# Library Automation and an E-Library: College of Natural and Computational Sciences, Gondar

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*Abstract:* This paper discusses the library automation and e-library project of CNCS. It examines the evolution of the University, the planning process and the implementation of library automation and e-library/Internet facilities. The paper looks at different phases to which the project was divided and provides a detailed overview of how each phase was designed and executed which can help librarians make decisions about automation and e-library projects. Few of the challenges encountered are highlighted and solutions proffered.

*Keywords:* College libraries; library automation; e-library/Internet; software package, information and communication technology (ICT).

## 1.  INTRODUCTION

The University of Gondar is one of the oldest and most well established higher education institutions in the country. Our University was established in 1954 as a  Public Health College and Training Center (PHC & TC) in joint effort between the Imperial Ethiopian government, WHO, United States Operation Mission to Ethiopia, and UNICEF. Dictated by the pressing health needs that existed in the 1940s and 1950s the PHC & TC quickly became established as a pioneer center for public health practice serving as a key source of Ethiopia's health professionals. It remains the Ethiopia's oldest medical training institution.

The College of Natural and Computational Sciences, formerly called Faculty of Applied Natural Sciences, was established in 2004, when the College of Medical Science was changed to the level of University. We aim to fill the gap between academia and the working world by offering a sound academic training designed to meet the practical aspects of professional life.

The College library was established in 2004 to be the hub of intellectual excellence in support of Sciences in the college. The College is reputed to be the oldest and best institution not only in Gondar, Ethiopia and indeed the entire country with about 35,000 students. The college library has a total collection of about 20,000 volumes of books, comprising text and reference books, journals, magazines, newspapers, conference proceedings, mimeographs, research projects etc. It operated a centralized library system. For more than three decades of its existence, the college operated a manuallydriven routine services of acquisitions, information processing, classification, storage, retrieval and circulation. However, in the last three years, the college library started preparing for automation and elibrary service to conform with the world prevailing Information and Communication Technologies (ICT) demand. It is in the light of this, that this paper discusses the efforts of the library in preparing for library computerization which involves library automation and e-library/Internet services. The paper describes the preliminary planning process for the installation of e-library/Internet facilities and library automation.

**Literature Review:**

The emergence of information communication technologies (ICT) have revolutionized access to information for the business world, education, intellectual development, recreational and sport as well as social development. Information communication devices to include e-mail, world wide web, file transfer protocol (FTP) and telnet. Libraries all over the world have benefited tremendously with ICT initiatives and applications thus changing the traditional ways of library operations.

These ICT initiatives are made possible through digital technology. The digital technology is of importance when information is to be gathered, store, retrieved and evaluated. In order to bridge the gap between traditional and modern methods of information storage, retrieval and provision in digital age submits that the use of ICT in library operations must be seriously emphasized.

Full integration of digital technology or e-library into the library operations would bring about effective utilization and dissemination of information to users. In this wise, information accessibility will not be restricted to a physical location. Digital library (e-library) is a library that stored information electronically and made accessible to users through electronic systems and networks, but having no single physical location. E-library  refers to all the library resources that are available online through computers and databases. A digital library as computer-based information system for acquiring, storing, organizing, searching, distributing and displaying digital materials for end-user access not necessarily network-based.

## 2.  COLLEGE OF COMPUTATIONAL AND NATURAL SCIENCE E-LIBRARY AND LIBRARY AUTOMATION EXPERIENCE

The computerization project of the college library was conceived to be executed in three phases. The phases are: e-Library/Internet facility procurement and installation; Distribution of Internet signals and bandwidth and system administration; Selection and Installation of automation software package; Retrospective conversion of date and library automation project. The  implementation of e-library/Internet facility and library automation is capital intensive and requires high technological skills in respect of engineering design, system configuration and bandwidth administration and librarian dexterity in using the system.

**Phase 1: E-library/Internet facility procurement and installation:**

The college first conceived the idea of installing Internet facility in the college library in 2009. Few computer sets were procured. Dial-up technology was adopted. The project could not be sustained due to poor technical know-how on the part of the engineer handling the project and the end-user. As part of the efforts to re-activate the project, academic librarians and library officers were sponsored to series of workshops and conferences in order to have a fair grasp of the technicalities involved in library automation and e-library.

 The college ICT committee sat several times to determine the requirements of the computer and network cabling system to be connected to the CISCO 2811 series switches in the management information systems room (server room).

**Phase 2: Distribution of Internet signals and bandwidth/system administration:**

The initial e-library/Internet project was conceived to be distributed to each workstation through a central control wireless system, which was installed by Zinox Technologies. The signal was deployed through a shared bandwidth. The shared bandwidth could not power effectively the entire 50 desktop computers that was centrally located. Arising from slow downloading period occasioned by small size bandwidth, the college migrated to a 1024/1024kpbs bandwidth.

The college was unable to sustain the subscription of N3million quarterly hence there was need to look for better and cheaper technology. The college therefore migrated to a fiber optic technology option provided by IPNX, Lagos. Fibre optic technology provides a faster, cheaper and more stable bandwidth signals. However, the migration required the provisions of basic infrastructures such as 140ft mass, CISCO and some other accessories and logistics. The take off contractual bandwidth subscription agreement between IPNX and the College was 2 megabytes/ 2 megabytes.. It is in the future plan to extend the services to second campus of the college. The college automation/e-library project is connected to three servers. The main server which has higher memory capacity is to serve as an interface between the other two servers. The other two servers are connected to application  and Internet server. These two are networked to the main server. The network administrative centre is manned by a trained system administrator and two support assistants. The network administrative centre houses main server, two backup servers and shared devices like printers, scanners etc. In order to ensure constant supply of electricity, inverter of appropriate capacity is procured and  installed to provide an alternative source of power. The system administrators are to ensure that the servers are ready and signals distributed to all the workstations. Network challenges are addressed promptly and where a system develops minor faults, they are to rectify such faults with minimum loss of time.

**Phase 3: Selection and installation of library automation software package**

The library defined clearly the goal and objective of the library automation and computerisation which is to provide wide access to digitized library collections, using computer based skills to dispense library services to the end-users. College library management decides on application software that could support integrated library management system. The application software to select must be assessed to determine its scope and capacity that will be suitable to achieve library goal. There are a long list of application software packages in the market.

The Library  package could be assessed based on the following:

- Software functional flexibility and expandability

- Indexing and searching capabilities

- Interactivity of input and output interfaces

- System security provisions

- Good system documentation and manuals

- Cost

- Scope of customer training

- Possibility of system upgrading

- Compliance with the Internet

Besides, the package upgrading and renewal process does not require any financial commitment once it is connected to the Internet.

## 3. CHALLENGES AND PROSPECTS OF COMPUTERISED LIBRARY SERVICES

The computerisation of the college is not without its challenges. There is the challenge of optimumly utilizing small fund allocation to address wide segments of the automation areas. The committee handling the project had to accommodate areas not budgeted for and yet not compromising quality job delivery.

Library automation and e-library project require vast knowledge in the areas of computer engineering, computer networking and software installation and training. By implication, these specialists are to be brought together and coordinated to ensure success at the end. Librarians must be good in the area of Internet signal deployment and bandwidth assessment and sizes. In order to circumvent these challenges, there must be drastic attitudinal change in the way librarians leave the entire library automation and e-library installation project in the hands of computer experts. One other big challenge is in the area of continue sustaining bandwidth subscription. It is a fact that Internet facilities can only be sustained through subscription to the appropriate bandwith size that could power the number of computers and the level of Internet usage. Therefore, the institution must be prepared to fund the facilities regardless of the revenue generation therefrom.

E-library/Internet facility is now a backbone for any meaningful research in academic environment. There is the challenge of daily and routine maintenance of computer sets that are connected to the servers. There is the urgent need to employ a system librarian/analyst who will take charge of overseeing the system administration. This is very important as the college plans to gradually expand Internet service. Besides, the system librarian/analyst will ensure that appropriate volume of Internet signals are received and utilised using appropriate bandwidth software manager to monitor it. Again, minor repairs of computer sets and quick response to networking problems fall within the preview of this expert.

The college plans to increase the 2 megabytes size of bandwidth currently under subscription to megabytes. This has the potential of extending the Internet coverage to the Vocational Technical Education. School of vocational and Technical Education is a separate campus few kilometers within the town.

Full scale library automation and Internet services to cover the entire college would raise the intellectual development of staff and students and the college image in the academic world will be enhanced. It is intended that all the offices of

academic staff will be connected to the Internet thus the staff will be able to support their teaching and research drive without their physical presence in the library. Lack of steady funding of library services poses serious challenge to the sustenance of automation/elibrary project. Federal university libraries receive better funding attention than state college of education libraries. The fact that there is a budgetary allocation of 15% of the recurrent budget for library development at university level put their libraries at a better stead than state college libraries without any funding policy direction. The funding situation is so worrisome that books and journals are obsolete, equipment and furniture are dilapidated, personnel are scanty, and poorly trained. There is complete absence of oversea training for college library staff. This scenario further testifies to the glooming and precarious financial situation of the funding support for automation/e-library project at college level.

The erratic power supply remains a source of concern in sustaining automation/e-library facilities. Computer experts say Internet facilities are better placed on continuous power supply. This will ensure steady current supply to the equipment and equipment damage through power surge will be minimized. This problem is being addressed with the installation inverter equipment to provide alternate source of power.

## 4.  CONCLUSION

The lack of steady funding pattern for college libraries notwithstanding, libraries have to find ways of sustaining the automation and e-library projects. Presently, the e-library/Internet facilities are functioning effectively. The library automation is gradually taking shape. The library services to the users are gradually changing to Internet-driven and digital collections are given priority. The library is restructured to reflect the way services are being coordinated. For instance, the library is structured into six sections namely: readers' service, technical services, collection development, elibrary/ management information system, bindery section and special collection.

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