IST-Africa 2014 Conference Proceedings
Paul Cunningham and Miriam Cunningham (Eds)
IIMC International Information Management Corporation, 2014
ISBN: 978-1-905824-44-1

An Overview of Digital Library Projects in Kenyan Universities

Elyjoy MICHENI[1], Julius MURUMBA[2]
[1]*The Technical University of Kenya, P.O. Box 52428, Nairobi, 00200, Kenya*
+254 (020) 0722790482, Email: elyjoymicheni@gmail.com
[2]*Inoorero University, P.O. Box 60550, Nairobi, 00200, Kenya*
+254 (020) 0722892973, Email: j.murumba@gmail.com

Abstract: Initiatives for library digitization in Kenya are scattered all over with the university libraries, showing greatest progression. Despite the Government supporting the implementation of ICT related changes in universities, the pace in digitization of libraries still remains slow and pervasive. One of the reasons for the slow pace is attributed to challenges faced in managing the implementation of digital library projects. The objective of this paper is to explore the extent to which digital library projects are being undertaken in universities and to investigate the challenges faced in management of digitization projects. The study concludes that many university libraries are embracing Information Communication Technologies and digitizing their collections, and that implementation of the digital library projects are faced with managerial and technical challenges. This paper concludes that the planning and motivation of the digital projects can be integrated into the strategic goals of the university. Long range planning and phased implementation of such library projects is needed in order to cope with: the enormity of the automation projects; the high costs involved; and. the need for capacity building of key staff to effectively manage these digitization projects.

Keywords: Digital library, digitization, project, information and communication technologies, project management, universities, Kenya

1. Introduction

Information and Communication Technology has revolutionized the concept of libraries. Each and every library is slowly getting digitized. An 'electronic library' comprises e-collections, services and infrastructure to support lifelong learning, research, scholarly communication as well as preservation of our recorded knowledge [1]. Since digital libraries are running on the Internet and users are from different psychological, educational and social backgrounds, the usage of digital libraries is varying from user to user which entail the need of best user interface (UI) [2]. The emergence of the Internet and web technologies as a media of information delivery and access, particularly the World Wide Web has had a deep impact on people's daily life, including their way of work, study, and living. [3] stated that "The Internet has not only become an important communication channel among communities but has also given birth to the concept of digital libraries, a new form of managed information sharing and service provision". The web, being a hypermedia based system, allows linking amongst electronic resources and allows rapid access to a wide variety of networked information resources extending a uniform interface to a vast number of multimedia resources.

[4] defines a digital library as, "collections stored in digital formats (as opposed to print, microform, or other media) and accessible by computers". [5] takes the definition further to include, "all the services of the library which are made available electronically-frequently over the Internet so that users can access them electronically". "Digital Libraries are

organizations that provide the resources, including the specialized staff to select, structure, offer intellectual access to interpret, distribute, preserve the integrity of and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities" [6]. The point in this definition is on the digital library as a dynamic, growing organism. As digital libraries evolve and become the predominant mode of access to knowledge and learning, institutionalization of digital libraries appears to be on the increase. This paper adopts the [6] definition.

Access to information in many Kenyan university libraries has mostly been limited only to those who can physically visit the Library; hence putting pressure on physical space and facilities. In 2007, Electronic Information for Libraries (EIFL) teamed up with the Koha Foundation to develop expertise and to grow the network for Greenstone, a suite of software for building and distributing digital library collection in South Africa, and thereafter in 2009 the EIFL-Koha Foundation project was extended to involve sixteen countries including Kenya [7]. The concept of digital libraries received its first widespread attention in universities in Kenya during this time, and these library communities started to realize that the future of library development lay in the development of digital libraries, and started to pay close attention to the research and development of digital library technologies in the international community. University libraries have started investing in digital projects in order to provide access and to promote preservation of collections for future use. [8] noted that, "Many libraries and archives in Africa have already recognized that the time for going digital is now, and initiatives have been undertaken to transform materials in their collections into digital formats that can easily be disseminated electronically to a wider audience."

2. Objectives

The objectives of this study and paper include:

- To investigate automation procedures of digital library projects in universities in Kenya.
- To determine the extent to which digital projects have been undertaken by University libraries in Kenya.
- To investigate the challenges faced in management of digital library projects in Kenyan universities.

3. Methodology

This study is based on literature review of digital library projects in universities in Kenya. To achieve the study's objectives, an investigation was carried out to determine digital project management procedures and collect information relating to the extent to which digital projects have been undertaken and the challenges faced in managing implementation of such projects in Kenyan university libraries.

4. Technology Description

[9] observed that application of IT is gradually taking firm root in Kenyan university libraries and stated that, there was a 50-50 distribution of libraries that had OSS (open source software) and commercial based software for their ILS (integrated library system).Some of the ILS software used in Kenya's libraries includes AMLIB, CDS-ISIS, InMagic, Koha, Librarysoft, Mandarin, Open Biblio Voyager ILS and Winisis. [10] argue that, the design, implementation and maintenance of digital libraries should be based on certain principles in order for the content to be persistently accessible. They went further and identified ten principles which include: Expect change; Know your content; Involve the right people; Design usable systems; Ensure open access; Be aware of data rights;

Automate whenever possible; Adopt and adhere to standards; Ensure quality; and Be concerned about persistence. In order to promote accessibility and usability of digital libraries, these principles should be adhered to. In a similar development, [11] identified four principles for developing digital libraries in higher education being: i) creation of scholarly value by exploiting the distinctive features of the technology; ii) creation of collections of coherence and integrity; iii) protect and foster an intellectual commons for scholarly and educational uses and; iv) to be realistic about costs, especially the costs of distributing content and sustaining ongoing operations. He goes further to say that, "to weave digital libraries into the fabric of higher education following these four principles will require much creativity and, of course, an unswerving commitment to the academic mission".

4.1 Questions that may be asked

Questions that could be asked when embarking on a digital library project include a SWOT analysis:

- ***Strengths*** - what are the major strengths of our collections and how does that relate to our project? What must we do to strengthen the overall integration of our digital collections and how might this project assist in that?
- ***Weaknesses*** - what are the major issues standing in the way of the proposed project's success? How can these issues be overcome?
- ***Opportunities*** - what opportunities do we have, such as collaboration or coordination that could work in favor of our proposed project?
- ***Threats*** - what threats do we face if we do not perform this project? What threats do we face in implementing this project?

A digital library project manager has to get the project approved and put in the queue for development, and one of the best ways of doing that is by creating an effective business case. At its simplest, a business case is a justification for a particular proposal [12]. By getting input on the issues raised in the SWOT analysis from people throughout the institution, a project manager can develop a solid base of information from which they can begin crafting the business case document. The business case should include details of the following items:

- ***Project purpose*** - why is the project being requested at this time? In one sentence, what will the university accomplish by completing this project?
- ***Cost*** - how much will the project cost, typically broken down by software, hardware, and people expenditures
- ***Duration*** - when will the project be completed?
- ***Productivity*** - what types of productivity losses will occur while the project is being developed? When the project goes into production?
- ***Outcomes*** - how will the university benefit? How will the outcomes be measured?
- ***Alternatives*** - what alternatives are there to the proposed project? Why are they inferior to the proposed project? [13].

4.2 Planning and Pricing Digital Projects

Project management begins at the planning stage where a survey of user needs and feasibility studies will identify the need for the project and possible accomplishments. [9] asserts that, the respondents were asked to state factors that contributed to their decision making process when selecting their current or any ILS for their libraries; 62 % said that the librarian (or staff heading the library) was directly responsible for selecting and deciding on

the type of system to acquire and implement in their library and 4.8 % of the respondents who were librarians were not responsible at all. The majority of respondents at 42.8 % considered the features and functionalities of the systems to be the most important factor during the selection. Cost was another factor for 38.1 % of the libraries. Other factors that featured were the system user friendliness and operating system. Financial planning for digital projects is also necessary and involves a process of economic analysis - that is, identifying, costing and allocating revenue to the resources and activities that allow the objectives of the information service and its parent organization to be achieved [14]. A project manager need not necessarily have an in-depth knowledge and practical experience of all the project issues. For a less technically aware manager, it is advisable to have someone on the team, perhaps a technical manager who does fully understand all the technical aspects of the project. For projects that are heavily dependent on changing technology, it is important to develop a future proofing strategy that allows the project to grow without limiting the project's future options. [15] stipulates that in order to achieve great things in any project, two things are needed: a plan, and not quite enough time. It is certainly not inevitable that a digital project will overrun its budget, but it certainly is very common. Not only that, when a digital project goes wrong, the cost implications can be eye-watering. So how can anyone commissioning a digital project guard against a nasty budget shock? And how can the agencies and professionals that work with clients ensure that projects come in on budget? These questions can be answered when the project manager does the following:

Costs elements of the digital library Projects - A clear understanding of cost aspects is one of the keys to success for digital library projects. Libraries tend to focus on technical and service issues, and are generally weak in estimating cost. Digital library Projects can model the digital lifecycle and calculate the costs of preserving digital information for future years. Organizations can apply this process in order to understand costs and plan effectively for the preservation of their digital collections [16]. It is important to make a distinction between investment costs for creating a technical infrastructure for the digital library, project costs for developing specific systems and services, and the operational costs of day-to-day functions. 1) Investment costs comprise additional IT-investments in the library, e.g. in digital storage systems, Optical Character Reader (OCR)-equipment, etc.; IT-investments at the users' desktop, e.g. multimedia pc's, client software, connections to the Internet; Enhancements to existing library systems, e.g. adding Z39.50-functionality; 2) Project costs include project proposal development, project management; required hardware and software; technical development (personnel); testing and evaluating, Implementation costs. 3) Operational costs cover annual cost of IT-infrastructure, including telecommunications; systems maintenance; Storage and preservation; Additional acquisition and license costs for digital information; Cost of user training. There is a great deal of evidence that mature open source applications offer a lower total cost of ownership than their commercial counterparts [17].

User needs survey. Establishing a profile of the audience's location, background, wants and learning needs will enable the project manager create a digital resource that is useful. As [18] stated, it is the customer who determines what a business is. It is imperative that, libraries understand what their customer values and needs in order to develop services and provide resources to meet these needs [19].

Feasibility study. After establishing the needs of the end user and stakeholders, the project manager should find out if these can be met, given the resources at hand. Objective and aim can be summarized as “analysis of all the problems relative to the setting up, development and maintenance of a Digital Library” [20]. The study should investigate; his collection, Its suitability for digitization, the conservation needs of delicate or valuable originals, whether the accompanying indexes and catalogues are comprehensive enough to

create his metadata and to address rights issues, whether digitization will benefit the collection, the experience of, and lessons learnt by, similar projects, the support available, sources and adequacy of funding, the adequacy of the time allocated, skills of existing staff and the need for extra staff or training, the need to make some digitization trials to ensure the technology is capable of creating the resources he expects within the available time and budget.

Project specifications. In order to address the complexity of Digital Libraries, [21] proposed the 5S framework, where they defined a "core" or a "minimal" Digital Libraries, i.e., the minimal set of components that make a Digital Library, without which a system/application cannot be considered a Digital Library. According to the framework, the nature of Digital Library can be described using the 5S's – Streams, Structures, Spaces, Scenarios and societies [22]. The project manager will need to establish the order of project activities including, but not limited to: selection for digitization, clearing copyright, indexing and metadata, conservation of originals, transit of items to be digitized, digitization, digital processing or re-mastering, quality assurance procedures for all digital files and metadata, digital storage and back-up, creating a delivery mechanism, Preservation of collection once the project ends.

Risk assessment. The first step in risk assessment is risk identification. Once risk identification is complete, risk analysis is used to identify the likelihood that the risks that have been identified will happen. While there are several formal methods that can be used for risk analysis, many project managers use some type of matrix-based decision process for analyzing and evaluating project risk [23]. A table should be drawn up detailing the risk, the potential for failure (e.g. high, intermediate, low) together with the name of the person or project partner who takes responsibility for it. This table will be a key piece of project documentation and should be revisited, updated and discussed as a team, especially when there are changes within the project e.g. staff leaving or joining.

Workflow manuals. The project manager should create a detailed workflow manual for all team members and any sub-contractors. These manuals will contain clear instructions that will help staff in their responsibilities, will ease the introduction of new staff, and act as a basis for quality control. A workflow management system (WMS) can be a framework, architecture, and set of software tools that support the path from physical object and/or digitized material into a digital library repository [24].

Progress assessment. The project manager should define at what points during the project he will pause and measure the progress, review and measure achievements and update project specifications. As libraries continue to engage with an ever-shifting information landscape, it is apparent that their efforts would be facilitated by a shared view of how library services should be organized and surfaced in these new settings and contexts [25]. Successful projects have regular and open communication between team members, managers and possibly a steering group in order to discuss progress, problems and potential solutions. Whilst "all team members must share the same vision" may seem a trite cliché, a plan that is collectively owned should improve the quality of the projects deliverables and have more chance of delivering all of the project aims.

Exit strategy. Working with people from within and also outside an institution, the project manager must also prepare an exit and a sustainability plan for what should happen to project outputs at the end of the project, and to explore which ones should be sustained further and how. Some project outputs will be archived at the end of the project; some will live on after the project ends and others may be taken up and transformed [26]. Some digitization projects tell of how they have publicized their project around the country, but have forgotten to promote it within their own host institution

4.3 Hardware and software selection

[27] states that the most familiar problems in digital preservation are media failure or deterioration that makes older systems obsolete on a regular basis. Digital projects should keep in mind that preservation of digital objects requires both maintenance of an accurate signal (byte stream) and the ability to retrieve and recreate that byte stream using current or future technology.

Standards: The Digital Library Federation has been developing a standard set of data definitions and common XML schema, encompassing names, definitions, and semantic relationships for elements related to identification, access and licensing of digital resources [6]. Technical standards form a foundation for much of what makes digital libraries possible. Standards and protocols for storage, data formats, bibliographic control, display, retrieval, transport and distribution are imbedded in the infrastructure that makes digital libraries accessible, manageable, and useable. In digital projects, standards issues primarily concern encoding, data formats, and representation schemes. Kenya's standardization body, the Kenya Bureau of Standards (KEBS) has established a Technical Committee (TC) to help set standards for digitization of libraries, record centers and archives. The ISO TC46 SC11 Committee was established to set standards for digitization for libraries, record centres and the National Archives.

Migration: Migration is the most widely deployed technical strategy in repositories that have established digital holdings. Migration has been defined as a set of organized tasks designed to achieve the periodic transfer of digital materials from one hardware/software configuration to another or from one generation of computer technology to a subsequent generation [28]. Subsequent research on migration has demonstrated that there are several different types of migration, each of which may affect the digital products that result [29]. There are several risk categories associated with migration including: content fixity, security, context and integrity, references, cost, staffing, functionality and legal considerations.

User interface: The user interface (or just interface) is that part of the computer system with which a user interacts in order to undertake his or her tasks and achieve his or her goals. Since the digital libraries are running on the Internet and the users are from different psychological, educational and social backgrounds, the usage of digital libraries is varying from user to user which entail the need of best user interface (UI). User interface design is a highly creative process requiring intuition and an artistic sense from the designer, and also some past design experience or mimicking from other systems' design which should be understood as part of the design process. Developing user interface framework for digital libraries would help to design the usable digital library user interface system with improved interactive information seeking process [30].

5. Developments

[31] points out that in recent times, universities in sub Saharan Africa have embarked on integrating information and communication technology in their operational environment in such areas as digitization and preservation of content. A casual observation of the Kenyan situation by [9] revealed that the majority of academic libraries depend on commercial, free or locally developed systems. At [32] for example, the library has used mandarin to digitize its past examination papers and provided them over the Web. The library's catalogue is also accessible on the Web.

University libraries in Kenya have three main sources of income: 1) funding from a parent organization; 2) user fees and income generation; and 3) donor funding. Of these three funding sources, university libraries depend mainly on fund allocations from their parent organization. [14] observed that comparatively, libraries in private universities are

doing better in terms of acquisition, providing service and adoption of information technology. This is in part because they are better funded by their parent institutions and operate under the Commission for University Education, which requires that they adhere to their standards. Librarians at the public universities in Kenya have traditionally looked to donor funding as a panacea for automating their libraries, and have not gone to great lengths to explore other means at their disposal. In Moi University's case according to [33], in 1990, the British Overseas Development Agency (ODA) accepted a proposal to finance the Moi University Library automation project. So far, cataloguing and circulation operations have been fully automated. The School of Environmental Studies Documentation Centre has also been automated. NUFFIC, through the University of Amsterdam, funded the automation project in the School of Environmental Studies Documentation Centre. [9] asserts that, because of the budgetary constraints evidenced in majority of libraries in developing countries, OSS (open source software) would be an affordable option at the outset for libraries that wish to automate their processes, but have the necessary expertise for installing and implementing.

5.1 Extent to which digitization projects have been undertaken

Kenya has currently a total of 22 Public Universities, 17 Chartered Private Universities and 12 Universities with Letter of Interim Authority (LIA). All these universities have established libraries to support their programmes as required by the Commission for University Education [34]. In [34] observed that only two libraries had fully automated services, namely, Moi University and USIU (United States International University) libraries. The rest of the libraries and, in particular those owned by public universities, faced acute funding problems that seriously affected their collection development programmes. A major initiative for digitization was training organized by UNESCO in September, 2008, when the UNESCO Office in Nairobi facilitated a workshop on the Greenstone digital library software at the University of Nairobi. The trained library staff were from among others, Kenyatta University, University of Nairobi, Daystar University, Catholic University of Eastern Africa, African Nazareth University, United States International University, Jomo Kenyatta University of Agriculture and Technology, Nairobi Evangelical Graduate School of Theology, Kenya Information Preservation Society, International Centre of Insect Physiology and Ecology, Kenya National Library Service, Kenya National Archives and Documentation Service and Bible Translation Literacy [35]. Following this training, participating institutions came together to develop a central digital collection under the Kenya Information and Preservation Society (KIPS), which has digital collections that include a union list of theses and dissertations held by universities and research organizations in Kenya. Most participating institutions have also digitized and posted numerous e-resources such as abstracts of theses, e-learning content and past examination papers on their web sites [7].

5.2 Implementation problems/challenges

[36] identified the challenges facing library automation projects in sub Saharan Africa to include; lack of budgets, inadequate ICT facilities, lack of ICT strategies, low skills levels of users, lack of qualified staff in ICT, lack of commitment by institutional management and reluctance among staff to use ICT.

The Moi University experience is representative of the type of problems that a library project manager in a developing country is likely to face. Managerial hurdles included poor infrastructure, a shortage of local technical expertise and a shortage of qualified project managers. Managing a library automation project successfully in a developing country like Kenya poses more managerial and technical challenges than managing a library automation

project in a developed country. The managerial and technical challenges that the Moi University Library automation project management team faced should not be looked on as an isolated case, but challenges that any library in the Third World intending to automate its library functions should expect to face [33].

6. Results

This study reveals that a majority of academic libraries have digitization projects, which are determined by the parent bodies of those university libraries. Inference drawn from Moi university is that public universities' automation plans are not necessarily integrated with the programs of the universities since the acquisition of hardware and software were not catered for through the general university's budget but were dependant on donor funds. This means that their automation project plan was being influenced more by donor funding than the university's financial programs. Institutional commitment is needed to fund library development and ongoing services, which require sound financial planning.

The study reveals that digital library projects in universities are faced with managerial and technical challenges. Managerial challenges include: importing technology; training staff in preparation for an automated system; soliciting funds from the government or from donor; persuading library staff to adapt to the information culture and above all, to successfully acquire and install the system [33]. The technical challenges include writing a compelling business case and a project management plan with procedural steps in automation exercise of the project. To ensure that university libraries continue to provide adequate information services supporting teaching, learning and research, the adoption of a strategic plan in all areas of library management and especially in funding and collection development, is needed.

7. Benefits

Digital projects in libraries promise new societal benefits. One of such benefits is elimination of the time and space constraints of traditional libraries. When the full potential of a digital library is realized for a particular community, people shall be able to access all human knowledge hosted in that digital database from any location. At Moi University the automation of the library has enabled the delivery of electronic information services to its clients away from the confines of the walls of the library. The library subscribes to several e-journals, full text databases and web-based resources. For example, the university library subscribes to resources from various service providers such as: African Journals Online, American Society of Civil Engineers, Blackwells Publishing, Beech Tree Publications, EBSCO, Emerald Group Publishing Ltd, Gale (Thomson Learning), IEEE/EIT Electronic Library among others [37]. The library has also digitized past examination papers and now offers them through the OPAC.

[38] noted that, academic libraries serve multiple communities which include: faculty staff, students, and members of the general community. By implementing fundamental project management strategies, the benefits include:

Better efficiency in delivering projects -Efficient management can provide a roadmap that can be easily followed to lead to project completion.

Improved user/stakeholder satisfaction - Whenever any project is completed on time and within budget, the stakeholders and users will be satisfied and happy.

Improved development and growth within your team - Positive results from your project will inspire your team and it will continue to look for ways to perform in a more efficient way.

Increase in quality - With enhanced effectiveness, there will be considerable increase in quality.

Increased risk assessment - Efficient management of projects helps you in assessing the risks and warns you in time, even before you start working on any project.

8. Conclusion and Recommendations

This paper explored the extent to which digital projects in academic libraries in Kenya have been undertaken. It also investigated the managerial challenges encountered and pertinent problems affecting implementation of digitization projects in academic libraries.

Digitization projects are not all the same. Each will vary in the type of materials being digitized, the timescale, budget, staff skills and project 'scope'. Some may be large collaborative ventures requiring frequent meetings of a 'steering group' and complex workflow control mechanisms; others will be small budget, independent projects, meeting the needs of a modest user group. Consequently there are no off-the-shelf solutions and what follows are recommendations based on, the Moi university case, that must be adapted to your own circumstances.

The planning and motivation of the digital projects should be anchored into the strategic goals of the university. In support of this, [39] advice that long range planning by African universities is needed in library automation. They recommend phased implementation of library projects in order to cope with: the enormity of the automation projects; the high costs involved; and the need for capacity building of key staff to effectively manage automated libraries. other recommendations in library project management are assuring staff of their job security's, pedagogical training for librarians, securing buy in and building partnerships with key stakeholders and have sustainable budgets.

Libraries can also seek ways of strengthening their financial base by being involved in generating income, libraries have embraced this practice and have used their facilities and skills to generate some income through photocopying, binding, word processing services, internet services, and in the case of University of Nairobi, the library has mounted a library diploma course. According to the librarians, these activities can enhance library finances.

References

[1] Latha J.K., P. S. (2005). *A Journal of Library and Information Science*. Retrieved December 14, 2013, from Indian Journals.com:

[2] Hanumat G. Sastry, Lokanatha C. Reddy, (2009) "User Interface Design Principles for Digital Libraries", International Journal of Web Applications Vol. 1. No.2. Available at http://dirf.org/ijwa/v1n20109.pdf

[3] Zhen, X. (2010, May/June). *D Lib Magazine*. Retrieved December 13th, 2013, from The Magazine of Digital Library Research: http://www.dlib.org/dlib/may10/zhen/05zhen.html

[4] Greenstein, D. I. (2002). *The Digital Library: A Biography*. Digital Library Federation(2002).

[5] Rosenberg, D. (2005). Towards the digital library: findings of an investigation to establish the current status of University Libraries in Africa. Oxford: INASP: [accessed March 13, 2012]

[6] Digital Library Federation. (2001), Registry of Digitized Books and Serial Publication, Available at http://www.digilib.org/collections.

[7] Amollo, B. A. (2011). Digitization for libraries in Kenya. *Second International Conference on African Digital Libraries and Archives (ICADLA-2)*. Johannesburg: University of Witwatersrand, South Africa.

[8] Okwaro, P. (2009). Digitization of Libraries/Archives and development. Presented at the First International Conference on African Digital Libraries and Archives (ICADLA-1), Addis Ababa, Ethiopia, 1st-3rd July 2009

[9] Amollo, B. A. (2013). Feasibility of adaptation of open source ILS for libraries in Kenya: a practical evaluation. The Electronic Library Vol. 35 No.1. Available at www.emeraldinsight.com/0264-0473.htm

[10] McCray, A. T., Gallagher, M. E. (2001). Principles for digital library development. Communications of the ACM, 44(5), 48-54.

[11] Waters, D. (2001). Developing Digital Libraries: Four Principles for Higher Education, EDUCAUSE Review Archive; Vol. 36, No. 5.

[12] [Shelly, G. C. (2008). Systems Analysis and Design,. In G. C. Shelly, *Systems Analysis and Design,* (pp. 256-62.). Boston, MA: Thomson Course Technology.

[13] Hut, P. (2009). *Building a Project's Business Case*. Retrieved from The Project Management Hut: http://www.pmhut.com/building-a-projects-business-case.
[14] Kavulya, J. M. (2006). Trends in funding of university libraries in Kenya: a survey. The Bottom Line: Managing Library Finances Vol. 19 No. 1, pp. 22-30
[15] Bernstein, L. (2011). *philosiblog*. Retrieved December 2013, from http://philosiblog.com/2011/11/17/to-achieve-great-things-two-things-are-needed-a-plan-and-not-quite-enough-time/
[16] Ayris, P. D. (2008). *The LIFE Final Project Report.* JISC.
[17] Surman, M. and Diceman, J. (2004), Choosing Open Source: A Decision making Guide for Civil Society Organizations, The Commons Group, available at:
[18] Drucker P. F. (2006), The Practice of Management. Paperback edition (2006) from HarperBusiness, A division of HarperCollins Publishers. ISBN 0-88730-613-6.
[19] Cynthia K. Robinson, (. T. (2012). *Peter Drucker on marketing: application and implications for libraries.* Retrieved from http://www.emeraldinsight.com/journals.htm?issn=0888-045x&volume=25&issue=1&articleid=17035949&show=abstract.
[20] Marco De Rosa, R. G. (2010). *Feasibility study for the creation of the Digital Library.* Retrieved 2013, from www.iccu.sbn.it: http://www.iccu.sbn.it/upload/documenti/Esdf_Summary.pdf
[21] Gonvalves M. A. et al (2007) "What is a good digital library?" - A quality model for digital libraries. International Journal of Information Processing and Management. Volume 43, Issue 5, September 2007, Pages 1416 - 1437.
[22] Uma Murthy, D. G. (2009). Extending the 5S Digital Library (DL) Framework: From a. http://www.indianjournals.com/ijor.aspx?target=ijor:pjolis&volume=4&issue=2&article=002
[23] Duncan, W. R. (1996). Project Procurement Management. In W. R. Duncan, *A Guide to the Project Management Body of Knowledge* (pp. 123-133). Project Management Institute.
[24] G. Sayeed Choudhury, C. R. (2000). *Digital Workflow Management: The Lester S. Levy Digitized Collection of Sheet Music*. Retrieved from www.firstmonday.org: http://firstmonday.org/ojs/index.php/fm/article/view/756/665
[25] Brian Lavoie, G. H. (2006). A Service Framework for Libraries. *D Lib Magazine , 12* (7/8).
[26] JISC. (2013). *Project planning: Exit, sustainability and business plans*. Retrieved from http://www.jisc.ac.uk: http://www.jisc.ac.uk/fundingopportunities/projectmanagement/planning/exit.aspx
[27] Spindler, R. P. (2012). Retrieved December 14, 2013, from NorthEast Document conservation Center: http://www.nedcc.org/free-resources/preservation-leaflets/6.-reformatting/6.5-digital-preservation
[28] Task Force on Archiving of Digital Information (2006) Commission on Preservation and Access, Research Libraries Group.
[29] Cordeiro, M. I. (2004). From rescue to long-term maintenance: preservation as a core function in the management of digital assets. *4* (1).
[30] Hanumat G. Sastry, M. G. (2011). User Interface Design Framework for Digital Libraries. *International journal of advanced research in computer science*, *2* (1).
[31] Eke, H. (2011), "Digitizing resources for University of Nigeria repository: process and challenges", Webology, Vol. 8 No. 1, available at: www.webology.org/2011/v8n1/a85. html (accessed 10 December 2013).
[32] Inoorero University. (2013). *Inoorero University Library*. Retrieved from Inoorero University Website: http://www.iu.ac.ke/
[33] Okemwa, E.O.(1999). Managing a library automation project: the Moi University experience. Library Management Volume 20 Number 4
[34] Otike, J. (2013). *Kenyatta University.* Retrieved from Kenyatta University: http://library.ku.ac.ke/books/
[35] Odera, B. A. (2011). DIGITIZATION FOR LIBRARIES IN KENYA. *Second International Conference on African Digital Libraries and Archives (ICADLA-2)*. University of Witwatersrand, Johannesburg, South Africa,.
[36] Chisenga, J. (2004), The Use of ICTs in African Public Libraries: A Survey Of Ten Countries in Anglophone Africa, INASP, Oxford.
[37] Moi University. (2013). *Libarary*. Retrieved from Moi University Website: http://www.mu.ac.ke/campusnairobi/index.php/2012-06-08-08-16-18
[38] Metz, P. (2010). Two universities in one place: Reflections on seasonal variations in the use of library resources. *ACRL Tech Connect* , 311-313.
[39] Ogunsola, L.A. and Okusaga, T.O. (2008), "Establishing virtual libraries in African universities: problems and prospects", Ozean Journal of Social Science, Vol. 1 No. 1, pp. 43-52.