Section		Computer- Nil			
	Maintained by the staff of the Administrative Section	Permanent				
Central Library, University of Calcutta	Rare Book Section (Before 50 Years) (4th Floor)		Computer- Nil	Computers- 05	Computer- Nil	Computer- Nil
	Junior Library Attendant	Permanent				
	Rare Book Section (Before 1900s) & Gifted Books (Memorials) (8th Floor)		Computer- 01			
	Assistant Librarian Gr.-I	Permanent				
	Junior Library Attendant	Permanent				
	Gifted Books (Not Proper) (Memorials) (9th Floor)		Computer- 01			
	Assistant Librarian Gr.-I	Permanent				
	Junior Library Attendant	Permanent				
	Reading Section		Computers- 02			
	Assistant Librarian Gr.-I	Permanent				
	Assistant Librarian Gr.-I	Permanent				
	Junior Library Attendant	Permanent				
	Reprographic Section		Computer- 01			
Junior Assistant	Permanent					
Senior Peon	Permanent					

Figure 7: - Other Sections: Comparison of ICT Infrastructures (up to May, 2018)



Apart from the Dr. S. R. Ranganathan's Staff Formula some sections have been arrived in these Central Libraries as per their requirements. Here, these are called as Other Sections. These are Rare Book Sections, Reading Section, Reprographic Section, etc. It has been found that the Rare Book-Cum- Reading Section is attached to the Reference Section in the Jadavpur University Central Library. But, in the University of Calcutta Central Library these are different. Here, these are combined for the sake of data analysis. In these Sections of Jadavpur University Central Library total amount of Computers- 02 and only 01 Computer has been installed within the last 5 years. These data are also rounded here for the sake of data analysis. On the other hand, in case of University of Calcutta Central Library total amount of Computers- 05 and no Computer has been installed in these Sections within the last 5 years.

Findings of the Study

The researcher after careful observation and evaluation of the data has found the followings-

1. Most of the ICT Infrastructures in the Central Libraries of Jadavpur University and University of Calcutta are not up-to-date as per modern Library and Information Science curriculum.
2. In case of Jadavpur University Central Library total amount of Computers- 96 and Laptop- 01, only 16 Computers and 01 Laptop have been installed in the Sections within the last 5 years.
3. In case of University of Calcutta Central Library total amount of Computers- 120 and Laptops- 03, only 48 Computers and 02 Laptops have been installed in the Sections within the last 5 years.
4. Some Computers and Laptops are up-dated, but the majorities are on the back foot.

5. User satisfaction rate in the digital environment of these Central Libraries are very poor.
6. The Central Library staffs lack adequate up-to-date trainings.
7. The Central Libraries lack proper staff distribution as per workloads.
8. The Central Libraries lack adequate staff requirements as per workloads, etc.

Not only the hardware technology, but soft wares are also to be modified. The modern Library Management soft wares are based on modern computer technologies as well as programming. Basically, the old model (prepared before 5-7 years) Computers like IBM and Laptops bear soft wares like XP, Windows-7, etc. On the other hand, they have lower modelled mother board, RAM, Hard Disk, etc. The RPM of Hard Disk is very slow. Therefore, the working capacity and network browsing speed is very slow and they are not compatible to modern hard wares and soft wares. Whereas, the modern Computers and Laptops are bearing 6th or 7th or higher generations of hard wares which require minimum Windows 8.1 or Windows 10 soft wares for compatibility. Many desktops are year old. Their activities are not so good. They have to be modified. Some frequent library trainings, workshops, seminars, etc. have been attended by the library personnel, but not proper way to operate them and manage them. The Library authorities have to be arranged time-to-time training programmes on various topics relating to modern Library and Information Science curriculum. There are no provisions of permanent hardware and software maintainers. Proper staff arrangements are very essentials in various sections. Basically, it proves that these Central Library ICT Infrastructures and staff

are rather out dated than updated. It proves that they are walking behind the radical development of this professional field. Proper inclusion of ICT Infrastructures, staff pattern, job analysis, job descriptions, recruitments, promotions and motivations are also needed as early as possible.

Recommendations

Based on the above observations and evaluation of the collected data some recommendations may be provided-

1. The age old Computers or Laptops are to be modified or replaced with new as 6th or 7th or higher generations.
2. New soft wares are to be installed with compatible hard wares like Windows 8.1 or Windows 10.
3. The existing staffs of these Central Libraries are to be up-to-date trained in modern ICT environment.
4. Quality management policy is to be adopted in these Central Libraries.
5. Documentation Sections are essential in these Central Libraries besides the digital systems as all resources are not available in the digital environment like various language related matters.
6. Reprographic Sections of these Central Libraries are to be strengthened for user satisfaction.
7. Proper staff distribution and recruitment policies are to be adopted immediately with workload and job analysis by suitable parameters.
8. Some new posts like Hardware and Software Maintainers, Digital Repository Building staff, etc. may be arrived.
9. Time-to-time User Orientation and Information Literacy Training Programmes are to be organised.

Suggestions and Conclusion

The ICT Infrastructures of the Central Libraries of Jadavpur University and University of Calcutta are to be modified as per requirements of the modern Library and Information Science curriculum. To fulfil the user demands as per their requirements on click for their dynamic education and research the Libraries are to be modified time-to-time. Hardwares and softwares both are to be modified as per present requirements. Network connections are also to be faster for smooth retrievals. All over ICT Infrastructures as well as the library staffs are to be up dated rather than out dated as early as possible. Time-to-time updated training programmes on ICT and other related matters have to be arranged at earliest by the authorities. The valuable un-used information resources of these libraries are to be used by the users on their thirst areas with time-to-time awareness through User Orientation Programmes, Information Literacy Programmes, etc. Not only that, qualitative manpower planning and staff recruitment policies are to be adopted at earliest as per modern application of ICT Infrastructures in these Libraries in proper ways. Motivations and promotional avenues with justified pay scales for the employees are to be incorporated.

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14. No specific and relevant literature of the years 2015-2018 (Till now) has been found.