

## Chapter 27

# ICT in Libraries: Prospects and Challenges

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### ABSTRACT

*Recent developments in Information and Communication Technologies (ICT) have characterized new ways of information generation, managing, and dissemination. The advancements in ICT with breakthrough in transient and permanent information storage technology have not only reduced the cost of infrastructure required for hosting digital libraries, but also demonstrated success in a wide variety of projects across the world. This chapter addresses and documents the emergence of digital technologies, the purpose and characteristics of digital libraries, and digitization policy. It also elaborates the process of digitization including the hardware and software requirements. This chapter also focuses on major digitization initiatives and the challenges of digitization.*

### INTRODUCTION

This is an information age wherein information has become a valued commodity in its own right, and the role of information in fostering development has been duly recognized. This age is characterized by new ways of information generation, managing, and dissemination because of the use of Information and Communication Technologies (ICT) (Moahi, 2003; Paul, 2007). Today, the barriers of space and time for searching the knowledge and

information are being eliminated which has given rise to digital libraries. Further, the advancements in ICT with breakthrough in memory technology have not only reduced the cost of infrastructure required for hosting digital libraries, but also demonstrated success of wide variety of projects across the world (Jeevan, 2004; Paul, 2010). Before introduction of ICT, libraries were finding it difficult to preserve the rare, fragile, and unique print collection due to preservation related multiple problems. Factors like residual acidity in paper

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and dust used to cause slow decay of paper-based documents. Apart from easy decay of paper, other factors that have brought digital technology into prominent use are ease of use, easy accessibility, and perceived utility (Sridhar, 2007). Now, with the availability of technology, libraries are converting their collection into digital form to preserve their cultural heritage, thus giving rise to digital libraries. Digital libraries are being denoted using different terms like virtual library, hybrid library, electronic library, library without walls, etc. A digital library is one in which collections are stored in digital formats and its resources are accessible through computers. Today, many of the traditional libraries are actively involved in digitization activities by converting their print content into digital format. However, the digital collection also includes documents born-digital, which are supplied by the publishers in digital form.

## **EMERGENCE OF DIGITAL TECHNOLOGIES**

During medieval period, emergence of printing technology and subsequent use of paper revolutionized library culture and brought a social change. Over centuries, paper technology remained quite stable. Although paper technology had many drawbacks but books became common and large libraries started to include hundreds and thousands of books in their collection. However, overcoming the problem of brittleness of books through deacidification and reformatting has caused slow decay of paper-based documents, creating a need for better storage media (Ashraf, 2010). For such problems, introduction of ICT in early 1930s played a major role in changing the information world when libraries started using some sort of technology to transact business. During this period, punch card equipment was implemented for use in library circulation and acquisitions (Mutula, 2007). According to Bush (1945), memex was described as a mechanical library to allow

a user to view stored information from several different access points and look at several items simultaneously. His ideas were later used in the basic hypertext operations. During 1940s, IBM produced Mark series of computers. Later technological breakthrough in semi-conductivity has led to increase in computing speed and miniaturization of computers and consequently the reduction in costs of computers. During 1950s and 1960s the digital computers were accessible to universities and defence organization in India. During 1970s with the introduction of mini-computers, large commercial organizations started using computers for their computational needs.

By the early 1990s, growth in the electronic communication of data among different libraries took place. Librarians by now started having access to reference information and bibliographic data using dial-up connection to a local computer that would route information to the host machine. Thus, with the advent of personal computers, local- and wide-area networks, and the movement from centralized to distributed client-server processing that libraries of all types were able to utilize the power of computing technology to share information and resources, generate management reports, and electronically link libraries together (Deegan & Tanner, 2002). Moreover, universal accessibility of digitized resources 24x7 made digital technologies most popular choice among researchers.

## **DEFINITIONS OF A DIGITAL LIBRARY**

A library containing digital collection is called a digital library. Various authors have defined digital library in different ways. Yerkley (1996) defined digital libraries as “Electronic libraries in which a large number of geographically distributed users can access the contents of large and diverse repositories of electronic objects.” According to Harter (1997), a digital library is one that contains

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