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KOHA ENTERPRISE RESOURCE PLANNING SYSTEM AND ITS POTENTIAL IMPACT ON INFORMATION MANAGEMENT ORGANIZATIONS

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Introduction and background information

With the development of technological solutions in mainstream organizations and institutions, there is rapid transition to free and open source software in business and information management organizations. In the information environment, Koha enterprise resource planning system is one of the solutions that is fundamental in the transformation and change of information organizations. Koha is the enterprise resource planning system used for automating and integrating information management practices in organizations. At the center of the debate are the economical benefits and myths of the system compared to the commercial solutions. Information management organizations and professional leaders need reliable business systems that handle, support and provide services within the context of the allocated vote and budgets. Information and communication technologies infrastructure is needed to form the base for good information management practices in libraries and information centres, and increasingly these organizations have converted to integrated library systems in order to manage and make their collections available for national development (**Stiwell, 2012**). Information management organizations are driven by the needs and demands of the clients that are increasingly becoming dependent upon technological solutions.

In the modern information environment, information management organizations all over the world suffer from defining challenges or problems ranging from integration of technological solutions to economical crisis of reduced budgets. Many economically less information organizations and academic institutions have massively reduced financial spending and subscriptions for resources (**Shabi & Chinwe, 2011**). Consequently, add the aspect of integration of technological solutions that are quite necessary to the already burdened information and knowledge management organizations. Koha has been considered the free and open source enterprise resource planning system that can fulfil the needs and demands of libraries and information centers (**Breeding, 2009**).

In this competitive world, information organizations and professional leaders need reliable and timely information in order to implement solutions that are cost effective in service delivery. Application and use of Koha enterprise resource planning system in information and knowledge management organizations is too strong to ignore, due to the hard economic situations facing institutions in regard to spending and the need for provision of quality services to the customers. There have been baseline studies on Koha especially on technical and integration issues including occasional conferences, training workshops and seminar presentations, but none on its potential impact as the "enterprise resource planning system" on information management organizations. This paper explores organizational decisions made in the choice of Koha free and open source enterprise resource planning system in information management organizations in Kenya against the risks and myths associated with the solution.

Research context

The study was conducted in information management organizations with Koha free and open source enterprise resource planning system. The information organizations were selected from academic and research institutions in the public and private sectors. In this context, two public universities, two private ones and one corporate organization were equally chosen. The university libraries have the mandate of providing information and knowledge to support training, teaching, learning and research activities. Data and information were collected from information professionals more so systems librarians and library technologists, and scholars.

Statement of the problem

The modern information environment in organizations is anchored on the foundation of free and open source movement systems (**Mutula & Kalaote, 2010**). Across the world, free and open source enterprise resource planning solutions into mainstream operations and services have transformed information management organizations economically, socially and institutionally into knowledge hubs (**Stiwell, 2012 & Shaul & Tauber, 2013**). With many of enterprise solutions being produced into the knowledge economy, information professionals and leaders in information management organizations are faced with the daunting challenges of selecting economically **viable** software systems. Koha is one of the free and open source enterprise resource planning systems for automating and integrating services in libraries and information centers (**Breeding, 2009**). In the modern cloud computing environment, the scenario has changed due to numerous reasons that above all require information management organizations to integrate solutions that are economical and cost effective in delivery and provision of services (**Shukla, 2012 & Haven & Storey, 2010**). Koha free and open source enterprise resource planning system is likely to be associated with various problems, risks and myths that have compromised the use of this solution in information management organizations due to lack or reliable information. In Kenya alone, only **countable** information organizations use the system and the replica applies to many African and other developing countries (**Ogbenege & Adetimirin, 2013 & Egunjobi & Awoyemi, 2013**). Koha may face surmountable challenges but information management organizations and professional leaders have the option of deciding the appropriate solution. One of the defining challenges of information management and leadership is to make decisions that are scientifically reliable and valid. The purpose of this study was to provide information professionals and leaders with reliable, accurate and timely information in relation to Koha free and open source enterprise resource planning movement and its innovative role in the global knowledge society, and dispel the risks and myths that might be associated with the solution.

Purpose and objectives of the study

This paper focused on the need to switch to Koha enterprise resource planning system and its potential impact on information management organizations, against the risks and myths associated with the solution. Objectives of the study included:

i. Obtain information on significant benefits associated with the use of Koha system in information management organizations.
ii. Find out problems associated with the use of Koha system in information management organizations.
iii. Establish the extent to which information management organizations are satisfied with the use of Koha system.
iv. Propose strategic measures to mitigate the risks and myths associated with the use of Koha system.

Research questions

i. How does information management organizations benefit from the application of Koha system?
ii. Which challenges are associated with the use of Koha system in information organizations?
iii. To what extend are information organizations satisfied or dissatisfied with the use of Koha system?
iv. What strategic measures are needed to mitigate the risks and myths associated with the use of Koha system?

Literature review

Enterprise resource planning systems in information management organizations

In the modern knowledge environment, automation and social computing practices are fundamental requirement for quality delivery of information services in organizations. In the global economy, information and knowledge organizations need to develop and implement enterprise resource planning systems and solutions for the purpose of connecting and streamlining business functions and operations. Enterprise systems provide and share information and knowledge across the organizations without any duplication. Enterprise resource planning systems automate and integrate information applications, functions and processes within and beyond the borders of the organization. Historically, enterprise resource planning systems began in the manufacturing sector in 1960, where the centralized computing systems were used in inventory management and control. In 1970, the materials planning systems were developed to manage and support manufacturing requirements and production planning processes. From the 1990s, the systems expanded to include additional core operations and processes such as accounting and finance, and human resources. In the

modern knowledge economy (21ˢᵗ Century), business and information organizations are transitioning to cloud enterprise resource planning systems – online, web, internet or cloud based solutions (**Shukla, 2012**). Enterprise resource planning systems have increasingly been adopted and used in many diverse institutions and industries including banking, insurance, healthcare, higher education and learning, information and knowledge organizations (**Shaul & Tauber, 2013 & Nazemi, Tarokh & Djavanshir, 2012**).

In information management organizations, automation practices began in the middle of the 20th century, with the systems revolving and expanding to integrated, intelligence and cloud based solutions. Implementation of electronic resource planning systems in business organizations lead to the adoption and use of these solutions in library and information housekeeping operations and functions such as acquisitions, cataloguing, circulation control, serials management, research and reference support, online public access catalogue (OPAC) and patron management. In knowledge based organizations, "information automation" is the application and use of cloud enterprise resource planning systems for automating and integrating information functions and operations from a central and single database application. Library software allows information professionals not only to increase efficiency and eliminate repetition but also improve accuracy, save time and provide relevancy (**Okewale & Adetimirin, 2011**).

Information automation practices have witnessed numerous developments due to technological revolution in the knowledge society resulting to innovative systems such as enterprise resource planning system, cloud enterprise resource planning, integrated information management and automated digital information systems that manage and support access and use of information from common database and remote sites. In addition, other solutions like radio frequency identification (RFID) technology have enabled information management organizations to provide self services to the customers (**Makori, 2011, Biswas & Paul, 2010 & Madhusudhan, 2010**). In what can be seen as an emerging revolution in automation of information systems in the digital environment, is the outsourcing process through cloud computing devices. In the 21ˢᵗ century, cloud enterprise resource planning business model is displacing the distributed or client server based delivery of services in information management organizations. Cloud computing and informatics solutions offer the infrastructure that handles, manages and supports cloud enterprise resource planning systems (Cloud ERP) (also referred to as online, web or internet based) and cloud online public access catalogue (Cloud OPAC) in addition to normal automation functions.

Effective and efficient management of information resources in organizations is one of the modern International Standards Organization (ISO) requirements for knowledge management practices meant to enhance and improve provision of quality services to the customers. The image of the library is increasingly being measured by the services offered in terms of helping clients to access universal information rather than the respective collection (**Ejedafiru, 2010**). Central to the discussion is the choice of the enterprise resource planning systems to handle and support seamless services in information and knowledge

management organizations. The business enterprise system is not only critical in automation and integration of information services but must also be sustainable and cost effective in organizations. Better the system that provides quality based information services to the customers than the very expensive one that becomes both economical burden and unnecessary expenditure to the organization. These end-user technological solutions are widely used in information management organizations by customers to interact with the internet in order to research for knowledge. For information professionals, enterprise resource planning systems provide a convergence of information services, client needs and technological solutions.

In a nutshell, enterprise resource planning systems provide innovative and internationally recognized modules that handle and support information operations and services in organizations. In addition, the systems help in decision making, planning, budgeting and finance functions. In the modern knowledge landscape, the benefits of enterprise resource planning information management systems include:

- Automation and integration of information processes, functions and operations from central and single database application such as acquisitions, processing, storage and dissemination of quality services.
- Influences product advancements and integration with **e-procurment, e-payment and mobile billing as well as** e-commerce applications in relation to how information is acquired, processed, stored, retrieved and managed.
- System saves considerable effort, time and resources in handling and supporting information services.
- Performs speed computations at low cost in the process of handling and supporting delivery or transfer of information services.
- Provides increased opportunity to seamless and coherent flow of information activities internally and externally.
- Promotes the morale of the staff in acquiring new and relevant knowledge and skills hence job satisfaction.
- Expansion of existing information activities and services and introduction of new ones.
- Provides powerful, efficient and effective information storage, processing and retrieval systems.
- Helps in the protection and security of information services against unauthorized access and use.
- Has the potential of reducing the digital divide between the 'technological haves' and the 'technological have-nots'.
- Provides business intelligence solutions for handling, supporting, tracking and forecasting information processes and activities.
- Helps in adding value to information services and delivering the same to the market and especially to where the customer is – use of mobile devices.

- Knowledge hub that provides the platform for using and accessing digital information including electronic version of books and journals as well as mobiles devises such as Ipads and personal digital assistants.
- Provides access to online information and knowledge services anywhere anytime through cloud, internet, hosted or web based applications.

Koha free and open source enterprise resource planning system

Across the world, many countries and information management organizations have made fundamental progress in relation to use of Koha free and open source software system as "a strategic asset in knowledge management". Historically, since its inception Koha has gained momentum across the world as the best enterprise resource planning system for automating and integrating information management practices due to the development of the internet that fundamentally makes free and open source software programmes easily available. Economical benefits of the system include its potential to acquire the solution absolutely free or using minimum budget.

Globally, governments and organizations are increasingly adopting and implementing free and open source enterprise resource planning programmes. Open source software development and deployment in government across the world is gaining momentum purportedly to enhance universal access, reduce costs associated with commercial software, bridge the digital divide, and grow indigenous information technology skills (**Mutula & Kalaote, 2010**). Similarly, open source software has enabled those in many countries around the world to develop digital library systems and provides researchers and students the ability to read current literature and research outputs (**Krishnamurthy, 2008**). In the modern business environment, the movement has enabled libraries and information agencies to identify, develop and own best software solutions that are within the allocated vote or budget. Open source software is seen as part of wider movements for more grassroots and democratic technology models in the development of a global information society (**Pyati, 2007**). Transition to the open source software movement is a strategic plan to increasingly help governments and organizations including information management organizations to provide effective and efficient services using limited financial resources.

Koha movement in information management organizations in Kenya

Numerous free and open source enterprise resource planning systems for automating and integrating information management in organizations have been developed to handle and support operations and services such as Koha, Evergreen, Emilda and OpenBiblio. Developed in 1999, Koha is the first *free and open source software* most widely used in information management organizations with a customer base of over 500 institutions globally. From the literature review, Koha was initially the programme for rural and small libraries or information centers in New Zealand until the first public library in Northern America adopted and implemented the software in 2003. Evergreen is the other free and open source software developed in 2004 by a consortium of public libraries in Georgia, and

is widely used in libraries and information centers. Unlike Evergreen Koha software is widely used in African countries more so in universities and organizations. Koha provides customer based features that easily embrace new technological innovations in the market, for instance, integration with business intelligence solutions like radio frequency identification to enhance self-issue and self-return of information materials.

Modern information environment, media landscape and technological innovation are increasingly influencing the classical physical library premises creating modern communication based library rather than a collection based one (**Hellen, 2007**). Modern learning resource centers (LRC) provide information and knowledge hubs that place greater emphasis on client needs and demands in regard to information communication technology (ICT) solutions – social computing services, media centers, information skills, learning development services, teaching, accommodation, space for informal learning or group work, laptop use and catering facilities (**Makori, 2009**). Learning resource centers aim to deliver high quality information resources and services to support excellence in learning, teaching, research, publishing and community activities in universities. In Kenya, United States International University, Kenyatta University and Catholic University of Eastern Africa have built modern learning resource centers.

Universities libraries in Kenya have implemented integrated information management systems so as to keep abreast with the benefits and risks of the modern knowledge based economy. Most information based agencies in institutions of higher learning in the country have adopted and implemented open source software (OSS) systems largely due to financial limitations that face the parent organizations. Big information management organizations in academic and public libraries use commercial solutions, while small learning and knowledge media centers in school or special libraries equally use proprietary systems. Universities libraries of University of Nairobi (UoN) and Catholic University of Eastern Africa (CUEA) use V-Smart software, which is one of the top-end five systems in the global information environment, while SirsiDynix is used at the United States International University (USIU) library. Koha enterprise resource planning information management system is widely used in universities of Kenyatta and Strathmore as well as host of other organizations.

Table 1: Enterprise Resource Planning Systems in Information Management Organizations

ENTERPRISE INFORMATION SYSTEMS	INFORMATION MANAGEMENT ORGANIZATIONS	
	PUBLIC ORGANIZATIONS	PRIVATE ORGANIZATIONS
V-Smart System	University of Nairobi	Catholic University of Eastern Africa
SirsiDynix System	United States International University	
Koha System	Kenyatta University Technical University of Kenya Parliament of Kenya	Strathmore University Umma University Kenya Institute of Management

7

Research synthesis

Baseline studies in Koha enterprise resource planning system has helped information management organizations across the world to accept and implement the solution as exemplified in America, Europe, Asian, Africa and Australia. Initially, there were issues regarding **Koha's suitability in relation to MARC** compliance and related technological issues but the first public library in Northern America took the lead initiative to address this anomaly. In North American countries of United States of America, Canada and Mexico the software is widely used in library and information establishments of higher education, faith based institutions, schools and organizations. Among the first implementations of Koha enterprise resource planning system in the United Kingdom whose use experience and conclusions was not only very successful but also influenced decisions of other libraries and information centers was the CAMLIS project (**Bissels & Chandler, 2010). France's policy** on open source software has increased the use of specific applications in universities. Three university libraries collectively cooperated in installation, customization and implementation of Koha (**Espiau-Bechetoille et al., 2011**). Similarly, in Italy, CILEA a consortium of universities founded in 1974 has participated actively in the Koha community since 2008 including several subprojects. In particular, CILEA has worked on Italian translation and on writing a correct default configuration for Italian libraries (**Tajoli et al., 2011).**

The Chinese government policy requires ministries and agencies to use open source software as the first option (**Mutula & Kalaote, 2010).** In particular, the Koha community has lead to the development of Koha-Taiwan that basically provides services to Chinese users across the world (**Chang et al., 2013). In India**, open source software is providing the first step toward an information society and helping to close the digital divide (**Sharma and Adkins, 2006**). University library and department libraries at Cochin University of Science and Technology use the Koha free and open source enterprise resource planning system for automation and integration purposes (**Cherukodan, Kumar & Kabir, 2013).** In April 2007, Pakistan librarians selected Koha as the best integrated library and information management system with comprehensive functionality and impressive features. Koha's ability to accommodate different languages and scripts, and the potential for use as shared catalogue of all legislative assembly libraries were the major attractions for legislative libraries that contained large number of collections in different oriental languages such as Urdu, Punjabi, Sindhi and Pushto (**Rafiq & Ameen, 2009**).

Widespread use of Koha in Australian special libraries and related agencies indicates that the free and open source option has enabled many libraries to greatly enhance services to remote users (**Keas, 2011).** Within the African context, Koha free and open source enterprise resource planning system is used in many countries including South Africa, Egypt, Nigeria, Malawi, Zambia, Zimbabwe, Gambia, Eritrea, Ethiopia, Congo, Burundi, Tanzania and Kenya. Koha has already found favour in two private Nigerian universities (Bowen and Redeemer) and one college (Adeyemi College of Education) where the system is widely used to handle and support information work and services (**Ogbenege & Adetimirin, 2013**& **Egunjobi &**

Awoyemi, 2013). In the modern cloud computing economy, coupled with numerous issues of quality services, customer needs and demands, limited financial budgeting and spending, and the digital environment impacting on information management organizations, there is need to critically evaluate and analysis the perceived potential benefits of Koha enterprise resource planning system.

Theoretical framework and its applications

Modern information environment is rapidly becoming innovative and intelligent with enterprise resource planning systems that are free and open but less commercial. Across the globe organizations are increasingly using these technologies to expand and provide quality and customer focused services. With the transition from millennium development goals to sustainable development goals the focus is for organizations to invest in systems and solutions that are economically beneficial, **viable**, easy to use, maintain and manage. These aspects touch on a number of theories involving return on investment and technology acceptance model (TAM) (**Rupak, 2014, Haven & Storey, 2010, Urieto, & Inyang, 2011**). Information management organizations have to adopt information technology solutions that are economically beneficial to deliver quality customer based products and services.

Return on investment stresses on the cost-benefit analysis to the institutions in terms of economic performance and value - quality services and monetary gains. In the modern economic environment, information management organizations shall get value for money-in and money-out in development and provision of information products and services (**Haven & Storey, 2010**). Consequently, the customers shall get quality information products and services. Institutions of higher learning have reduced financial budgets from government and sponsors, and therefore any spending committed must demonstrate perceived usefulness in providing information and knowledge to support teaching, learning and research activities (**Shabi & Chinwe, 2011**). Return on investment in university libraries can be realized if Koha resource planning system provides value and quality based services through timely access to information, convenience to digital and electronic resources, knowledge portal that provides information, metadata information management, supports information services, online information resources.

The fundamental basis of TAM involves the critical aspects of user acceptance with perceived usefulness (PU) and perceived ease of use (EU) (**Rupak, 2014**) **that normally addresses the concerns and feelings of the customers.** In this context, the technological system and solution must be perceived beneficial (usefulness, simplicity, and user and pocket friendly) prior to being accepted and embraced by the stakeholders. Technology acceptance and user performance requirements are central to effective and efficient utilization of Koha system. Information organizations adopting Koha enterprise resource is based on the perceived usefulness, perceived benefits, perceived return on investment, perceived compatibility and integration, perceived challenges, perceived attitudes and behaviour, and perceived myths associated with the solution. The theories provide useful

knowledge that addresses issues regarding technological investment and acceptance in information management organizations.

Research methodology

Research design

This study used descriptive design that is applied in preliminary and exploratory studies to gather information, summarize, present and interpret for the purpose of clarification. Descriptive design enabled the study to construct questions that helped solicit the desired data, identify the means of conducting and gathering, summarizing and presenting the information. The study was confined to selected information management organizations with Koha free and open source enterprise resource planning system while additional information was gathered through literature review scan and survey - document or desk review analysis. In addition, expert opinions and ideas from information professionals more so systems librarians were selected and utilized.

Population and sampling strategy and techniques

The study gathered information and expert opinions from various stakeholders in information management organizations. Information professionals and leaders including information systems and librarians were sampled for the study. The purpose was to gather comprehensive and in-depth information and learning experiences from information professionals within and outside Kenya. In total, the study involved five (5) information management organizations from public and private university libraries, and corporate resource center. These include two (2) public and private universities each and one (1) public organization; ten (10) information professionals of systems librarians and library ICT staff; and expert opinions from scholars (10). Koha enterprise resource planning system is used in countable organizations and as a result the respondents were purposively sampled and included for the study.

Data collection methods and approaches

Structured or close ended questionnaire and document review guides were used for gathering and collecting data and information from the respondents. The close ended questionnaire was used to obtain in-depth information on Koha free and open source enterprise resource planning system and its potential impact on information management organizations. The aim was to collect comprehensive information on perceptions and experiences of respondents regarding Koha system more so in terms of the benefits and problems associated with the solution, levels of satisfaction and dissatisfaction, operational experiences and planning, strategic measures to address the identified and unforeseen challenges, and expert opinions and ideas from the professionals. The study also used document analysis from reputable sources to collect data and information. Documents examined or analysed included electronic or digital versions of books and journals such as

Emeraldinsight, Jstor, Wiley and Ebscohost. In addition, Koha weblogs and related websites also provided up-to-date information.

Data analysis procedures

Data and information obtained through the various data collection methods were reviewed, analyzed and organized into relevant themes and subthemes of the study. To address issues of bias, the respondents participated in the data collection process on free or volunteer basis in addition to being carefully selected. Above all, the study involved mainly respondents dealing with issues of information technology and systems, who provided comprehensive and additional free information and knowledge.

Conceptual findings

Perceived potential benefits of Koha enterprise resource system

First and second objectives of the study were to *obtain information on significant benefits associated with the use of Koha free and open source enterprise resource planning system in information management organizations*, and *find out problems associated with the use of Koha system in information management organizations*. The purpose was primarily to assess the potential impact of use of Koha system in information management organizations including possible challenges. **Widespread** use of the software that was initially developed for rural and small libraries into a global one is proof enough that the free and open source software movement is slowly being accepted into the information and knowledge environments (**Chang et al., 2013, Espiau-Bechetoille et al., 2011, Keas, 2011, Tajoli et al., 2011**). Koha enterprise movement communicates one important thing to the information industry and the knowledge society at large, that information organizations are satisfied with the use of the system in provision and support of customer services.

In order to obtain information on the potential benefits of Koha enterprise resource planning system in information management organizations in Kenya, the respondents were requested to select from the list whose result is given in Table 2 below. The findings indicate that the benefits associated with Koha system include Integration solution (95%), Economical opportunities (90%), Solid customer base (85%), Free usage and distribution (80%), Compatibility with other solutions (75%), Technical and online support (70%), Global access to information (65%), Organization of knowledge (60%).
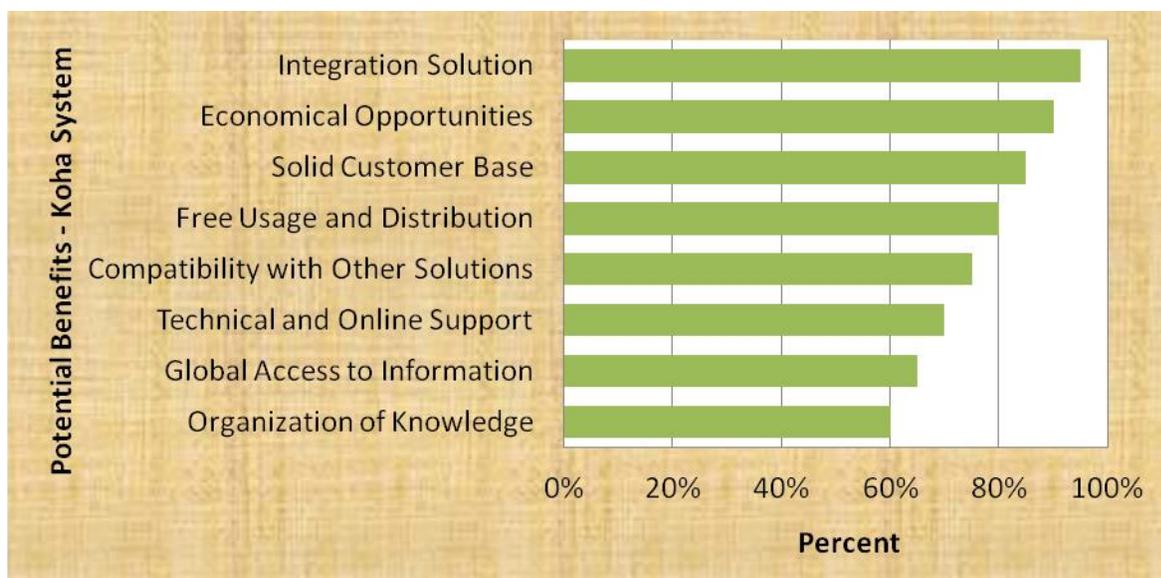
Figure 1: Potential Benefits Associated With the Use of Koha System

Koha free and open source system vis-à-vis proprietary solutions

Koha integration and open source software system is increasingly gaining favour over other proprietary solutions in information management organizations. Koha software practices are begged on numerous benefits associated with the solution as exemplified by information management organizations and professionals that have implemented the enterprise resource planning system. In order of priority, the respondents noted the following central benefits associated with the system integration solution, economical benefits, solid customer base, free use and distribution, technical and online support, compatibility and integration with other technologies, global access to information, and organization of knowledge.

Integration solution

Koha integration and open source system allows automation of information and knowledge management operations, functions and services including administration, acquisitions, serials management, cataloguing, circulation, OPAC, reference, interlibrary loan and community services. In addition, this process enhances and improves delivery of services to the customers the "hallmark" of any information and knowledge organization. In particular, over 95% of the respondents acknowledged that the integrated mechanism makes it possible to track down information resources and services from the time the order is made and received in the acquisitions, processed (catalogued), circulated (circulation) and retired. Further testimonies from the respondents summed and concluded that, integration avoids duplication of multiple entries of bibliographic records in the system. The system provides for one time entry and access of bibliographic records that is used for all operations and functions in the information center.

Economical opportunities

In one of the university, the systems librarian noted that, *the library adopted and implemented Koha software without incurring any expenses, and the institution has been offering consultancy services to other information centers wanting to use the system.* This is the principle benefit of Koha system that enables information management organizations to introduce cost effective measures and customize the solution in regard to local requirements. Koha integration and open source software is freely available from the internet without any purchasing price tag, save alone for minimum expenses in terms of implementation, customization, maintenance and support issues. In addition, the software is developed, customized and shared free of charge (**Mutula & Kalaote, 2010; Rafiq & Ameen, 2009; Krishnamurthy, 2007**). Koha software helps information management organizations to develop and provide effective information services at little costs and budgets compared with proprietary or commercial solutions. In situations where technological skills and competencies of the information professionals are wanting, it is possible to outsource for the services internally or externally but within the context of affordable or minimum expenses. In terms of economic and cost benefit analysis, 90% of the respondents noted that, the expenses that are incurred in terms of development, implementation, post implementation, support, maintenance and training of staff are quite low as opposed to commercial software.

Solid customer base

Koha enterprise resource planning system is a worldwide programme that is available in many developed and developing countries. From the document review guides many organizations and institutions in equal measure have implemented the solution. **Businesswise** this is good business information since any software with solid customer base provides opportunities of continuity and broadcasting and sharing of knowledge among the stakeholders. Out of the total respondents, 85% agreed that this particular aspect was instrumental in the choice and selection of Koha system in information management organizations. Perhaps, this explains the notion why business organizations with huge clients have continued to grow and expand over the years. Initially, Koha software began as a rural programme that has developed into international information management system. Since its inception in 1999, Koha's customer base has increased tremendously and the sky is the lower limit for this unstoppable movement.

Free usage and distribution

First and foremost, the source code is freely available providing excellent opportunities, freedom and flexibility to develop, adapt and modify the software without hindrances. Koha enterprise resource planning system can be accessed and shared among information organizations with affiliated institutions and agencies (**Rafiq & Ameen, 2009**). Respondents affirmed that information management and organizations and information professionals in

equal measure can use and share the software with affiliated colleges, campuses or institutions or among themselves with 80% **response rate**.

Compatibility and integration with other technological solutions

The demand and desire of quality services by the clients in information management organizations have bought about the urgent need for use and application of technology solutions. This development has brought a new dimension in knowledge management practices, where information professionals have realized that computers, computing, telecommunication systems and networking capabilities are useful tools in information organizations. In this digital age, use of Koha enterprise resource planning solution has proved useful in handling and supporting services in information organizations. Respondents representing 75% agreed that, Koha automates and integrates with cross-cutting technological solutions such as social media, web 2.0 tools, radio frequency identification technology and e-learning systems (Moodle and e-database management systems like open journals system) to facilitate innovative services including self-service, online communication, collaboration, discussion and participation, and marketing and promotion of information services to the customers. Working in the Koha integrated environment motivates information professionals as the transition into digital age is increasingly becoming popular and reality. This provides information professionals with the opportunity to engage in digitization of resources and services. This not only improves the delivery of information services to the customers beyond ordinary activities of capturing, processing, storing and disseminating information but also provides for self-service in borrowing, returning, reserving and renewing of materials.

Modern information clients are highly versatile, confident and comfortable with computers and digital media technological solutions and enjoying working in integrated information environment. The clients enjoy self-service in borrowing and returning of information materials as well as printing and photocopying services. Koha enterprise resource planning system provides online collaboration and sharing of information services using technological solutions of internet second generations - Facebook. Automated environment provides adequate rich space for clients to interact, collaborate and socialize. Modern digital information and knowledge environments entirely depend upon use and application of technological systems and solutions.

Technical and online support

From the study, 70% of participants noted that technical support is readily available among software providers and library technology staff from around the globe including at the local level. Initially, technical support used to be a major issue but that has been effectively solved in the present knowledge based economy whereby information technological professionals easily share, collaborate and communicate challenges through interne based communications and online support within seconds. Online collaboration, discussion forums and blogs provide excellent means for information professionals to seek and share problems in a timely manner.

Global access to information

Integrated environment provides excellent opportunities for sharing and exchanging of knowledge and information locally, regionally and internationally. This enhances and improves efficiency of services in the administration, acquisitions, serials management, cataloguing, circulation, OPAC, reference, interlibrary loan and community services. The normal OPAC services has developed into new innovative and smart solutions that provides access to information services across the globe, for example, Web OPAC and Cloud OPAC. Borrowing, returning, reserving and renewing of information materials through online and interlibrary loan services have been enhanced and improved within participating information management organizations as represented with 65%.

Strategic asset in management and organization of knowledge

Using the principle of copy cataloguing, information professionals avoids duplicating and wasting time and resources in processing and organization of knowledge. **Respondents noted in unison** (60%) that information management organizations have the opportunity of establishing one access to the union catalogue devoid of any duplication among the members. Reference, research and communication services involving information organization have also improved through the use and application of internet based technologies such as Facebook and Twitter. Searching of information resources and services through internet access points like Web OPAC is easier, faster, effective and efficient. Web OPAC and Cloud OPAC provide searching capabilities anywhere and anytime without having to physically visit the information organization.

Challenges or problems associated with the use of Koha system

Combination of factors – social, economic, education and institutional politics have continued to impeach the development of Koha system into mainstream information management organizations. Respondents were asked to identify and select from the list, challenges or problems that affect the use of Koha system in information management organizations. From the results in Table 2 below, the respondents highlighted major problems affecting Koha usage in order of priority as lack of shared vision; lack of adequate resources; lack of knowledge, skills and competencies; lack of leadership and management issues; institutional and physical issues; and resistance to transform and accept change.

Table 2: Problems Associated With the Use of Koha System

PROBLEMS ASSOCIATED WITH USAGE	YES	NO
Lack of shared and coordinated vision	95%	5%
Lack of adequate resources	90%	10%
Lack of knowledge, skills and competencies	80%	20%
Lack of leadership, management and strategic planning qualities	75%	25%

Institutional and physical issues	70%	30%
Resistance to transform and accept change	65%	35%

Koha application and usage practices are hindered due to lack of shared and coordinated vision regarding training, retooling and recruitment of competent staff as well as acquisition (procurement) of hardware and software. Information professionals and leaders must have the capacity to demonstrate and understand the overall vision of the knowledge organization. One must visionary identify the information needs and problems and provide strategic solutions in order to enhance delivery of services to the customers. In the information environment, this ability is best demonstrated if the professionals are able to mobilize the available resources in implementation of effective and efficient technological solutions. In this case, the administration and management of the information organization is supposed to engineer and ensure adequate human personnel and staffing with the parent institution is done through recruitment, training and retention. Support from the administration and management of information agencies and parent organizations are essential in developing competent staff, enhancing allocation of resources and providing excellent leadership skills.

Lack of adequate resources is another major problem commonly associated with failure in implementation of Koha enterprise resource planning system. Respondents (100%) agreed that information management organizations lack resources that are necessary in implementing and using enterprise and integrated systems. The hard economic situation facing most institutions or organizations is directly impacting negatively in information organizations that normally become the victim of reduced budget cuts. As a result, all the operations and services of the information organization are grounded since resources are not enough to service and maintain the systems. Information professionals lack the requisite knowledge, skills and competencies that are basic and equally essential in handling, managing and supporting the system. In addition, there is lack of leadership and strategic planning qualities on the part of information professionals. The staff must be proactively involved in all automation activities and tasks right from conception of the project, during and after completion of the whole process. Learning and training on technological solutions is imperative for the staff more so if relevant working knowledge, skills and competencies in the systems and related applications is **anything to go with**. This is because some of the major problems associated with the implementation of Koha enterprise resource planning system are direct recipients of lack of ICT skills like data conversion and uploading. Information management organization may also source such services but the problems of in-house practices are disastrous such as lack of strategic planning, staff, hardware and software.

In most information management organizations, institutional and physical challenges in relation to poor information infrastructure, telecommunication systems and internet connectivity and penetration (optic fibre and wireless technologies, internet hot spots), and web portals to facilitate access to electronic databases including electronic books and journals still affect the adoption of any technological solution including Koha system. In such

scenario information leaders face institutional challenges brought by technological, social and emotional problems as well as inability to accept change. **Author Ng** (2011) while writing on *Best Management Practices* noted that management is a combination of leadership, communication and people skills, and equates a manager without any leadership skills to a ship sailing on high seas without use of compass and gyroscope. This fundamental philosophy affects all fields of human life in social, political, economical, cultural and technological. In knowledge based economy, professional leaders need inclusive management based approaches that are fundamental in addressing and fixing organizational challenges that might hinder quality and excellent delivery of services to the customers, and information professional are no exception to this cardinal principle and practice. Information professionals need to borrow and learn leadership and management practices from other fields of specialization as exemplified in business and politics.

Third objective of the study was to *establish the extent to which information management organizations are satisfied with the use of Koha system.* From the question, majority of the respondents (90%) indicated that both information management organizations and end users (staff and clients) are satisfied with the levels of access and use of Koha system, while only 10% represented "Not Satisfactory".

Fourth objective of the study was to *propose strategic measures to mitigate the risks and myths associated with the use of Koha system.* In this respect, the respondents proposed strategic measures necessary for successful development and use of Koha enterprise resource planning system. This was meant to dispel some of the risks and myths associated with use of the system that have been overtaken by events in the modern information environment. Respondents noted that knowledge management organizations and information professional leaders must provide the followings:

- Library ICT personnel to be competently trained in all aspects of Koha development, implementation, customization, programming, maintenance and server management.
- Need for ICT policy to provide direction and guidelines in all technological systems and solutions in information organizations.
- Leadership and management practices on information professionals are instrumental or key to the success of any project. Information professionals and leaders must provide vision and direction in relation to technology acceptance and performance in information organizations.
- Proper implementation is not only a necessary requirement but also the means of ensuring and counter checking if the needs of the information agency are met in terms of development, customization, training and documentation.
- Making choices, for information management organizations in this digital age is all about adopting and embracing innovative and smart solutions that are less expensive. New and smart technological solutions will always reinvent the image and status of organizations and information professionals.

Conclusion and Recommendations

Conclusion

i. In the modern cloud computing environment, Koha enterprise resource planning system provides potential business-to-business (B2B) opportunities that influence information professionals to deliver quality and customer based services.
ii. Entrepreneurship and economic aspects of Koha system in terms of potential usefulness, benefits and ease of use have widely influenced its adoption and usage in information organizations.
iii. Due to hard economic situations facing information management organizations, Koha enterprise resource planning system provides a sustainable solution than commercial ones.
iv. Technical support through online forums and helpdesk provide maintenance assistance where problems and myths associated with the system are shared and solved.
v. From this study, it is mandatory for information professionals to provide knowledge inclusivity in relation to innovative and smart solutions so as to enable organizations provide competitive services to the clients.

Implications to Theory and Practice

First and foremost, the study provides useful information and knowledge on the potential benefits vis-à-vis cost-benefit analysis of Koha free and open source enterprise planning system. In this context, comprehensive knowledge is given, thus, dispelling the risks and myths associated with the adoption and use of the system. Second, free and open source movement provides effective and efficient cloud enterprise systems and solutions. Third, in the modern business environment, delivery of quality and customer based products and services are critical to both organizations and information professionals. Finally, Koha enterprise resource planning system is highly reliable, stable, maintained and versatile technology and most importantly recommended for use in information management organizations having been proved and tested as a successful system.

Limitations of this Research

The study involved only selected information management organizations primarily using the system. In addition, information professionals of systems librarians and library ICT staff were purely involved in the study. The study units and respondents were appropriately selected since Koha system is used in countable organizations.

Future Research Recommendations

Perhaps in mitigating against the above challenges the need for a wider study involving more stakeholders to ascertain the reliability and validity of the findings is quite imperative. Further research to unearth critical factors and reasons as to why most information management organizations prefer commercial systems over proprietary solutions is indeed necessary.

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QUESTIONNIARE FOR RESPODENTS

Background information

1. Name of information automation software system ……………………………………

2. Name of information management organization ……………………………………

Benefits/motivations associated with the use of Koha enterprise resource planning system

3. Statements in this question are related to the benefits and motivations associated with the application and use of Koha enterprise resource planning system in information management organizations. Please indicate the extent to which the statements apply to the various issues.

No	Benefits/motivations associated with Koha system	Yes	No
1.	Integration and automation of all functionalities		
2.	Economical opportunities		
3.	Solid customer base		
4.	Free usage and distribution		
5.	Compatibility with other solutions		
6.	Technical and online support		
7.	Global access to information		
8.	Management and Organization of knowledge		

Challenges in relation to use of Koha system

4. Select from the list below the challenges you have faced in relation to use of Koha system.

No	Challenges/problems associated with use of Koha system	Yes	No
1.	Lack of shared and coordinated vision		
2.	Lack of adequate resources		
3.	Lack of knowledge, skills and competencies		
4.	Lack of leadership, management and strategic planning qualities		
5.	Institutional and physical issues		
6.	Resistance to transform and accept change		

Levels of satisfaction with the system

5. Statements in this question are related to the extent to which the information management organization is satisfied with the levels of use of Koha system. Please use the following scale: 3=Satisfactory, 2=Not Satisfactory, 1=No Opinion.

Strategic measures to mitigate risks and myths

6. Kindly propose strategic measures to mitigate risks and myths associated with the use of Koha system.
   ………………………………………………………………………………………………