Trends in Private Engineering Education Institutions and their Libraries Services in West Bengal: An Overview

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Abstract

The growth and development of private Engineering & Technology institutions in the state of West Bengal has been accelerated throughout the 9th, 10th and the 11th Five years Plan Period and the beginning of the 12th Plan period. The demand for techno-savvy manpower is high to fulfill the void and much stress has been given on expansion, modernization and reorientation of engineering education in the state. To attain the purpose, new private engineering colleges and institutes are being opened up. Libraries function as an essential integral component in higher education system. Without a proper information and knowledge infrastructure, no education system can sustain and achieve its desirable goals and objectives. The information need and information seeking behavior of the users have already been changed due to tremendous development of information and communication technology. The modern telemetric has been forcing the libraries and their users to adopt new tools and techniques to provide and avail the digital information resources and services. Libraries of technical institutions have not only changed their types of collection of resources but also changed their service pattern to cope with the needs of the users. This article provides an overview of recent trends in the growth private engineering colleges and the library services provided by them to the future engineers. An attempt has been made to determine the present status of engineering colleges in terms of growth and correlates the importance of digital resources provided by the libraries.

Keywords: Engineering Education, Private Engineering Institutions, Engineering Education – Trends, e-Resources, e-Services

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INTRODUCTION

The State of West Bengal has a very rich heritage of education and culture. All the Nobel Laureates of our country have worked in this State. There are many reputed institutes of higher education like –the first IIM, the first IIT, Bengal Engineering and Science University (2nd oldest engineering institution in India), Jadavpur University, Presidency College, Indian Institute of Science Education and Research, Kolkata, National Institute of Technology, Durgapur, Indian Statistical Institute and University. The history of imparting formal technical education in India can be traced back to mid 19th century, although it got momentum in 21st century with the set up of constitution of technical education committee on the Central University Board of Education (CUBE) in 1943, and formation of All India Council of Technical Education (AICTE) which was established in November 1945 first as an advisory body and later on in 1987 given statutory status by an Act of Parliament. Though, the basic thrust of development planning was on growth in first few decades after independence, but the globalization of the education system has led the establishment of various universities and institutes of higher education in the recent years. The growth of private Engineering & Technology institution has been accelerated throughout the 9th Plan Period, 10th Plan Period and the 11th Plan Period and the beginning of the 12th Plan period due to development of industries in the land of West Bengal, and these require huge manpower both - technical and non- technical. Definitely the demand for technical manpower is high to fulfill the void and much stress has given on expansion, modernization and reorientation of technical education. To attain the purpose, new private engineering colleges and institutes are being opened up. Libraries are as important as education itself. Library services imply both availability and accessibility of library resources, facilities and services to the user.

The tremendous developments of ICT, the private engineering college libraries have shifting their services i.e., traditional service to electronic services. They offer totally new environment, new resource and new services to the user. They provide e-resource and e-service depends on the user needs. The value of information is enhanced only when a user need it. It has no value until it has no used by any user [1].

HIGHER EDUCATION INSTITUTIONS IN WEST BENGAL

There are different types of universities and colleges in the higher and technical institutions in the state of west Bengal. In the Table 1 and Figure 1, the break-up of number of Higher & Technical Institutions in West Bengal shows that the share of state universities is the highest (70%) followed by private universities (11%), deemed universities (4%), institutes of national importance (11%) and central universities (4%).

Table 1: Number and Type of Higher Educational Institutions in West Bengal.

S/N	Type of Institution	Number of Universities
1.	Central University	01
2.	State University	19
3.	Institution of National Importance	03
4.	Deemed University	01
5.	Private University	03
	Total Universities	**27**
Total Colleges		**947**

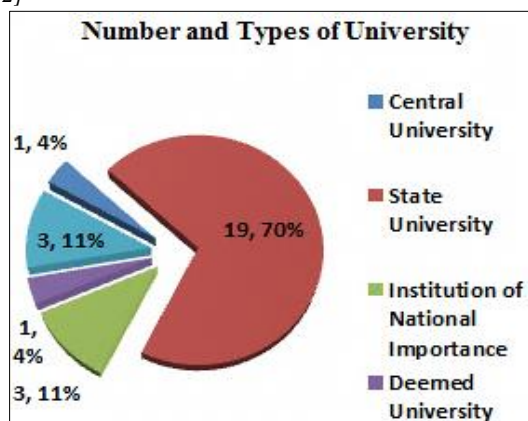*Source: http://www.indiaeduinfo.co.in/state/bengal.htm [2]*

Fig. 1: Pie Chart Showing Number and Type of Higher Educational Institutions in West Bengal.

HISTORICAL BACKGROUND OF PRIVATE ENGINEERING EDUCATION INSTITUTIONS IN WEST BENGAL

With this background, the State of West Bengal is marching forward towards the expansion of Higher Education in engineering & technology and also in management education. More specifically, in the last ten years, the growth rate in Higher Technical Education in West Bengal has remarkably improved, particularly in the emerging areas like Civil Engineering, Mechanical Engineering, IT engineering, Electronics and Communication Engineering, etc. [2].

The development of technical education in the west Bengal shows that there was no dearth of institution for higher professionals and technical education in the state. But in the recent years, the industries have expanded their wings in the land of West Bengal, and these require huge manpower both technical and Non-technical. Definitely the demand for technical manpower is high to fulfill the void and much stress has given on expansion, modernization and reorientation of technical education. To attain the purpose, new private engineering colleges and institutes are being opened up.

The first step towards engineering education started in the year 1856 when an initiative was taken to impart basic engineering education at the Writers' Building, Kolkata. But the first formal and mainstream engineering education was started with the establishment of Bengal Engineering College in 1857 with a licentiate course in Civil Engineering. The college was initially affiliated to Calcutta University and was later combined with Presidency College in 1965. Again it was separated and shifted to Shibpur, Howrah to its own premises and building which was previously occupied by the Bishop's College in 1880.

The first diploma courses in other fields like mechanical and chemical engineering was begun by Jadavpur University in early 1990s. Bengal Engineering College popularly known as BE College started first degree courses in several engineering disciplines during 1930s. There were only 9 engineering educational

institutions in in West Bengal till the end of 1960s. And all of them were either government institutions or in University Sector. First self -financing Engineering Institution was set up namely Haldia Institute of Technology, Haldia, West Bengal in the academic year 1996–97. At present there are 71 private Engineering educational institutions in the state of West Bengal [3].

The West Bengal University of Technology (WBUTech) is a public state university established in the year 2000 by the Government of West Bengal, located at the Salt Lake City, Kolkata, and West Bengal, India.

The university primarily imparts education in the field of Science, Technology and Management. The West Bengal University of Technology (WBUT) has 207 affiliated Colleges and Institutions spread all over the West Bengal and offered all the major Science, Engineering and Management courses.

The University aims to achieve self-reliance the country requires centres of excellence for evolving world-class technology. The main objectives of Technological University in the state of West Bengal:

- To provide affiliation to engineering, technological and management institutes.
- To provide quality technical education that may help the West Bengal in its technical development and will boost technical environment in the country

DISTRIBUTION OF ENGINEERING AND TECHNOLOGY INSTITUTIONS IN WEST BENGAL

The different types of engineering technology institutions in the state of west Bengal are showing in Table 2. In the Table 2 and Figure 2 shows that, the Engineering & Technology Institutions is the highest i.e., 87(42.03%) followed by Management Institutions 40(19.32%), MCA 52(25.12%), Pharmacy 10 (7.83%), Architecture 06 (4%), HMCT 04 (1.93%) and other institutions 06(02.89%) are available in the state of West Bengal [4].

Table 2: Showing Different Types of Engineering and Technology Institutions.

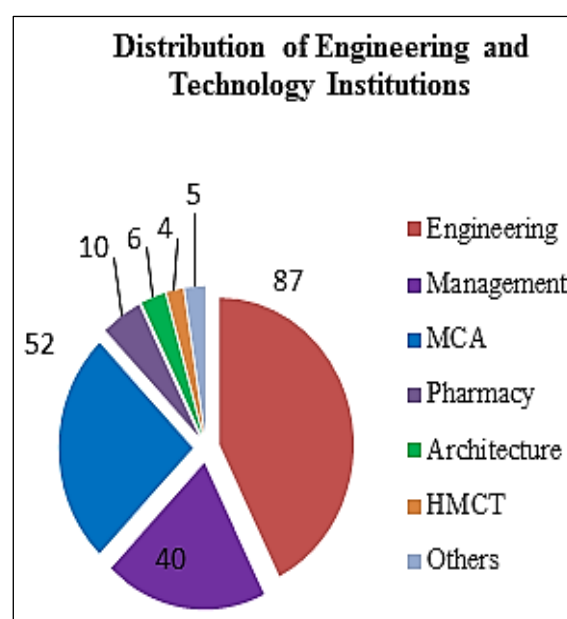| Sl. No.	Types of Institutions	No. of Institution	Percentage (%)
1.	Engineering	87	42.02%
2.	Management	40	19.32 %
3.	MCA	52	25.12 %
4.	Pharmacy	10	04.83 %
5.	Architecture	06	02.89 %
6.	HMCT	04	01.93 %
7.	Others	07	03.38%
Total		**207**	**100.00 %**

Fig. 2: Pie Chart Showing Distribution of Engineering and Technology Institution.

CATEGORY-WISE DISTRIBUTION OF ENGINEERING INSTITUTIONS (B.TECH) IN WEST BENGAL

There are four category of engineering institutions are established in the state of west Bengal. Table 3 and Figure 3 highlights that the out of 87, 71(81.62%) engineering and technology institutions are running by self-financing basis whereas 04(04.60%) engineering institutes are run by central government funds, 06(06.89%) are state Govt. engineering colleges and 06(06.89%) are run by several University in the state of State West Bengal [5].

Table 3: Category Wise Distribution of Engineering Institutions.

Sl. No	Category of Engineering Institutions			Number of Institutions	Intake Capacity (2013-14)
1.	Engineering institutes with special status(IIT,IIM,IIEST,NIT)			04(04.60%)	3,264(08.36%)
2.	University / University Departments			06(06.89%)	2,201(05.19%)
3.	Govt. Engineering & Technology Colleges			06(06.89%)	1,314(03.37%)
4.	**Self -Financing Private Engineering College**	Govt, Aided	06	**71(81.62%)**	**32,294(82.88%)**
		Un-aided	65		
Total				**87(100.00%)**	**38,973(100.00%)**
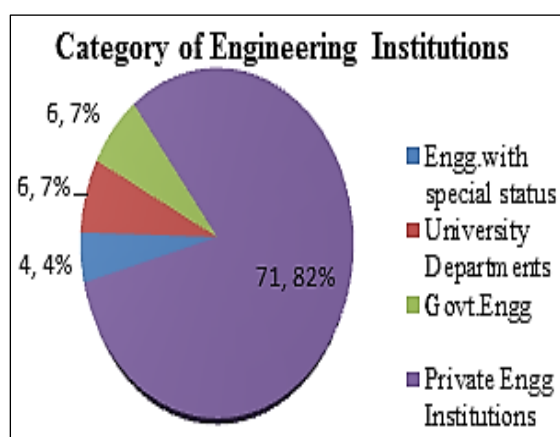
Fig. 3: Pie Chart Showing Different Engineering Institutions.

TRENDS IN PRIVATE ENGINEERING & TECHNOLOGY INSTITUTES IN WEST BENGAL

The growth of private Engineering & Technology institution has been accelerated throughout the 9th Plan Period, 10th Plan Period and the 11th Plan Period and the beginning of the 12th Plan period. Table 4 and Figure 4 shows that the number of degree level private engineering institutions (B.Tech) was one in 1996–97 and where as in the year 2013–2014 it had increased to 71 engineering institutions .It is also seen that establishment growth of engineering and technology institutions was very high in the year 1999 to 2003 and 2008 to 2010 due to massive efforts and policy decisions were taken by the central government and the state government. It is observed that from 2010 to till date the growth in engineering education has come down, both in number of students and number of college [6].

Table 4: Growth of Private Engineering Institutes in West Bengal.

Academic Year	Total Institutes	Additional	Academic Year	Total Institutes	Additional
1996–1997	1	-	2005–06	40	01
1997–1998	2	01	2006–07	42	02
1998–1999	7	05	2007–08	43	01
1999–2000	12	05	2008–09	52	09
2000–2001	17	05	2009–10	61	09
2001–2002	23	06	2010–11	67	06
2002–2003	29	06	2011–12	69	02
2003–2004	36	07	2012–13	70	01
2004–2005	39	03	2013–14	71	01

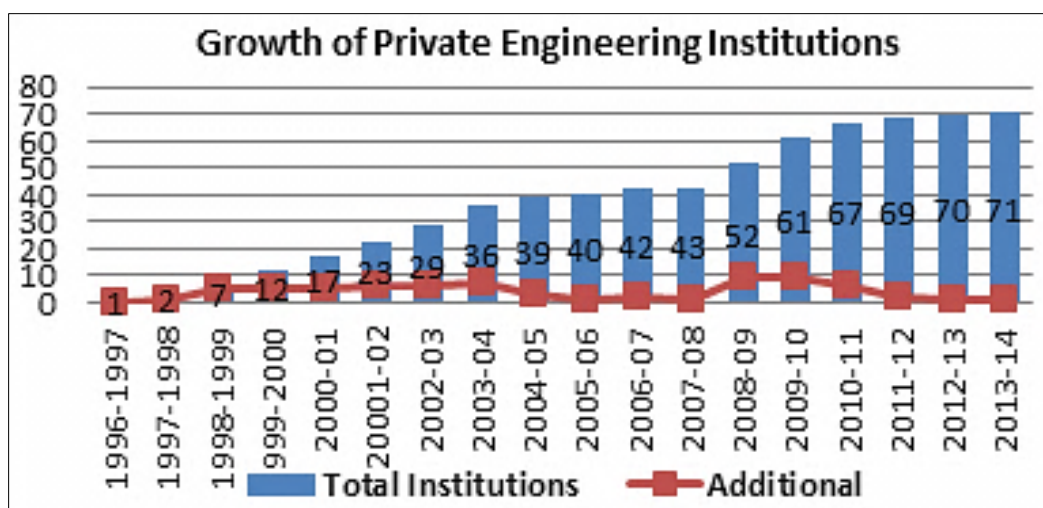***Fig. 4:*** *Showing Growth of Private Engineering Institutions.*

GROWTH OF STUDENTS INTAKE CAPACITY IN ENGINEERING COURSES IN WEST BENGAL

The growth of student's intake capacities in engineering courses in the state of West Bengal is shown in the Table 5. Table 5 shows that in the 1996–2000 the intake capacity were 6879 which went up to 38973 in the year 2013–14.

It is also seen that massive growth of intake capacities in engineering courses in West Bengal was very high in the year 2000–2005 i.e. 50.22% Figures 5 and 6.

Table 5: *Growth of Students Intake in Engineering Courses.*

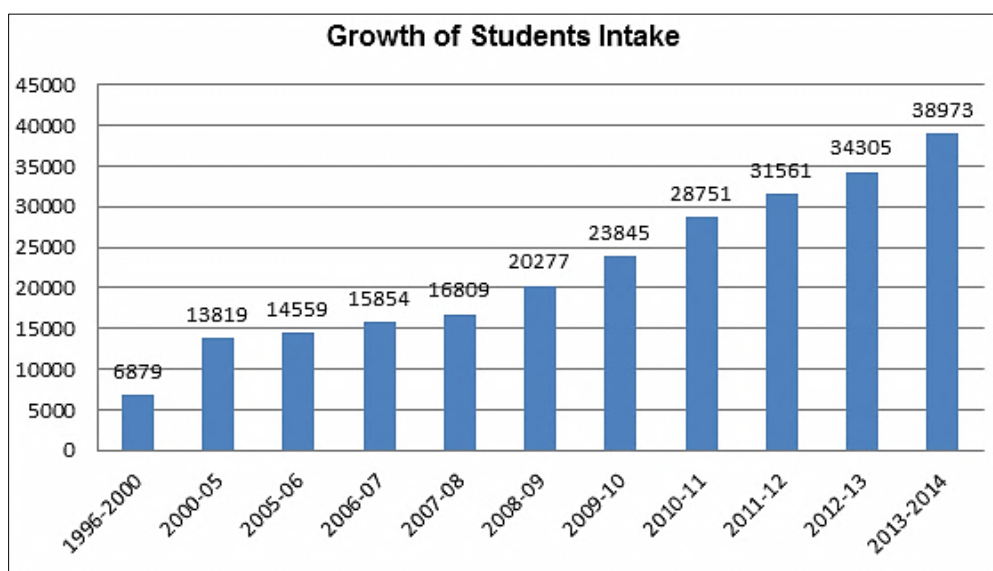| Year	Students intake	Growth rate (%)
1996–2000	6,879	-
2000–05	13,819	6,940(50.22%)
2005–06	14,559	740(05.08%)
2006–07	15,854	1,295(08.17%)
2007–08	16,809	955(05.68%)
2008–09	20,277	3,468(17.10%)
2009–10	23,845	3,568(14.96%)
2010–11	28,751	4,906(17.06%)
2011–12	31,561	2,810(08.90%)
2012–13	34,305	2,744(07.99%)
2013–14	38,973	4,668(11.97%)

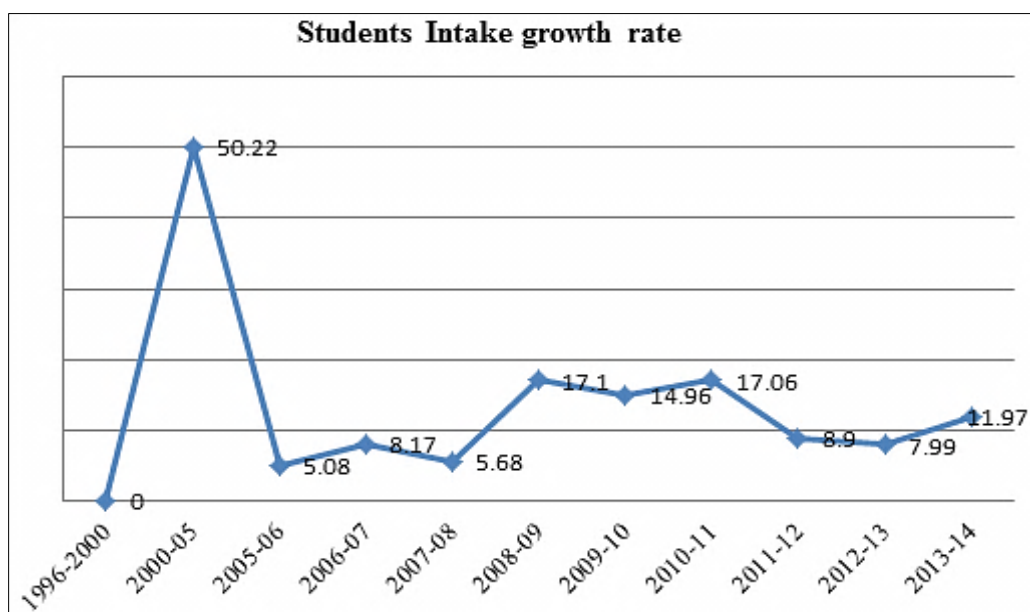***Fig. 5:*** *Showing Growth of Student Intake.*

Fig. 6: Showing Intake Growth Rate.

ROLE OF LIBRARIES IN ENGINEERING INSTITUTES

Like any other library affiliated of an institution, the libraries of engineering education institutions contributes primarily to the teaching and learning process by providing various information and learning resources to its users for their studies in courses offered by the institution concerned. The regulatory body for technical education in India AICTE has framed exhaustive norms for libraries of engineering institutions offering different technical courses.

The major role of engineering college library is to gather information, develop proper collection in engineering subjects and to cater library and information services as per requirements of users and students.

The main aim of an engineering college library is to help professionals of engineering education in updating their ability and knowledge and to give information about new outlook, concept and study of new innovations

Modified Services:

(a). Card catalogue to OPAC

(b). Manual to Automatic circulation

(c). Reservation alert by post to electronic mail

(d). Document delivery service by post to electronically

(e). Interlibrary loan to resource sharing Microfilm

(f). Translation service by man to machine and microfiche search

in engineering education. Now-a-days ICT has been playing a crucial role in gathering and disseminating information to the users and engineering professionals. In today's age of digitization and web technologies it is necessary for engineering college libraries to adopt use of trendy information systems and new web technologies to fulfil the increasing demands of the forthcoming engineering professionals. At the last two decades biggest technological episode is the innovation of digital media which helped libraries to stock the multimedia documents and also entire range of everyday activities [7].

NEW SERVICES PROVIDED TO THE USERS IN MODERN LIBRARIES

Here we categorically differentiate two ways the services provided to the users. (a) Modified Services: means which services are existed earlier in traditional library and after integrated of ICT in libraries how the services are provided in modified way. (b) New Services: means which are newly innovated after integrated of ICT in libraries. [8, 9].

New Services

(a). Electronic resources

(1). e-Journals

(2). e-Books

(3). e-Archives

(4). CD-ROM and

(g). Bibliography services: Indexing and abstracting services by man to machine

(h). Manual suggestion for document to online

(i). Current awareness services:

(1). SDI

(2). New arrivals of books and journals

(3). Institutional publication

(b). Database services

(c). ETD

(d). Institutional repository

(e). Online reference service

(f). Overdue notices

(g). Security system

TRENDS IN LIBRARY SERVICES IN ENGINEERING COLLEGES

The emerging challenge for the librarian is to teach intelligent selection, collection, dissemination of electronic resources in engineering college libraries [10].

Traditional Collection to eResource Collection

Collection development is defined as systematic building of information resources in a library and information center.

It's including the selection, acquisition and processing of library materials in varied formats, meant for users' current needs and their future requirements.

There traditional collections should be converted to digitized form to provide information service. The collection development and selection policies changed to provide batter services.

Sl. No	Traditional Library Collection	Electronic Collection
1.	Books	ebooks
2.	Journals	ejournals
3.	Bound volume	Journal archiveal
4.	Reference collection	Digital tools
5.	Slides	Images
6.	Scientific movies	Dvds
7.	Photo album	Image collection
8.	Newspapers clippings	e-newspapers clipping (pdf,ps, doc format)

Card Catalogue to Web OPAC

In earlier days card catalogue is the main tool for retrieving the existing document in the library. Due to advancement of ICT, OPAC replaces the card catalogue. The feature of the OPAC is mainly user friendly searching the documents and we can search anywhere and anytime if OPAC is available in internet. More fields search option is available in OPAC in comparison with card catalogue.

In card catalogue we were able to search only author title subject whereas in OPAC along with these we are able to search though classified no, publisher, place words in titles and facility available for broad and narrow search by using the Boolean logic. Always up-to-date status of the documents is available in the OPAC in comparison to card catalogue. It means that OPAC is available for user in 24/7 and output will get in less time.

Manual to Automatic Circulation

Circulation is mainly known as issue and return of books. Earlier through book card and library card circulation work was done. After invention of barcode which is facilitating circulation automatic. Bar code is a unique code which is given to each documents similarly user identity card also bar coded which is used for multipurpose.

Now in automation libraries circulation work is done through scanning the user identity card and the document. So that more issue and return can be possible in less time because of no manual work. It helps to provide service to users in less time. Barcode replaces the book card for circulation work.

E-Database Services

Databases are different kind such as bibliographical, numerical, statistical, full text, and reference etc. These database are commercial available by vendor library subscribed the database for user. It has vital role for retrieve the exact and pinpointed information related to user query so that user can get all related information by searching the database.

With subscribed databases some databases are managed by the library for the users which are freely available by the vendor or publisher for

their advertisement. Databases provide the better and related information to the research scholar according to his/her research topic.

Online Reference Services (Asked to Librarian)

Online reference service provided to the users in two ways. (a) Asynchrony: The service the user will e-mail a request to the library or fill in a specific web form outline the specific request and in due course answer will be provided by e-mail and (b) Synchrony (real time, chat) in this service, there is a two way communication between user and librarian using chat software or video-technique. Most of the libraries developed software chatting with librarian with online query and get answer through chatting from librarian. This is an interactive online reference services.

Mostly ready reference services provided to the users who are outside of the campus. Some time knowledge born created to answer. So that users automatically get their answer from librarian.

E-Reservation

It is very difficult to contact the user who had claimed for any book in earlier days. But now in electronic environment user gets automatically alert message if he has claimed any document. It is possible only for electronic mail which is a part of every aspect of human activity. So that user can aware about his demand after receiving the message without loss of time he can issue the same. It has more advantage to inform the user by post to electronic mail.

Security System

There is increasing application of emerging technologies like biometric, RFID, Wi-fi, etc in libraries for users' convenience and for providing effective services. In the last few years the demand for large national scale biometrical systems has increased extremely. Many countries, including US, European countries and others include biometrical data into passports, ID cards, visas and other documents. Human fingerprints are unique to each person and can be regarded as some sort of signature, certifying the person's identity. The most famous application of this kind is in

criminology. However, nowadays, automatic fingerprint matching is becoming increasingly popular in systems, which control access to physical locations, computer/network resources, libraries, bank accounts, or register employee attendance time in enterprises. In fact now laptops have this for access security. We also have iris recognition systems also in high security applications as biometric identification solution.

CONCLUSION

The growth and development in engineering educational institutions in private sector initiatives in India as well as in West Bengal has come down drastically, both in number of students and number of colleges due to massive increase in number of private engineering colleges without minimum standard and decrease in the industries in the state of west Bengal. The paper has attempted to correlate the usefulness of the library and information centers in the engineering education institution and its impact in the overall growth and development on the engineering education. Although libraries of the engineering and technological institutions play a pivotal role in facilitating students, researchers and teachers in the use of the internet, web-base and e-resources and other library and information services. Libraries of higher and technical education institutions are the main channels of bringing information to cater information requirement to the users. The changing information need by the users is also marked by a rapidly changing information user.. Rapid and massive developments in the libraries and information services in the last 10 years have been the introduction and spread of electronic information sources. The progress in information technology has offered today's information seekers different opportunities to access to information resources in an increasing array and format.

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Cite this Article
Nakul Ch. Mondal, Pijush Kanti Jana. Trends in Private Engineering Education Institutions and their Libraries Services in West Bengal: An overview, *Journal of Advancements in Library Sciences*. 2015; 2(2): 32–40p.