Chapter 5
Open Access to Knowledge and Challenges in Digital Libraries

Cary Francis Oyier
Rongo University, Kenya

Joyce Nyambala
The Technical University of Kenya, Kenya

ABSTRACT
This chapter discusses open access as an aspect of digital libraries and the effect of copyright laws on free access to information. The authors conclude that the future of scholarly communication rests on open access content. They submit that the bulk of scholarly output will be open access. These, they opine, will become a formidable pillar of digital libraries. In this recognition, different players have come up with successful interventions for dealing with the barriers posed by copyright requirements. The authors recommend that all the players in scholarly communication should fully embrace open access principles at all levels. Similarly, they propose that stakeholders should urgently relook the challenges posed by copyright to the realisation of open access with a view of finding strategies to cope effectively with the same.

INTRODUCTION
Information and communication technologies (ICTs) have redefined all aspects of human life in a profound way. In the information and knowledge management sector, ICTs have affected the reproduction, saving, distribution and preservation of the collective memory of humanity. Among the many ICTs, the discovery of the Internet in the early 1990s has had far reaching implications on the management of information. Indeed, it created a global digital sphere, which coupled with the hyper-change of technologies and social networks, has impacted all aspects of information and knowledge management. Based on the Internet platform, the distribution of knowledge today is a global phenomenon. This is the reality that defines the current knowledge society which is based on the global interconnection of technologies.
The rapid evolution of ICTs and their application in knowledge management has come with new paradigms in the treatment of the traditional laws governing management of knowledge resources thus redefining the realities in the knowledge market. The casualties in this case are the intellectual property rights which have to be tightened or reformed due to vulnerabilities exacerbated by the emerging technologies and the new demands in the information and knowledge market. The intellectual property laws are now viewed as being obstacles to the distribution of information and knowledge as a matter of public good in light of the global open access movement. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2015) asserts that the instantaneous reaction towards making the laws stricter regarding the availability, use and distribution of creative works through the Internet as a networked public platform is in itself a constraint to the evolution of digital libraries and repositories. This chapter discusses open access content in connection to digital libraries and copyright laws.

BACKGROUND INFORMATION

The evolution of digital libraries has been very dramatic starting with the conceptualisation of Memex machine in 1945 to help the world deal with the exponential growth of information – the information explosion. Memex provided a microform-based means of storing and retrieving information (IFLA, 1998). The eventual discovery of computers around the same time led to the application of microforms in building large bibliographic databases that created new paradigms in information retrieval systems in the library. This may be viewed as the first major step in the evolution of digital libraries. It was immediately followed by the discovery of the Internet in 1990s which proved to be a redefining phenomenon in the development of digital libraries and a landmark development from the memex database technologies. The network technology and its integration with telecommunication technologies allowed organisations to connect a number of computers into local and wide area networks so as to share software applications, information storage spaces and to transport information electronically. Arising from this scenario, the world embraced libraries of digital information which were easily accessible in nature as contrasted to traditional libraries (IRMT, 1999).

The exponential growth in literature in the 20th century, underpinned by the Internet and the World Wide Web (WWW) technologies, created enormous challenges to libraries and research institutions. The burden of information explosion became catastrophic with spiralling publishing costs and inefficiencies in the distribution of scholarly materials. In particular, libraries were faced with the burden of increasing prices of journals, limited physical space for storage and extensive budget cuts. This scenario called for new models of scholarly communication which led to open access movement. This was a milestone in the development of digital libraries. Currently, many of these libraries are populated with an increasing collection of open access content as compared to subscribed or licensed materials. As such, open access literature should be seen as a fundamental building block for digital libraries across the world.

UNDERSTANDING DIGITAL LIBRARIES

Graham (1995) opines that the digital library concept is very confusing in literature. One, it is used synonymously with terms such as virtual library, electronic library and libraries without walls. Two, the concept attracts different connotations in different fields: in the area of information retrieval, it is seen as