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# Availability of Appropriate Technology in Library Automation Practices at Multimedia University, Kenya

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***Abstract:***
*This study was aimed at evaluating the availability of technology in library automation and to identify the significance of infrastructural, financial and human resources in library automation practices. The study was guided by the following specific objectives; to establish the role of the provision of e-resource facilities on library automation practices, to determine the extent of ICT training on the automation of library practices and to determine the extent of support for library automation practices in Kenya. The target population consisted of 1 librarian and the 2 assistant librarians, 105 departmental library staff and 2100 library users of Multi-Media University. This amounted to a target population of 2208. The sample comprised of a whole population of librarian, assistant librarians, 20% of departmental staff were used and 10% of library users comprised the sample of 234 respondents. Random sampling was used in selecting the departmental staff. Stratified sampling was used in selecting library users according to their stage of study. Appropriate research tools were used in collecting primary data which was supplemented with secondary data. Many university libraries had challenges in ensuring effective automation of their services. From the findings, there existed incompatibility issues and prohibition by programmers. In regard to the evaluation of the availability of the right automation technology it was found that there was only a moderate availability of appropriate technology on library automation. The provision of e-Resource facilities was moderately rated. This demonstrated that although there was sufficient commitment for university library automation, there lacked sufficient ICT training on such technology and that there was only a moderate provision of e-resource facilities. More was needed to be done to ensure compatibility of library technologies. The study recommended that university library administration should integrate their ICT training arrangements. This is aimed at achieving an all-participatory approach to automation as well as achieving better automation practices. Further, there was need to adopt a common automation technology so as to solve incompatibility issues. A similar study that shall employ longitudinal survey and employ case study analysis to corroborate these research findings is suggested by from this study. Further research on the suitability of the automation technologies adoption is suggested.*

***Keywords:*** *Library automation, technological support, financial support, human resource*

## 1. Introduction

The last decade has witnessed a quantum leap in information and communication technology (ICT) that has led to the increase in the use of computers in both public and private libraries. Social and technological changes have been affecting every profession and during the last decades, rapid technological development has also affected library services (Arif and Mahood, 2010). Application of ICT in libraries began in 1980's when online public access catalogues (OPACs) began to be used extensively. Although the traditional functions and objectives of the library remain primarily the same, the method of information dissemination and the format are changing. The environment in which libraries operate has changed significantly with the advent of the information age, especially the internet (Okojie, 2010).

The need to exploit information and communications technologies (ICT s) to share locally and internationally available information resources has become critical. Libraries all over the world are continually being forced to re-evaluate their role in the wake of an increase in value and demand for information coupled by the emergence of a sophisticated class of clients. From the global point of view, it appears that there is tacit consent that a relationship exists between use of information and communication technologies and job enhancement of librarians. The goal of the developers of systems was to assist librarians in their work even though different approaches were used. The end result was a proliferation of library software without common standards. The development of Machine Readable Catalogues in 1960s was to be seen as a major turning point in library software development. By the mid-60's, computers were being used for the production of machine readable catalog records by the Library of Congress. Between 1965 and 1968, Library of Congress began the MARC I project, followed quickly by MARC II. This was a significant development because the standards created meant that a bibliographic record could be read and transferred by the computer between different library systems.

Information technology provides significant benefits in work measurement, cost reduction, productivity improvement and better services to customers and clients. Actually it is availability which makes use possible and it is use that makes performance attainable. So, the combined effect of availability of information and communication technologies enhances the job performance of the academic librarians (Parez 2011).

There was need for all developed and developing nations of the world to take information and communication technologies (ICTs) as tools that aid the enhancement of job performance of the library staff through the application of the ICTs by the librarians (Boyle & Brown 2010). This cannot be achieved unless academic libraries realize the tremendous role information and communication technologies could play to enhance effective services. Libraries need to develop a strategic information and communication plan that would enhance the deployment of ICTs in their libraries. The ICT deployment and application is done by academic librarians who are trained to man specific sectors of the library. Some libraries in the developed countries, for example: University of California system, California Digital Library; University of Tilburg Library, Netherlands, have put measures in place to ensure the development and management of digital libraries, for instance, observe in their study of the University of Nevada, Las Vegas (UNLV) libraries' digitization programmes, that the majority of libraries had made provision for digitization activities in their library's strategic plans. Within that plan, the need for financial sustainability was emphasized in order to enhance, migrate and sustain resources over time (Lampert and Vaughan, 2009)

In the opinion of (Azzolini 2011), a digital library should be regarded as an enterprise that is meant to fulfill specific goals and from the outset designed to be sustainable in order to provide value to those who invest in it and those who use it. In other words, the need for financial planning including short-term and long-term forecasting as well as benchmarks cannot be neglected. (Chisenga 2004) in a survey of use of ICTs in public libraries in Botswana, Ghana, Kenya, Malawi, Nigeria, South Africa, Tanzania, Uganda, Zambia and Zimbabwe found limited use of computers. The study found that public libraries heavily relied on donor assistance for the purchase, maintenance and development of ICT facilities; inadequate budgets and ad hoc deployment of ICTs. Though Chisenga's focus was on public libraries the situation was not much different in university libraries. The CDS/ISIS use in university libraries was complemented by CDROM databases especially on agriculture that were affordable or donated (Ekpenyong 1997). Technical skills resulted in under-utilization of technologies and policy restrictions on internet access in such places like universities of Nairobi in Kenya, and Copper-belt in Zambia (Mutula 2004).

The automation of libraries in general and those in universities in Africa poses several challenges. (Chisenga 2004) identified the challenges facing library automation projects in Africa to include; lack of budgets, inadequate ICT facilities, lack of ICT strategies, low level of skills of users, lack of qualified staff in ICT, lack of commitment by institutional management, and reluctance among staff to use ICT. Benefits of Library automation include acquisitions of new skill by library staff, sharing of resources through consortia, provision of information services remotely 24/7, access to diversity of resources, introduction of new services, and improved image of librarians. Digital libraries are increasingly being recognized as efficient channels for the collection, storage, organization of information in digital formats and for their ease of searching, retrieval and processing of information via improved communication networks. Digital libraries have the potential to provide timely access to information, improve facilities for information sharing and collaboration and also reduce the digital divide among (Chowdhury and Chowdhury 2003).

Kenyan libraries are compelled to shift gears in order to justify their existence in the changing information environment. The recent past has seen many universities in Kenya constructing/refurbishing their libraries. The trend has been going on in both public and private universities starting with the United States International University (USIU), Catholic University of Eastern Africa(CUEA), KCA University and Kenyatta University which have since been officially opened. In an effort to ensure that libraries remain forecast in their objectives in this era of ICT development, CHE recommended that libraries shall adopt and maintain new information communication technologies as they develop and that every University Library shall embrace the new opportunities created by Information and Communication Technology (ICT) used in teaching, learning and research. It was also recommended that libraries shall facilitate the provision of virtual services, such as web pages, internet searching and using technology for electronic connectivity. The library building must provide space adequate for print and IT based resources and that it shall incorporate ICT needs as an integral part of the design concept including trunking and cabling and wireless connectivity. The recommendation was summed by the emphasis that all librarians, para-professional and other library staff shall be trained so as to be able to use ICT products and services available in the library (Makori 2009).

Technological innovation is not well grounded in academic libraries in Kenya but few academic libraries have integrated the necessary technology such as: USIU Library, CUEA Library among others (Makori 2009). Therefore, there is need for academic libraries in Kenya to integrate ICT solutions into their mainstream information products and services. These solutions include integrated information systems, digital information systems, computing, radio frequency identification (RFID), local area and wide area

networks. Although traditionally libraries have been the most important of the university facilities in supporting advanced scholarship, today, perhaps as never before fundamental questions are being raised concerning their nature and purpose as institutions. In spite of the recognition that libraries play a key role in development and success of higher education, in many parts of the developing world there is a near total collapse of university library and information services (Kavulya 2004).

*1.1. Statement of the Problem*

In pursuit of the specific strategies to enable Kenya become a regional centre for research and development in new technologies, the Social Pillar of the Kenya Vision 2030 endeavors to establish a computer supply program that would equip students with modern IT skills as one of its flagship projects for education and training (The Kenya Vision 2030, 2007). In order to comply with this requirement, academic institutions both public and private must make adequate progress toward ensuring that the libraries, as sources of knowledge dissemination, are well equipped with new technologies to enhance reliable information management.

Multimedia University has invested in information systems with the aims to increasingly use electronic systems during the 2011-2015 strategic plan period to alleviate the high cost of printed information resources, and enjoy the great advantages of modern databases. Despite the heavy investment in information systems and information technology by the university, there seems to be low use by majority of staff and students which may imply less benefit accrued from the investment. In his study (Kavulya 2004) argues that the provision of library services in Kenyan public universities is characterized by extremely inadequate resources in terms of funds, information materials, equipment and staff. The strengths and weaknesses of the library software directly affect the library management and services (Kaliamal and Sasvadi 2007). Several authors have identified that lack of trained personnel and negative attitude of university management on IT as major factors that impede effective adoption of ICT in university libraries (Kamba 2011).

This formed the basis of this study hence the researcher sought to evaluate the availability of the right technology in library automation.This study also sought to assess the adoption of ICT and also examine if the various library management systems were compatible for purposes of inter-library cooperation, and whether there was sufficient training of users.

*1.2. Purpose of the Study*

The general purpose of the study was to evaluate the availability of the right technology in library automation in Kenya with specific reference to Multimedia University library. The study was guided by the following specific objectives: to establish the role of the provision of e-resource facilities on library automation practices, to determine the extent of ICT training on the automation of library practices and to determine the extent of support for library automation practices in Kenya.

**2. Related Literature Review**

Technology has resulted in convergence of two movements in the libraries affecting information access, namely: New forms of information; and new technologies that have transformed library holdings. New forms of information have implications on transformation of library holdings. (Haddad & Draxler 2002) points out that ICTs have transformed the way library holdings provide endless possibilities of going over the same material in a variety of formats. For example, one can find in literature a piece of work in monograph/hard copy, on a CD-ROM as text, on a video tape or DVD as a play being acted. These are some of the benefits that arise from use of information technology in academic libraries. New technologies have also impacted on library holdings. The impact of automated technology is evident in various online services, especially the value of remote access to electronic resources. Libraries have portals where access to information is no longer restricted to the physical library building, but spreads through campus networks and through the World Wide Web. To fully utilize these technologies, call for a new type of preparedness known as e-readiness. According to the European Economic Intelligence, e-readiness refers to the degree to which a community is prepared to participate in the Internet-based opportunities.

(Das and Dutta 2004) argues that e-readiness may be gauged in two ways. First it is gauged by assessing a community's relative advancement in the areas that are most critical for ICT adoption and the most important applications of ICT. Such areas include procession of relevant skills for using ICT within individuals, issues affecting access and affordability of ICT and prevalence and use of ICT for services. Second, through individual readiness measured through factors such as information literacy rates and locus of access to Internet.

It is a known fact that automation enables easy access to library materials, and allows staff to better serve users and facilitate a multitude of tasks such as acquisitions, cataloging, circulation, and reference, (Egunjobi and Awoyemi, 2012). Library automation comes with a lot of benefits to both the users and the librarians who man the libraries. In the course of library automation materials in poor condition are repaired so that at the end of the process materials will not only be available but also in good condition. It also enables reconciliation of call numbers so that copies of the same title will not be located at different places in the library. It facilitates weeding of books that have outlived their usefulness, (Ahenkorah-Marfo and Borteye, 2010).

Automation in university libraries is related to the following benefits: economy in expenditure, increased use of collection, increased productivity in terms of work output and information retrieval, helped in extending library services enhanced the prestige of the library and increased user satisfaction, (Obaseki 2010).

Once a library system is automated, there are some intangible benefits that staff and students gain such as computer literacy, introduction of new services, and internet and online database searches (PSU 2012). Library automation will address the problem of manual processing of materials overcoming the problems of filling and typing errors, retrieval errors, and the time involved, (Kadiri 2004). He further noted that the advantages of library automation include less drudgery, easy generation of records, space conservation, improvement of information services, and easy retrievals. Library automation has a tendency of jobs creation in the

areas of web development, and system maintenance, (Obaseki 2011). Libraries are also able to conduct inventory during automation exercises (Ahenkorh-Marfo and Borteye 2010). Owed to the automation, circulation is one of the most affected areas of library services, which saved a lot of time of users as well as staff. With the help of WEBOPAC, users can search information from anywhere at any time, users can easily do the reservation of library.

Each year Universities set specific, measurable goals and then work hard each day to achieve them. Some are short term goals that they plan to accomplish during that year, while others are longer term goals designed to grow their products and services to meet the educational challenges of tomorrow (Bruce and Kelly 2008). They carefully examine and adjust their goals to ensure that each one supports their mission. Goal mechanisms affect performance by increasing motivation to reach set goals. They provide access to shared information resources, ensure continuing library development through the effective use of technology, training, support and consultation, seeking the most sustainable models of delivery, research, evaluate, implement and communicate information about new and emerging technologies, provide library advocacy and leadership for issues of concern to college libraries, enhance library services and resources through mutually beneficial alliances (Bruce and Kelly 2008).

*2.1. Conceptual Framework*

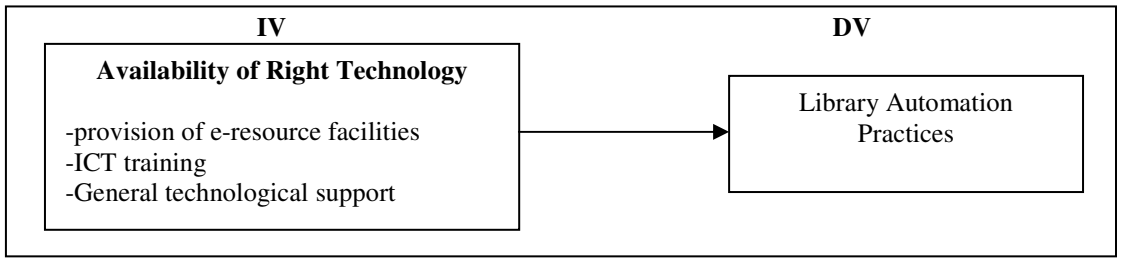


*Figure 1: Conceptual Framework*

**3. Research Methodology**

The study employed a descriptive research design. According to (Trochim & Donnelly, 2006), a descriptive research design is best suited for this kind of research where studies were conducted to demonstrate relationships between things or interactions between groups of people. The technique that was used under descriptive method was the survey approach. As stated by (Majumdar, 2005), survey is a reliable source of first-hand information since the researcher directly interacts with the participants and is able to gather factual information, data on attitudes and preferences beliefs and predictions, behavior and experiences.

The study was conducted in Multimedia University library, a public university in Kenya. This was because in Kenya major developments and achievements in the use of automated systems had been mainly in the academic and research libraries and like any other public university libraries, MMU was be a replica of a modern university library in Kenya.

The target population consisted of 1 librarian and the 2 assistant librarians, 105 departmental library staff and 2100 library users. The users included the 3rd year, 4th year and postgraduate students of Multi-Media University. This amounted to a target population of 2208.

The sample comprised of a whole population of librarian, assistant librarians, 20% of departmental staff and 10% of library users. According to (Mugenda 2004), this 20% sampling method is representative enough for such small populations. It therefore formed a sample of 234respondents. Random sampling was used in selecting the departmental staff. Stratified sampling was used in selecting library users according to their stage of study. The table below shows the sample frame of the study:

| S/NO | Departments | Population | Sample |
|---|---|---|---|
| 1 | Librarian | 1 | 1 |
| 2 | Ass. Librarian | 2 | 2 |
| 3 | Technical | 15 | 3 |
| 4 | Acquisitions | 25 | 5 |
| 5 | Reference | 12 | 2 |
| 6 | E-resources | 25 | 5 |
| 7 | Circulation | 28 | 6 |
| 8 | Library Users | 2100 | 210 |
| | **Total** | **2208** | **234** |

*Table 1: Population Sample Frame*
*Source: MMU Library Records, 2014.*

This study relied on both primary and secondary data. The questionnaire with closed questions was used. The questionnaires were tailored for easy use by the respondents in the study. Document review for secondary data was used to gather data that had been recorded in the institution. An authorization letter was obtained from the university and attached to the questionnaire so as to help in improving the response rate. The questionnaires were self-administered by the researcher to the respondents during library working hours. The respondents were allowed 2 days to fill them after which they were collected for analysis. The questionnaire was pre-tested

through piloting on some of the respondents to test its reliability. Data analysis was majorly quantitative. The information collected was analyzed using statistical, mathematical and data interpretation techniques which include the five-point Likert scale. The results of the analysis were presented using tables.

**4. Results and Discussions**

Respondents were asked on the extent of availability of appropriate library automation technology. Data collected were illustrated in the table below.

| S. No | Category | Ranks | | | | | Weighted Averages |
|---|---|---|---|---|---|---|---|
| | | **5** | **4** | **3** | **2** | **1** | |
| 1. | Provision of e-Resource facilities | 131 | 54 | 24 | 5 | 1 | 3.87 |
| 2. | ICT training | 65 | 98 | 39 | 18 | 5 | 3.89 |
| 3. | Support for automation | 76 | 99 | 45 | 3 | 2 | 4.08 |

*Table 2: Availability of Appropriate Technology on Library Automation*

Form the findings in table 2, on the Availability of Appropriate Technology on Library Automation, 131(58%) respondents strongly agreed that there was a provision of e- resources in the library, 54 (24%) of the respondents agreed that it was in place, 24(9%) of them moderately agreed while 5(2%) of the respondents disagreed that there was a provision of e- resource facilities and one of them strongly disagreed with the statement. With ICT training, 65(29%) of the respondents strongly agreed that it was in place, 98 (44%) of them only agreed that ICT training was provided, 39 (17%) of the respondents moderately agreed with the statement, 18(8%) of them disagreed as 5(2%) of the respondents strongly disagreed. On support for automation, 76 (35%) of the respondents strongly agreed that it was fully supported by the university management, 99 (44%) of the respondents only agreed that automation was supported, 45(20%) of them moderately agreed, while 3(1%) of them disagreed as the other 2 strongly disagreed. As it is explained above, it is therefore evident that majority of the respondents agreed that there was only a moderate availability of appropriate technology on library automation.

According to the findings, provision of e-Resource facilities was moderately rated with a score of 3.87. ICT training and support for automation were rated at 3.89 and 4.08 respectively. This demonstrated that although there was sufficient commitment for university library automation, there lacked sufficient ICT training on such technology and that there was only a moderate provision of e-resource facilities. This implies therefore that effective commitment on the part of university library administration should be enhanced. A regression coefficients analysis on the availability of appropriate technology was as follows.

| | **Coefficients** | **Standard Error** | **t Stat** | **P-value** | **Lower 95%** | **Upper 95%** | **Lower 95.0%** | **Upper 95.0%** |
|---|---|---|---|---|---|---|---|---|
| Intercept | 1.837939 | 0.445944 | 4.121458 | 0.025892 | 0.418747 | 3.257132 | 0.418747 | 3.257132 |
| $X_1$ | 0.027025 | 0.006934 | 3.897264 | 0.029976 | 0.004957 | 0.049093 | 0.004957 | 0.049093 |

*Table 3: Regression Coefficients Analysis on Availability of Appropriate Technology on Library Automation*

The estimated equation as generated above will be: $Y= 1.8379 +0.0270x_1+e$

Where, y = Effective Library Automation

$x_2$= Availability of Appropriate Technology on Library Automation

e= margin of error.

The positive beta value of 0.0270 indicates that availability of appropriate technology on library automation has a positive influence on effective library automation in public universities. This implies that a unit increase in availability of appropriate technology increases the effectiveness of library automation in public universities by approximately 2.7%. The t-Value of 3.89 is higher than 2.0and the P-value of 0.029 is lower than 0.05. This implies that the estimated results of the coefficients are both individually and statistically significant. This demonstrates that reasonable attention should be paid to mechanism that can enhance the availability of appropriate technology on library automation.

A section of the respondents was requested to indicate whether, in their opinion, there was significant support for automation from the university administration. Their responses were as shown in the table below

| | **Yes** | **No** | **Total** |
|---|---|---|---|
| Library staff | 68 | 6 | 74 |
| Library users | 141 | 10 | 151 |
| **Total** | **209** | **16** | **225** |

*Table 4: University Administration's Support for Automation*

*Source (Field Survey)*

The results show that university administrations support library automation. A further analysis to test the homogeneity of responses from the two groups of respondents using the chi-square test was carried out and the findings are as shown in the table below, where the formula for calculating the expected (E), is follows:

$$\text{Expected (E)} = \frac{(A) \times (B)}{N} = \frac{209 \times 74}{225} = 68.74$$

| | Observed (O) | Expected (E) | $(O-E)^2$ | $(O-E)^2/E$ |
|---|---|---|---|---|
| | 68 | 68.74 | 0.5476 | 0.0081 |
| | 141 | 140.26 | 0.5476 | 0.0039 |
| | 6 | 5.26 | 0.5476 | 0.1233 |
| | 10 | 10.74 | 0.5476 | 0.0547 |
| | | | $\sum \frac{(O-E)^2}{E}$ | **= 0.19** |

*Table 5: Chi-Square test for homogeneity of responses on awareness levels on compliance to public procurement regulations*

The table value for chi square for one degree of freedom ((2-1) (2-1)) at 0.05 significance level is 3.841. The calculated value of chi sq is 0.19, which is less than the table value. This means that there was no significant difference on the respondents as pertains their evaluations of university library automation practices.

**5. Summary**

From the findings, the majority of respondents agreed that there was only a moderate availability of appropriate technology on library automation. According to the findings, provision of e-resource facilities was moderately rated. This demonstrated that although there was sufficient commitment for university library automation, there lacked sufficient ICT training on such technology and that there was only a moderate provision of e-resource facilities. This implies therefore that effective commitment on the part of university library administration should be enhanced through provision of financial resources.

**6. Conclusion**

From the findings; there was only a moderate availability of appropriate technology on library automation. The provision of e-resource facilities was moderately rated. This demonstrated that although there was sufficient commitment for university library automation, there lacked sufficient ICT training on such technology and that there was only a moderate provision of e-resource facilities. Sufficient and effective commitment on the part of university library administration on the search for the right technology must be enhanced. A good training arrangement will facilitate participation effective exploitation of technologies available for automation.

**7. Recommendations**

The study recommends that university library administration should integrate their ICT training arrangements as an on-job training program. This is aimed at achieving an all-participatory approach to automation as well as achieving better automation practices.
Secondly, the study recommends that proper mechanisms should be put in place to carry out periodic audit of library automation resource allocation. Thirdly, there is need to adopt a common automation technology so as to solve incompatibility issues.

**8. Suggestions for Further Research**

This research adopted a descriptive design approach based on one institution, namely, the Multimedia University. This consequently limits the generalization of results. This study therefore recommends a similar study that will employ longitudinal survey and employ case study analysis to corroborate these research findings in more similar institutions. Further research on the suitability of the automation technologies adopted is recommended.

**9. References**


i. Abdelrahman, O. H. (2009). The state of ICT implementation and training at the University of Khartoum librarysystem (UKLIS). ICAL 2009 –Vision and roles of the future academic libraries.
ii. Ahenkorah-Marfo, M and Borteye, E. M. (2010). "Networking the Library Catalogue: Lessons from the Kwame Nkrumah University of Science and Technology Library, Kumasi, Ghana" Ghana Library Journal, 20(1):1-21.
iii. Ahmad, Parvez and Iqbal, Fatima (2009), "Library Automation of Al-Barkaat Institute of Management Studies, Aligarh with the help of Alice for Window (AFW) Library Software", Indian Journal of Library and Information Science, Vol.3No.2, 81-86.
iv. Aina, L. O. (2004). Library and Information Science Text for Africa. Ibadan: Third World Information Services Limited
v. Akinpeju (1999), Staff Training and Development: A Vital Tool for Organisational Effectiveness, EuropeanJournal of Scientific Research, Vol.24 No.3

vi. Alter, S. (2002). Information systems: Foundation of e-business, 4th ed. New York: Pearson Education, Inc.
vii. Amutabi, M. N. (2009). "Information and communication technology in Kenya: some reflections". Studies in the economic history of Kenya. The Edwin Mellen Press: New York.
viii. Arif, M. & Mahmood, K. (2010).The changing roles of librarians in the digital world: Adoption of web 2.0 technologies in Pakistani libraries. World library and information congress: 76th IFLA general conference and assembly, Gothenburg, Sweden10-15 August 2010. Retrieved on March 19,2015 from http://www.ifla.org.
ix. Aswal, R. S. (2006), Library Automation for 21st Century. New Delhi: ESS Publications. Pp5-8
x. Azzolini, J. (2011), "Business planning for digital libraries: international approaches", The Electronic Library, Vol. 29 No. 5, pp.723–724.
xi. Baglivo, J., Olivier, D., and Pagano, M. (1992), "Methods for Exact Goodness-of-Fit Tests," Journal of the American Statistical Association, 87, 464–469.
xii. Bartik, T.K. & Bingham, R.D. (1997). Can economic development programmes be evaluated? Dilemmas of urban economic development. In Bingham, R.D. & Mier, R. (eds.), Dilemmas of urban economic development: Issues in theory and practice, 246-277. Thousand Oaks, CA: Sage Publications.
xiii. Belyk, D. and Feist, D. (2002) Technical Evaluation Reports: 7. Software Evaluation Criteria and Terminology. The International Review of Research in Open and Distance Learning. http://www.irrodl.org. (July 27, 2015).
xiv. Bhanja, M. and Barik, N. 2009. "Library Automation: Problems and Prospect", in 10th National Convention of MANLIBNET organized by KIIT University from 22nd–24th, Jan.
xv. Boyle, F., & Brown, C. (2010).The UK Research Reserve (UKRR): Machinations, Mayhem and magic. Inter-lending & Document Supply, 38, 140-146.
xvi. Bruce Kelley, (2008) .Goals evaluation and execution: How to make Successful strategies.
xvii. Chowdhury G.G. & Chowdhury, S. (2003), Introduction to digital libraries, Facet Publishing, London.
xviii. Chisenga, J. (2004), "ICT in Libraries: An overview and general introduction to ICT in libraries in Africa", Paper presentedat INASP ICT workshop, held at Johannesburg, South Africa on 21-23 July 2004.
xix. Chiware, E. R. T. (2007). Training librarians for the digital age in African university libraries. Pre-IFLA satellite meeting, Durban.
xx. Cicmil, S.J.K., Williams, T., Thomas, J.L., Hodgson, D.E., (2006). Rethinking project management: researching the actuality of projects. Int. J. Proj. Manag 24 (8), 675–686.
xxi. Coben, D. (Ed.). (2003). Adult numeracy: Review of research and related literature Retrieved November 21, 2005, from the National Research and Development Centre For Adult Literacy and Numeracy: http://www.nrdc.org.uk/uploads/doc.
xxii. Connell, T. H. & Cetwinski, T. (2010).Impact of institutional repositories on technical Service. Technical Services Quarterly, 27, 331-346.
xxiii. Das, A.K. and Dutta, B. (2004), "An introduction to auditing and control of digital Library systems", Annals of Library Science and Documentation, Vol. 51 No. 3, pp. 99-103.
xxiv. Emmanuel, G. and Sife, A.S. (2008). Challenges of managing information and Communication technologies for education:Experiences from Sokoine National Agricultural Library. International Journal of Education and Development using Information and Communication Technology. (IJEDICT), 2008, Vol. 4, Issue 3, pp. 137-142.
xxv. Egunjobi, R.A. and Awoyemi, R. A. (2012). "Library automation with Koha", Library Hi Tech News, 29(3):12 – 15.
xxvi. FAO (2010).Food Agricultural Organization: Report of the United Nations Forum.
xxvii. Farrell, G. (2007).ICT in Education in Kenya. Survey of ICT and education in Africa: Kenya Country Report. Retrieved from www.infodev.orgon 17/07/2011.
xxviii. Georgina .D. Ekpeyong, (1997) "Automating a large library in Nigeria, The story so far" New Library World. Vol.98,Iss. 3,pp 106-110.
xxix. Ghuloum, H. & Ahmed, V. (2011). "The Implementation of New ICT Services in Kuwaiti Academic Libraries" The Built & Human Environment Review, Volume 4, Special Issue1
xxx. Gould, E. and Gomez, R. (2010). "New challenges for libraries in the information age: a Comparative study of ICT in public libraries in 25 countries". Information Development. 26(2) 166–176.
xxxi. Government of Kenya. Ministry of Planning and National Development (2007). Kenya Vision 2030. Nairobi: Ministry of Planning and National Development.
xxxii. Gupta, R.C., & Dass, Shir (1991). Computerization of Serials Control- a practical approach using a personal computer. IASLIC Bulletin, 36, 17-22.7
xxxiii. Haddad, W. D., & Draxler, A. (2002). Technologies for Education. Washington DC/Paris: UNESCO and the Academy for Educational Development.
xxxiv. Hagenaars, M. (2007). Socio-cultural factors and ICT adoption."International Institute for Communication and Development (IICD)" http://www.iicd.org/articles/IICDnews.import2069[Accessed on 02/08/2015]
xxxv. Haneefa, M. (2007) "Application of information and communication technologies in special libraries in Kerala (India)" Library Review. Vol. 56 No. 7, 2007 pp. 603-620.
xxxvi. Haravu, L. J., & Raizada, A.S., (1967). Computerized Data Retrieval: An experiment with IBM 1620. Annals Library Science and Documentation,14(2), 76- 80.
xxxvii. Harinarayana, N.S., (1991). Concept of Library Automation. Herald of Library Science, 30, 174-183. 9

xxxviii. Harold, Borko., (March, 1966). Experimental Studies in automated Document Classification. Library Science, 3(1), 88-98.10

xxxix. Hesseling, Craig, Robert L., ed. (1971). Training and Development Handbook: A Guide to Human Resource Development. 3rd edition. New York: McGraw-Hill,

xl. Hussain, Akhtar., & Raza, Masoom M. (2002). Online Public Access Catalogue: IASLIC Bulletin, 205.

xli. James Castiglione, (2007) "Self-managing work teams and their external leadership: A primer for library administrators", Library Management, Vol. 28 Iss: 6/7, pp.379– 393.

xlii. Kadiri, J.A. (2004). "Automation of an academic library: the case of federal college of education (special) Oyo Nigeria", Nigerian Library and Information Science Review, 22(2):57-62.

xliii. Kaliammal, A. and Sarasvadi, S. (2007). Significance of Information and Communication Technologies (ICT) in the New NAAC Standards for University Libraries. University News. 45(12): 11-15.

xliv. Kamba, M.A. (2011). "Implication of ICT's in Libraries of Higher Education Institutes: A Panacea Catapulting Library Development in Africa" DESIDOC Journal of Library & Information Technology, Vol. 31, No. 1. pp. 65-71.

xlv. Kane, V.E. (1986), "Process capability indices," J. Qual. Technol. 18, 41-52

xlvi. Kavulya, J. M. (2004). University libraries in Kenya: a study of their practices and performance. Unpublished masters dissertation. Retrieved from http://edoc.huberlin.de/dissertationen/kavulyjosephmuema- 2004-02-19

xlvii. KENET (2009).E-readiness survey of East African Universities (2008). Kenya Education Network.

xlviii. Keralapura, M. (2009) . "Technology and customer expectation in academic libraries:a special reference to technical/management libraries in Karnataka" The International Information and Library Review, 41 (3), 184-195.

xlix. Kiechel, Walter (2010). The Lords of Strategy. Harvard Business Press.

l. Kroenke, D. (2011). Using MIS, 3rd ed. New Jersey: Pearson Education, Inc.

li. Lampert, C. & Vaughan, J. (2009), "Success Factors and Strategic Planning: Rebuilding an Academic Library Digitization Program", Information Technology and Libraries.

lii. Laudon, K. C. and Laudon, J.P. (2009). Management information systems: new approaches to organization and technology, 8th ed. New Jersey: Pearson Education, Inc.

liii. Laudon, K. C. and Laudon, J.P. (2010). Management information systems: managing the digital firm, 11th ed. New Jersey: Pearson Education, Inc.

liv. Lohr, Sharon L.(1999) Sampling: Design and Analysis. Albany: Duxbury Press.

lv. Lubanski, M. (2012) Building Clouds: building hybrid clouds that can support any device from anywhere: http://blogs.technet.com/b/privatecloud/archive/2012/10/22/what-is-automation-by-michaellubanski. aspx. (September 10, 2013)

lvi. Madu, E.C. (2002) Computerized Reference Source and Traditional Printed Reference Source: A Comparison of the Old and the New in Library Services. Information Science and Technology for Library Schools in Africa.

lvii. Majumdar P.K. (2005). Research Methods in Social Science, Viva Books Private Limited New Delphi.

lviii. Makori, E.O. (2009). Reinventing academic libraries in Kenya. Library Hi Tech News, Vol. 26 (5/6), pp.10 – 13.

lix. Minishi-Majanja, M. (2007). Integration of ICTs in library and information science education in sub-Saharan Africa. Paper presented at the World Library and Information Congress: 73rdIFLA General Conference and Council. Retrieved from http://www.ifla.org/IV/ifla73/index.htm.

lx. Moorthy, ALakshmana., (2004) . Library Automation in India. In Horizon of Information Technology: New Age, New Wage Trend and Impact of Library Science. AFestschcrift vol.no.1.

lxi. Moropa, R. (2010). "Academic libraries in transition: some leadership issues –a View point", a Library Management, Vol. 31 No. 6 pp. 381 – 390 Retrieved from www.emeraldinsight.com/0143- 5124.htm.

lxii. Mugenda & Mugenda. (2003). Research methods: quantitative and qualitative approaches. African centre and technology studies (ACTS): Nairobi.

lxiii. Mutula, S. M. (2001). The IT environment in Kenya: implications for libraries in public universities. Library Hi Tech, Vol. 19 (2), pp.155 – 166.

lxiv. Nadira, A. R. Kamal, B. &Banu A. T. (2010). "ICT in Higher Education – A Study" Canadian Journal on Data, Information and Knowledge Engineering Vol. 1 No.1

lxv. Naidu, Som (2006). E-learning: A guide book of Principles, Procedures and Practices. p.1, CEMCA, New Delhi.

lxvi. Neelakandan.B, Duraisekar. S, Balasubramani.R, & Srinivasa Ragavan.S (2010) Implementation of Automated Library Management System in the School of Chemistry Bharathidasan University using Koha Open Source Software. International Journal Of Applied Engineering Research,1(1)Available: http://www.ipublishing.co.in/jarvol1no12010/EIJAER1014.pdf. (September 10, 2013)

lxvii. Nieman G, Hough J & Nieuwenhuizen C (eds) (2003). Entrepreneurship. Pretoria: Van Schaik.

lxviii. Nieuwenhuizen C & Kroon J (2002). Identification of entrepreneurial success factors to determine the content of entrepreneurship subjects. South African Journal of Higher Education, 16:157-166.

lxix. Obaseki, T. I (2011). "Library Computerization: Nigerian Reality." Brazilian Journal of Information Science, 5(1):60-68.

lxx. Odero-Musakali, D. &Mutula, S. (2007). "Internet adoption and assimilation in Kenyan University libraries" Library review. Vol. 56 No. 6 pp. 464 – 475. Retrieve from www.emeraldinsight.com/0024-2535.htm.

lxxi. Ogunsola, L.A. (2004) Nigerian University Libraries and the challenges of Globalization: The Way Forward. Electronic Journal of Academic and Special Librarianship. Vol. 5(2-3).

lxxii. Okojie, V. (2010). "Innovative financing for university libraries in sub-Saharan Africa", Library management, Vol. 31. No. 6, pp. 404 – 419. Retrieved from www.emeraldinsight.com/0143-5124.htm.

lxxiii. Omoniwa, M.A. (2001). "The computerization of Kashim Ibrahim Library of Ahmadu Bello University, Zaria, 1972-2001", Nigerian Libraries: Journal of the Nigerian Library Association, 35 (1) : 15-22.

lxxiv. Parvez, A (2011). "Development in library services with the advent of ICT based products &services: a continuous process" International Journal of Digital Library Services,1(2):1-9.

lxxv. Phillips, D. C., & Burbules, N. C. (2000). Post positivism and educational research. Lanham, MD: Rowman & Littlefield.

lxxvi. Rana, Harpreet Kaur. (2011). Impact of Information Communication Technology on Academic Libraries in Punjab http://goarticles.com

lxxvii. Raymond Lang, (2012). The Development and Critique of the Social Model of Disability, Overseas Development Group, University Of East Anglia.

lxxviii. Roy, M.A. and Wheeler D. (2006). A survey of micro-enterprise in urban West Africa: drivers shaping the sector, Development in Practice, 16: 452-64.

lxxix. Saunders, M., Lewis, P., and Thornhill, A. (2003). Research Methods for Business Students 3rd Ed. New York:Pearson

lxxx. Schwandt, T. A. (2001). Dictionary of Qualitative Inquiry (2nd ed.). Thousand Oaks, CA: Sage.

lxxxi. Singh, G. Mittal, R., & Ahmad, M. (2007). A Bibliometric Study of Literature on Digital Libraries. The Electronic Library, 25(3), 342-348.

lxxxii. Seyler, D.L., Holton, E.F. III, Bates, R.A., Burnett, M.F., and Carvalho, M.A. (1998), "Factors Affecting Motivation to Transfer Training", International Journal of Training and Development, Vol. 2 (1), pp. 2–16.

lxxxiii. Spencer-Oatey, H. (2012) What is culture? A compilation of quotations. GlobalPAD Core Concepts.

lxxxiv. Spencer-Oatey, H. (2008) Culturally Speaking. Culture, Communication and Politeness Theory. 2nd edition. London: Continuum.

lxxxv. Stoner James A.F, Freeman R. Edward, Gilbert Jr., Daniel. R. (1996) Organizational

lxxxvi. Capacity to react to problems: p.13

lxxxvii. Sudhamani, K. S. (2010) Assessment and Evaluation of Open Source Library Automation Software KOHA and NewGenLib Adaptable to RGUHS Digital Library Operations and Functions. Being a report submitted to the Rajiv Gandhi University of Health Sciences in partial fulfillment of the requirement for the degree of a Postgraduate Diploma in Health Science Librarianship.P.2.Available:http://119.82.96.198:8080/jspui/bitstream/123456789/237/1/KOHA%20and%20Newgenlib.pdf. (September 10, 2013)

lxxxviii. The Pennsylvania State University World Campus. (2014). PSYCH 484, Lesson 6: Goal-Setting Theory: What am I trying to achieve in my work? Work Attitudes and Motivation.

lxxxix. The Pennsylvania State University World Campus. (2012). PSYCH 484, Lesson 6: Goal Setting Theory: What am I trying to achieve in my work? Work Attitudes and Motivation.

xc. Trochim, W. M. K., & Donnelly, J. P. (2006). The research methods knowledge base (3rd ed.). Mason, OH : Thomson Custom Publications.

xci. Uddin, Hanif., (2009) Library Automaton: A study of the AIC, INSDOC.

xcii. Wright, K. C. (2007). Computer-related technologies in library operations. Aldershot: Gower.

xciii. Zegarac, V. (2007). A cognitive pragmatic perspective on communication and culture. In H. Kotthoff & H. Spencer-Oatey (Eds.), Handbook of Intercultural Communication. Berlin: Walter de Gruyter, 31–53