

THE EVOLUTION OF ELECTRONIC PUBLISHING: A LITERATURE REVIEW

M.T. Bashorun,

Priti Jain,

P.M. Sebina

T .Kalusopa

University of Botswana, Gaborone, Botswana Department of Library and Information Studies

Corresponding Author: M.T.Bashorun. (PhD Candidate)

Abstract:

Information Technology has changed the way information is processed, stored and disseminated. The prime aim of publishing is to disseminate new research findings as widely as possible in a timely and efficient manner. The ultimate goal of EP is to provide fast and easy access to information contained in the publications with simple, powerful search and retrieval capabilities. This paper presents literature reviews of EP, traces its developments and explores the components of EP with the benefits. It examines the rationale for copyright in digital age and trace development of EP in Africa with the challenges. The paper concludes that the future of EP in Africa is brighter with the great potential to flourish.

Keywords: Africa, copyright, electronic publishing, publishing, scholarly communication

1.0 Introduction

Information Technology has brought about changes from traditional print to electronic format. Electronic publishing (EP), uses new technology to deliver books and other content to readers. Since the technology allows publishers to get information to the readers quickly and sufficiently, it is causing major changes to the publishing industry and stakeholders in the publishing sector. The application of electronic technology to almost every aspect of human endeavours is on the increase in the modern era of digital information revolution (Oladejo and Adelua, 2012). For instance, the EP which is a relatively new channel for scholarly resources has radically changed global availability of scholarly publications. At the moment,

readers are no longer confined to print publications but can search, obtain and download scholarly papers from electronic journals, electronic books, and electronic archives.

There are several trends in EP of scholarly materials that are changing the face of information dissemination within the specialist research and professional areas. It is highly required to bring these innovations together and anticipate the next developmental stage of EP. A number of electronic publishing developments have some relevance to our ability to understand the current position of EP in Africa. Hence, this paper presents an overview of the evolution of electronic publishing, from 19th century of the scholarly journals up to 21st century.

2.0 Background

The combinations of computers and telecommunication technology have brought widely exposure to EP in the scholarly environment. EP has a vital role to play in developments of research in every sector, but we need to examine its various definitions.

What is electronic publishing?

EP could be defined as “the application by publishers of a computer aided process by which they find, capture, shape, store and update information content in order to disseminate it to a chosen audience”(Kist,1989, p.602). Ludwick (2000) describes electronic publishing as non-print materials produced digitally. EP in its broadest sense is the use of electronic devices in all aspects of production, management and distribution of primary and secondary information.

Cuadra (1981) identified two major tools that will facilitate electronic publishing as computers and communication network. Computers facilitate the production process, while distribution is handled through the communication networks, enabling the users to access data produced electronically. It can be concluded that electronic publishing is the process of production, dissemination, storage and retrieval of information in an online environment.

EP can be described considering its functionality as digital divide that brings innovative ways of bridging the global digital divide gap and creating social and economic benefits to the stakeholders, who were marginalized from access to research findings. There are various efforts made by many authors to discuss the developments in EP but technology developments in general are not stable.

The field of Information Technologies is currently witnessing an unprecedented phenomenon of globalization and acceleration due to the success of the World-Wide Web.

The process of publishing and distribution of information has been transformed by ICTs. In view of growth of information, electronic publishing has become a foundation for the new information society to get the right information to the right person at the right time. Therefore, it is necessary to address these questions; what is the current state of electronic publishing? What are its benefits and shortcomings compared to print publication? Is it destined to fail or are there indeed hidden assets waiting to be discovered by major stakeholders? What does the future hold in stock?

3.0 Objective

The main objective of this paper is to explore the current state of electronic publishing in Africa. The specific objectives are to:

- Trace development in electronic publishing
- Describe the processes involved in electronic publishing and traditional print
- Discuss the benefits and key issues of EP
- Examine the rationale for copyright in digital age.
- Trace electronic publishing development in Africa

4.0 Methodology

This is a desktop research and literatures were reviewed using core keywords for the literature search. To ensure that all concepts were included within publishing, the following general related terms, were used as core keywords for all literature searches ‘publishing’ combined with any of the following terms; digital, web, Internet and electronic. For example electronic publishing, web publishing, digital publishing etc. The literature searches were conducted using online databases (Library and Information Science Abstracts (LISA), Science direct, Ebscohost, Emerald, Africa Journals Online, Google scholar) available at University Library to retrieve journal articles in electronic publishing. LISA provides access to abstracts. The abstract accessed help to identify relevant articles; therefore an insightful analysis is possible. LISA offers authority controls strictly for subject terminology that can enhance recall or precision in searching. The searches were limited to publications in English. In addition, a variety of search engines (altavista, yahoo etc) were used to identify relevant works on electronic publishing. Different relevant materials like articles, books and conferences proceedings addressing electronic publishing were used. Journal articles were consulted because they offer a relatively concise and up-to-date format for research.

Conference proceedings were used because they provide the latest research, or research that has not been published.

5.0 History of electronic publishing

The publishing revolution started five hundred years ago by Johannes Gutenberg with the printing press. The printing had gone into the next century, the World Wide Web (WWW) and Internet are without doubt introducing a new era in which the same kind of impact, if not greater, would be seen in the way we store, promote and distribute (or transmit) information. With the increasing popularity of the Internet, many developments have sprung up that enhance publishing (Ling *et al.*, 1996). This trend needs to be traced for keeping abreast of development in publishing.

Evolution of electronic publishing can be traced back to 1970s when computers were first used to assist printing of abstracting and indexing services. It has since evolved along the technological growth for over four decades. The databases emerged online first in the late 1960s and Dialog became the first commercial online service in 1972 (Lancaster, 1995). By 1975, there were 300 publicly available online databases. Creation and remote accessibility of online bibliographic databases are considered as very important landmark in electronic publishing. Sophisticated online databases were built during the 1970s and the 1980s using high technology. The distribution of database management system link different remote systems using data files generated in the process of electronic photo typesetting of printed abstracting and indexing services and other primary journals (Arora, 2001).

With the recent advent of digital information systems and the Internet, the scope of publishing has expanded from traditional to electronic publishing. From 1970s, there was an interest in the use of electronic publishing not only because the traditional role of the scholarly publication. This role of reporting results quickly and as a formal record of peer reviewed scholarly achievement was under stress in the print world, because the two functions could be achieved better in the electronic environment (Oppenheim, 2008). The first electronic publication came in the 1980s in the form of plain text e-mails. They were sent to the subscriber via a mailing list (Chitra, 2010). The period between 1985 and 1995 referred to as a period of digital revolution, involved a marked shift from analog to digital treatment of information. The electronic distribution path was neglected as soon as new tools became available in the late 1980s and early 1990s. Later CD-ROMs appeared to be more effective medium for electronic publishing. This kind of publication was relatively successful

for a number of years and, for particular publications (encyclopedias, dictionaries, atlases, handbooks), are still in use (Pettenati, 2001).

The CD-ROM has a high reliability allowing the use of many different formats. It has excellent quality, pictures, figures, and long life at low cost support. However, CD-ROMs soon became unmanageable for libraries when each CD-ROM required the installation of a special client (software to read the CD-ROM) for each publication. In the 1990s, scholars realized that, the use of the world wide web would “accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge” (Willinsky, 2002).

Then, in the years 1994–95 appeared the very first electronic journals (e-journal). The first e-journal to be distributed was Electronics Letters Online by IEE (Institution of Electrical Engineers). IEE distributed the journal via the Online Computer Library Center (OCLC); OCLC invented a client, called Guidon, to be installed on the reader’s station. Guidon was an excellent tool, with a very rich functionality but unfortunately, not Web-based (Pettenati, 2001). It became outdated as soon as the Web was chosen for the distribution of e-journals.

Web distribution started in 1995–96 and recorded immediate success. It was possible to use the rich format PDF (Portable Data Format), to embed links in the text and to start to use multimedia tools. Now, electronic publications are already prepared for downloading into Personal Digital Assistants (PDAs); it is a sort of e-book device already present in our pockets for other uses.

6.0 Electronic publishing: products and services

Electronic publication can be described as a document distributed primarily through electronic media in different forms. Electronic publishing is transforming itself in a wide range of products and services, although most of them try to be like the traditional publishing while others are revolutionary in their approach and design.

6.1 Electronic books

Borchers (1999) defines an eBook as a portable hardware and software system that can display large quantity of readable textual information to the user and let the user navigate through this information. An eBook is digital reading material that a user can view on a desktop or notebook personal computer, or on a dedicated, portable device with a large

storage capacity (1,500 to 50,000 pages) and the ability to download new titles via a network connection required hard ware. The reader hardware is expensive, e-titles cost about the same as their print counterparts, ink and paper are still easier to read and handle. Chong and Ling (2009) investigate the students' preference for the e-book designs. Researchers compiled three e-books non-fiction in portable document format for evaluation. It was indicated in the result that ease of use of e-book is highly associated with ease of navigation. Publishing a book electronically is to achieve greatly decreased publication costs, quick and dissemination of information (Cunningham and Rosebush, 1996). CD-ROM is appropriate medium for publishing books because it can be operated offline without Internet and it relieves end users of the fear of high connecting time charges, the readability of the *text* and preservation of the quality of the images (Koganuramath et al., 2000).

6.2 Electronic periodicals

Electronic journal (or e-journal) is defined as any journal, magazine, e-zine, webzine, newsletter or type of electronic serial publication which is available over the Internet and can be accessed using different technologies (Arora, 2001). Electronic Periodicals are accessible to all users regardless of geographic location. Anyone in the world with services and the proper computer software and browser services can access online journals. This accessibility leads to a more diverse audience throughout the world as well as a readership that may include not only academics, but students and lay people (Saxena, 2009).

6.3 Electronic databases

With the influx of computers and communication technologies, the strength of information system in the development of modern database has taken a new dimension. The stocks of the library database consisting of books, periodicals, reports and theses can be converted to electronic form that allows access for public use through digital networks. A variety of electronic database publishers today account for publishing information both bibliographic and full text on CD-ROMs as well as making them available for On-line retrieval. The prominent On-line publishers include DIALOG, EBSCO host etc (Chama and Saxena, 2008).

6.4 Electronic publishing on CD-ROM

CD-ROM has provided new dimension for information storage and retrieval. Publishing information mainly abstracting sources are quite common in CD-ROM. Although

much of the work on e-journals has concentrated on distribution via the Internet, there has been some work on CD-ROM as well. There are many non network electronic publications such as encyclopedias on CD and DVD as well as technical and reference publications relied on by mobile users without reliable and high speed access to a network (Kumar, 2012). Some of the advantages of CD-ROM are;

- More material can be included, both in terms of quantity (650+megabytes) and type (multi media resources).
- Full text searching is relatively easy to include.

6.5 Print-on-Demand (POD)

Print-on-Demand is a new method for printing books (and other content) which allows books to be printed one at a time, or on demand. It is a mix of electronic and print publishing .i.e (print on demand combines the Internet with more traditional publishing methods). The book is held by the publisher in electronic form and is printed out in the hard copy form only on order. This method helps free publishers from the process of doing a traditional print run of several thousand books at a time. Print on demand thereby “eliminates the need for editions to be printed beforehand, greatly reducing up front publishing costs” (Segur-Cabanac, 2005).

POD is highly in demand nowadays, because it is a good intermediary step between the regular method of printing paper books and electronic books.

6.6 Digital content

Digital content generally refers to the electronic delivery of fiction that is shorter than book-length, nonfiction, and other written works of shorter length. Publishers of digital content deliver shorter sized works to the consumer via download to handheld and other wireless devices. Technology used for delivering digital content includes portable document file (PDF), hypertext markup language (XML), WAP (Wireless Application Protocol) and other technologies. The security of the data being delivered is the major concern of publishers, who want to ensure they can deliver digital content without the risk of someone copying the work and selling or giving away the works (Saxena, 2009).

6.7 Electronic ink

Electronic Ink is a developing technology that has a huge impact on the media and publishing industries. Electronic Ink could be used to create a newspaper or book that updates itself. It is a high-contrast reflective display ideal for e-book applications. In addition, this content could be programmed to change at any time. For example, you could have a billboard that rotates different advertisements, or you could receive a coupon in the mail that is frequently updated with the latest offer. For media companies, the possibilities are almost endless. Someday, electronic newspaper will simply update itself every day. E - Ink Corporation, a new company with major investors, and Xerox are two companies currently developing this technology (Saxena, 2009).

6.8 Email publishing

Email publishing is designed specifically for delivering regular content-based email messages. Email publishing, or newsletter publishing is a popular choice among readers who enjoy the ease of receiving news items, articles and short newsletters in their email box. The ease of delivery and production of email newsletters have led to the development of a massive number of available email newsletters, mailing lists and discussion lists on a large variety of topics (Saxena, 2008).

6.9 Web publishing

Web publishing is not a novel practice any longer, but it continues to change and develop with the introduction of new programming languages. Hypertext Markup Language (HTML) is still the most widely used web programming language, but Extensible Markup Language (XML) is also making headway. XML is valuable because it allows publishers to create content and data that is portable to other devices. Nearly every company in the world has some types of website, and most media companies provide a large amount of web based content (Saxena, 2009).

7.0 Features of electronic publishing

The electronic publishing has several features, which makes it to be unique as outlined below:

- EP contents spread to researchers within the little time

- Ease of making correction if need arises, an electronic text can be updated or corrected with the same immediacy.
- Allows anyone with access to a networked computer to ‘publish’ on the internet.
- Provides high global visibility for the works
- Overcome geographical barriers associated with print media
- Distribution times between production, publication and its delivery have been drastically reduced as shown in figure 2.

8.0 Components of Electronic Publishing Process

The need to understand the key elements that are involved in electronic publishing process is essential, though similar with traditional publishing but this component does not fade away in the electronic era. The valid content, clarity of expression, and effectiveness of presentation increase as more of the journals are read on the screen. This allows comments and contributions from readers within the shortest period of time contrary to traditional publishing that associated with delay in peer review and editing processes. The elements of the publishing process are:

- Author preparation - to create intellectual content.
- Peer Review - to ensure scientific quality and appropriate scholarship.
- Copy editing and typography – for clarity and effectiveness of presentation.
- Database preparation-the core of electronic system, to ensure access and interoperability.
- Production and Distribution - to make literature available for use.
- Archiving to ensure continuing availability and authenticity and to maintain the historical record (Hartmann, 2011:2).

The components of electronic publishing process are illustrated in the figure (Figure 1).

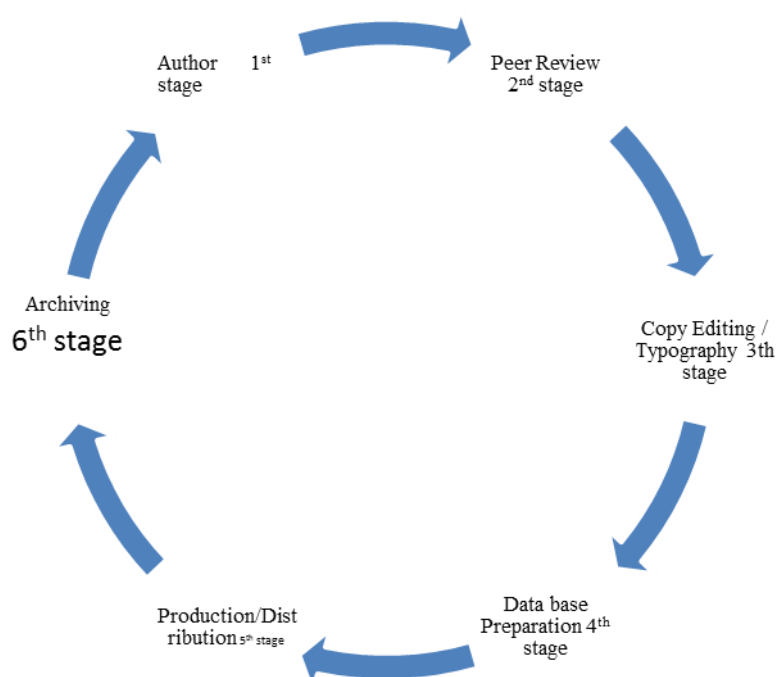


Figure1: Elements of Electronic publishing Process (Adapted from Hartmann, 2011)

9.0 Scientific communication through journals

Publishing articles within scholarly journals achieves several objectives: to communicate advances in knowledge, to register a researcher's priority of discovery, to submit findings to the critical examination of the researcher's peers, and, through the resulting imprimatur of experts, to achieve recognition for verified original findings, primarily through enhanced career prospects or further research grants (Fjallbrant, 1997). Scholarly publishing has achieved these objectives since the first publications were disseminated in the 17th century. According to Bacon's writings the progress in science is achieved by incremental accumulation, that it is "fertilized through sustained social interaction between scientists and attained through reasoned and systematic empirical methods of inquiry" (Merton, 1973, p.349). The printed journals were also a means of communication in an age where post was uncertain, carried by hand, carriage or ship between towns and different countries. Even when post available, the mails travel at "snail movement" (took longer period to reach the destination).

10.0 Electronic publishing as a tool for scholarly communication

Electronic Publishing (EP) has direct link with scholarly communication of the research outputs to the beneficiary. The author needs to publish the result of their research to

the public. This could be done by using EP or traditional form of publishing. Scholarly communication is a multifaceted and rigorous process involving many stakeholders. Scholarly communication refers to the clear research findings, formal as well as informal, which the academic and scientific community made known to the world for public consumption.

These findings are meticulously brought out research reports, called ‘article’ or ‘paper’, perhaps influenced by the medium used to print them. This has shown in the process of publishing, where delays in production occur. The usual delay experienced in traditional publishing has been removed in e-publishing, where knowledge production is delivered at minimal cost and time.

Arora (2001) carried out study on EP overview, he observed that revolution has just begun, and is going through a process of adaptation. Authors, publishers, users and librarians are only just beginning to take advantage of potentials of electronic media. He concludes that the ongoing shift towards EP is expected to continue.

This changing scenario in scholarly communication is possible as results of electronic publishing that were aided by Internet in an open access environment. Thus, electronic publishing has changed the scenarios in scholarly communication.

There are three basic models that exist in scholarly communication accepted by the stakeholders (authors, publishers, libraries and readers) as shown:

- The traditional paper based publishing process
- E-publishing on commercial basis and
- Open access model of publishing.

The recent developments in Information Technology (IT) and Internet have great impact on scholarly communication chain as illustrated in Figure 2. The traditional journals in paper format took 36-52 weeks to publish scholarly work but with EP, the total cycle time of 1 year, the value addition (generation, review, editing and printing) take place in 2-3 weeks (Sreekumar, *et al.*, 2007). Aina and Mutula, (2006) observed that in EP, the process is much faster, easier: the period between receipts of manuscripts and editorial board’s decision is now less than three months. This has greatly enhanced the production process of journal. It is obvious, that the advent of the EP has greatly boosted the scholarly publishing domain, reducing the publishing time frame to a remarkable 3-4 weeks.

The third category is the growing sets of open access publishing and scholarly archive initiatives, which are the outcomes of the Open Access movement, catching up worldwide. Authors are now publishing their works at fast speed such as 2-3 hours or even at a lesser time.

Communication between editor-in-chief and the authors, as well as editor and referee experienced delay. With the recent development in EP, the manuscripts sent to editor-in-chief electronically; peer review is done through e-mail, editor sends edited soft copy to the printer electronically. Thus, publishing process is faster.

The relative features and merits of the three systems are displayed in the figure (Figure.2)

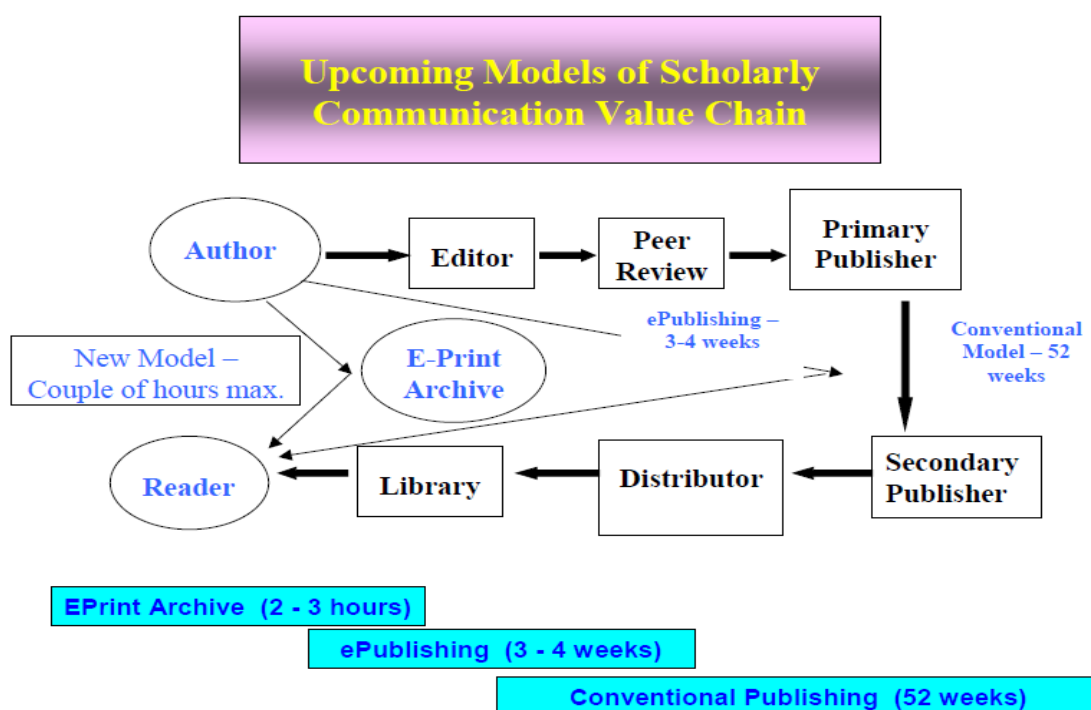


Figure 2: Scholarly Communication Value chain (M.G. Sreekumar et al, 2007)

EP gives greater freedom to researchers to disseminate their research results without having to go through the cumbersome route of finding a publisher who is willing to publish their research findings. Now, authors get their work published in electronic format or in electronic archive within 2-3hours against conventional publishing of 52 weeks.

With the advent of EP as shown in figure 2, it gives room for the authors and readers to shun publishers. EP has recorded land mark achievements and it will continue as long as ideas lead to new discoveries and new innovations in electronic publications are growing. This will enhance the enormous benefits of EP as discussed below.

11.0 Benefits of electronic publishing (EP)

Latamore (2011) carried out a study on advantages of electronic publishing over paper printing. He observed that one of the largest drains on corporate funds and productivity still be the endless reliance on paper documents. Thirty years after the PC revolution put computing power in the hands of virtually every employee, almost all documents are created electronically. Yet paper documents are everywhere in offices today, and executive are even known to print their e-mail.

In the current information technology era, researchers have greater expectations that EP will solve the problems like high cost and restrictive policies associated with traditional publishing (Ng, 2009). These have resulted in limited access to information, research output, innovation and exchange of ideas. However, the vital role of EP cannot be over emphasized considering the outweigh advantages, it has over print, as stated below;

- One of the most obvious advantages of e-books over traditional publishing is significantly lower production costs;
- Rapid publication since electronic speed the process of peer review, manuscripts can be immediately received attention with acceptance letter sent to author;
- Faster publishing time for accepted manuscripts. Rather than waiting up to two years for a manuscript to see print;
- Large citations can be searched and retrieved simultaneously and instantly;
- Innovative use of multimedia: to present research findings and other forms using sound, movies and simulation;
- Hypertext and hypermedia links: linking to other electronic information is possible at faster speed and
- EP facilitates open access (OA) principles (visibility and accessibility)

12.0 Key issues in electronic publishing

Despite the tremendous benefits accrued from electronic publishing, yet it has shortcomings as mentioned below;

- Quality of content: Another difficulty that needs to be overcome about content security. Publishers, looking at the Internet piracy problems, tampering with uploaded information.

- Different formats: There are many formats of electronic publications; this has constituted problems to users despite its advantages though it is unlikely that one digital file format will triumph over all the others.
- Increased opportunity for scientific misconduct: allows series of research misconducts like submission of same research results to more than one journal (Jennings and El-adaway, 2012).
- Copyright infringement; copyright is an issue that stakeholders bothered to tackle, especially in an online environment. Using authors work without appreciation or permission is very common in electronic publications, due to free access. Therefore, it is highly essential to discuss the concept of copyright for adequate awareness and benefits to the stakeholders.

13.0 Copyright in digital age

The legal issues related to EP and OA are complex. The universal nature of EP and OA creates the major legal problem. Each country in the world has its own legal system and practices that are acceptable or common in one country may be illegal in another. Authors/scholars, users, publishers, and advocate on all sides of issue have a variety of opinions about who owns work in the electronic world. Copyright issues are vital to knowledge production, distribution and dissemination (Business dictionary, 2012). Historically copyright has served as the fundamental intellectual property protection for authors and publishers. At present, there is intense public discussion on how to realize intellectual property rights by giving them a legal frame in the digital age (Samuelson, 2000).

Copyright can be described as a Legal monopoly that protects published or unpublished original work (for the duration of its author's life plus 50 years) from unauthorized duplication without due credit and compensation (Business dictionary, 2012). Prytherch (2000) defines Copyright “as a procedure whereby the originator of a recorded work acquire a series of right over the work created, including copyright, publishing, performing, broadcasting and adaptation for determined period of time” (p.1). Copyright covers not only books but also advertisements, articles, graphic designs, labels, letters (including emails), lyrics, maps, musical compositions, product designs, etc. According to the major international intellectual-property protection treaties (Berne Convention, Universal Copyright Convention, and WIPO Copyright Treaty (1996), five rights are associated with a copyright: the right to: (1) reproduce the work in any form, language, or

medium. (2) Adapt or derive more works from it. (3) Make and distribute its copies. (4) Perform it in public. (5) Display or exhibit it in public (Drahos, 1999). To acquire a valid copyright, a work must have originality and some degree of creativity. However, what is protected under copyright is the 'expression' or 'embodiment' of an idea, and not the idea itself. A copyright is not equivalent of legal-prohibition of plagiarism (which is an unethical and unprofessional conduct, but not an offense), and does not apply to factual information (Business dictionary, 2012).

13.1 Rationale for copyright law and fair dealing exemption

The first copyright law (the Statute of Anne) was promulgated in 1710 in England. The objective of the act was to encourage 'learned men to compose and write useful work' (Leaffer, 1989). The concept of the fair dealing exemption emerged from early century British case law (McDonald, 1999) and this was evolved from the specific technological and social situations of the time. There were legal issues that brought the concept 'fair dealing' a case of *Cary v. Kearsley* made the Lord Ellenborough asked whether the work that was centre of dispute was 'used fairly' (Patry, 1995).

In 1839, there was an express use of the term 'fair use' in its current combination in a case of *Lewis v. Fullarton* (Masango, 2009). The rationale for countries referring to the exemption as 'fair dealing' may be because although fair use is more broader than fair dealing, the latter is more detail than the former (Rimmer, 2004). Countries in their copyright acts expressly provide a clause of either 'fair dealing' or 'fair use' exemption in their copyright acts. The copyright fair dealing exemption allows individuals to copy portion of works for certain purposes such as research, criticism, teaching, and under certain circumstances that will not interfere with the legitimate rights of copyright holders (Amen, Keogh & Wolff, 2002).

The function of exemption is to balance the right of publishers and users of copyrighted works. The fair use exemption allows copying of printed copyrighted works and its content was changed as new reprographic technologies emerged, nations such as the United State in its Digital Millennium Copyright Act (DMC) 1998, and Australia in the Copyright Amendment (Digital Agenda) Act 2000. Copyright owners have pointed out that the relative ease that technology gives to users to make copies, cut and paste, etc has effect of jeopardizing the owner' economic interests and gains. Protection of digital work has been facilitated by the use of DRM technologies. DRM could be defined as "a collective name for

technologies that prevent you from using a copyrighted digital work beyond the degree to which copyright owner wishes to allow you to use it” (Litman, 2001).

DRM technology can help publishers provide online licensing, track use, control unauthorized use, protect copyrighted content, ensure integrity, and enforce ownership. According to Richman et al (2002), DRM has two components: encryption and decryption, the keys that lock and unlock information. In more complex systems of encryption and decryption, different keys are needed for each process. Encryption is the process by which information is scrambled to make it unusable to non-authorized users. One particular system of encryption that is vital to DRM systems is the so-called ‘Public Private-key’. Despite the issues affecting EP, it facilitates fast access and wide spread of research output. According to Tonta and Duzyol (2010), the study to chart the evolution of e-publishing as a research field using Cite Space and keywords was visualized through a number of co-citation maps. It was indicated that “open access” would improve our understanding of the e-publishing as a research field.

14.0 Electronic publishing development in Africa

The digital revolution that has affected the entire world also has influenced on Africa. Many efforts have been put in place in Africa that enhanced scholarly work and ensured free access of research outputs. Thus, African countries in their struggle not to fall behind join the waves of changes, as affirmed with following initiatives towards electronic developments in Africa.

The African journals Online (AJOL), is an initiative of the International Network for the Availability of Scientific Publications (INASP), in partnership with publishers in Africa. It was based in UK but now moved to South Africa. It aims is to assist African journals to publish online and offer electronic delivery in order to increase journal use and sustainability. It offer access via internet to tables of contents (TOC) and abstracts of Africa published journals in agriculture, social sciences, humanities, health and sciences and technology. As at September, 2012, over 437 journals published in 26 countries in Africa including Francophone. Most of the journals published were from Nigeria and South Africa, these two countries alone account for 62 per cent.

There are few initiatives to assist Africa journals to publish online. These include INASP’s programme to support journals on the AJOL database by assisting them to publish on commercial host. South Africa’s Bibliographic Network (SABINET) provides electronic access to over 200 journals published in South Africa. Bioline International is another

enterprise that facilitates certain Africa e-journal online on the web. It is a collaborative initiative of the University of Toronto Libraries, Canada, the reference Centre on Environmental Information (Brazil) and Bioline UK.

International institutions and many organizations gave adequate backing to discussions, conferences, meetings and workshops about the creation, access and use of electronic publishing in developing countries with special consideration for Africa countries. In October, 1998, a workshop was organised at Paris, sponsored by the International Council for Science (ICS) and UNESCO, under the auspices of AAAS (American Association for the Advancement of Science). The main goal was to examine the application of the electronic method for publishing scientific journals, in order to stimulate the development and international recognition of Africa research projects.

Other experiences with positive development in Africa were that of the Electronic Journals Publishing (EJP), supported by the Electronic Publishing Trust (EPT) which has a goal to stimulate African publishers to acquire abilities needed to start up electronic publishing, together with providing them with access to international support, by means of partnership with other publishers. The INASP (International Network for Availability of Scientific Publications), through the PERI (Programme for the Enhancement of Research Information) programme, the goal was to help and encourage researchers in the preparation of text to be published in electronic formats. There are other ongoing initiatives and projects in which Africa electronic publishing may be found e.g AJOPP (African Online Publishing Project). The project put publications online. Despite all these projects, Africa publishers are still required to be more active and make efforts to disseminate their publications by electronic means, assuring them wide visibility. These initiatives are easier to be describing than put into action, on account of several obstacles as discussed below.

15.0 Challenges of Electronic Publishing in Africa

The digital revolution brought changes with challenges that affected the entire Africa and Africans have started to ponder extensively about the development. Challenges facing Africa are enormous with boundless possibilities of the new technology, which divide them into two groups: those who are in support of the adoption of these technologies and those who do not trust them. The role of these electronic publications in developing countries may be different from their role in developed nations. Aparicio (2009) carried out study on access to the electronic publishing in Africa countries. She observed that acceptance, rejection or

involvement in electronic publishing in African countries may be influenced by the way entire process is treated by the context.

Obstacles and difficulties experienced in Africa as the matter of access to electronic services are ;

- lack of adequate supply of electricity;
- language barrier;
- lack of qualified manpower;
- low internet;
- poorly developed publishing infrastructure;
- lack of sustainable funding and
- Poor and high telecommunication access charges constrain

16.0 Conclusion

The revolution has just begun and it is undergoing adaptation. Electronic publishing (EP) has the potential of greatly increasing the spread of knowledge throughout the academic arena and by extension, the entire world (Jeffres & Lyle, 2012). With the access to basic ICTs and the Internet that are prerequisites in the development and use of EP. Stakeholders will take advantages of the potentials of electronic media. In addition, they will utilise enormous opportunities that thrive for the development in all human aspects of life. There are indications that research is being carried out in Africa. However, the visibility of these research outputs needs to be increased through EP. This growth of scholarly publishing in Africa depends on the production of freely access research findings from universities and other research institutions. This growth of EP will continue to record landmark achievements. It is hoped that, the enhancement of EP will close the digital divide gap between the developed and the developing countries (Arunachallam, 2002). It will continue to accelerate many evolutionary trends in scholarly communication. It is therefore; appropriate to submit that the future of EP in Africa is brighter with the great potential to flourish.

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