

Analysing Access to Information by Users of Institutional Repositories at the National Museums of Kenya

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Abstract

The National Museums of Kenya was created to facilitate the generation, preservation and dissemination of information on historical, cultural and natural heritage of the country. National Museums of Kenya and external researchers have over the years continued to generate information in print, audio-visual and electronic formats. However, due to the proliferation of information, and haphazard management, accessing this vast reservoir of data has become a major challenge. This study aimed to analyse the status of access to information by users using institutional repositories at the National Museums of Kenya and to suggest ways in which it can be enhanced. Objectives of this study were: to identify institutional-generated information available; to find out how the institutional-generated information was organised and accessed; to examine how researchers access the institutional-generated information; to determine challenges inhibiting access of institutional-generated information; and to suggest strategies that would enhance access to institutional-generated information by research staff of the National Museums of Kenya. The researcher used a case study research design. The researcher employed both qualitative and quantitative approaches. Rogers's Diffusion of Innovations Theory informed the study. The study population was 600 people, which comprised of researchers, management staff and external users. The study sample size involved 226 employees of the National Museums of Kenya. Non-probability sampling method and purposive sampling techniques were used. Data collection methods relied upon were administration of questionnaires and interviews. Data collection instruments included questionnaires and interview schedules. The key findings in relation to access of information were lack of policy on institutional repositories, inadequate ICT infrastructure, inadequate funds and inadequate trained personnel due to inability of information workers to manage institutional repositories. The researcher concluded that access to information can only be enhanced by addressing these existing challenges. The study recommends the need for policy formulation on institutional repositories, improved ICT infrastructure, allocation of enough funds, and training of staff on institutional repositories.

Keywords: Institutional-generated information, institutional repositories, National museums of Kenya

1. Introduction

Research institutions like the National Museums of Kenya (NMK) have an interest in the collection and preservation of their research output and in making such output accessible to users from within and outside the institution. Traditionally, NMK research output is in print and audio-visual forms. However, access to these research output is limited for an institution as they are not digitised in electronic format. Nowadays, developments in the field of technology are revolutionising the way to provide access to digital information via technology. This will provide access to appropriate scientific and technical information generated by research staff of the institutions through the use of open access institutional repositories. This could play a critical role in the development of this country. It will also assist in finding solutions to most of the problems facing our research institutions in terms of information accessibility. The right of access to information has become the dominant right in the information and knowledge era. It is for this reason that many researchers can now gain access to the ideas of others and even have their intellectual output readily available both locally and internationally. Institutional repositories will make it possible to access information over thousands of miles away through the Internet. This will have huge potential for collaboration and workflow accomplishment which cannot be ignored by researchers. IRs will make it possible to know what others are contributing to the public, create opportunities for participation and make it easy for potential users to access these rich and useful information needed across the globe.

1.1 Background to the study

The National Museums of Kenya has its own way of making information available to their potential users. A lot of information being generated at NMK relates to life of ornithology, biodiversity, cultural heritage and natural heritage. This information is in print and audio-visual format which can only be available within the information centre. However, the NMK has decentralised museums by increasing the availability of the resources to citizens of Kenya and other interested parties. This rich information is not readily available to the public as people do not know its existence. The NMK, as a research institution, is under pressure as there is serious demand by information users to access and use information generated by the institution.

1.1.1 National Museums of Kenya-generated Information

The National Museums of Kenya has the most unique and diverse collections in the world, which have been generated over the past 60 years. These collections are not adequately shared with the public because of the format in which they exist – that is, print and audio-visual. There is need for NMK to demonstrate its relevance in safeguarding and providing this cultural heritage to the public. NMK is committed to delivering information to its potential users through scientific expertise. These scientists offer specialised services to many clients every year in various disciplines ranging from entomology to molecular technology. Therefore, they contribute towards formal education and training in Kenya. In general, this rich information touches on exhibited dioramas, memorabilia and material culture of the people of Kenya. Preserved research collections include mammals, birds, insects, plants reptiles, pre-history, ethnographic collections. Living research collections are botanic garden with live succulent and orchid. Information collections continue to be useful to researchers and the public as a whole and play a very important role of a supportive tool to research and education. The scientific sources of the NMK are unique in the sense that they are valuable to science-teaching schools and colleges. Besides, NMK has information collections whose major source of information resources are divided into various sections. The sections are:

- a) Book collection with over 24,000 books.
- b) Reprints collection with over 40,000 reprints.
- c) Periodicals collection with over 2,000 journal titles.
- d) Audio-visual collection with over 200 audio-visual materials.

The library receives books in form of donations, some of which are distributed to the regional museum libraries. The library is a major information sub-system in as much as it is the starter of virtually any activity in research development.

1.1.2 Users of National Museums of Kenya Information

The National Museums of Kenya has information collections whose mandate is to facilitate access to relevant information by the management staff, research staff, research students, NMK affiliates, Nature Kenya and Kenya Museums Society. For users to access the institutional-generated information, they have to be cleared by the management. To be a member of Nature Kenya and Kenya Museums Society, one has to register by paying the required fee in order to be issued with a card that enables one to access freely access information generated by the research staff of the institution. NMK affiliates are always provided with a card showing that they are bona fide affiliates to enable them use the institutional resources. Research students are also provided with a letter prepared by the administration of NMK to enable them gain access to institutional-generated information. Other users of NMK information could be people from the general public who feel that they want to use the information generated by National Museums of Kenya and they access these information at affordable fee per day.

1.1.3 Access of Information by National Museums of Kenya Users

Gaining access to institutional-generated information has always been devastating due to the long process that one has to follow. NMK users have to register with either the Kenya Museums Society or Nature Kenya to be allowed to access the institutional-generated information. Upon registration, the users are issued with an access card. NMK affiliates are always provided with a card by the NMK management showing that they are bona fide affiliates free to use the institutional-generated information. Research students are provided with a letter prepared by the NMK administration to allow them use institutional-generated information. Other users pay KES 150 per day to access the premise.

The NMK is recognised for rich natural and cultural materials. It is charged with the responsibility of making sure that information generated by the institution is well disseminated. However, access to institutional-generated information has been devastating because of the way in which the information is packaged. Generally, NMK should serve to enhance access to this information. NMK needs appropriate technology as part of its informatics technology structure that will be critical to the realization of NMK's goals for the exploitation of its information resources. It is important for this research study to take place now in order to realise the importance of this new technology that will be able to integrate information in diverse formats to facilitate enhancement of access to institutional-generated information.

Users can only access information materials within their reach and cannot, therefore, benefit from the well-known information that NMK has generated. For example, when one is in the regional museums, he or she can only access the information within that region. This means they cannot even access information in other satellite museums or the headquarters unless he or she goes there physically. That is why there is need for a coherent informatics structure that will enhance efficiency and effectiveness of information outreach as a way of easing access to information by use of open access institutional repository.

1.2 Impact of Institutional Repositories

Open access institutional repositories make it possible to create an immediate impact on sharing of information

output within the continent. Researchers generating these information materials stand to benefit from open access because other institutions can also have access to their research outputs. The digital documents uploaded on institutional repository have the potential of being accessed and used by all interested users that have access to the Internet. This increases the profile of the researchers, their institutions and their countries. The researchers are rewarded for their work not financially but through the impact of such research output.

Studies have shown that open access documents are read more widely and cited more frequently than those materials which are not housed in repositories. The consequence of this is that such works have greater impact. The impact is based on an average number of times that these materials of a given title are cited by other papers. Citation data are not meant to replace informed peer review. Careful attention should be paid to the many conditions that can influence citation rates such as format. A growing number of open access documents now exist, which means that they are published free on the web, with the cost of publication met by authors paying to publish. The suggested ways in which impact can be measured on information deposited in open access repositories is to get realistic estimate of its effects. It is not enough to compare only 2% of materials that are open access with 98% that are not and conclude that their impact is the same. Researchers must be able to draw on a sophisticated understanding of the scholarly communication practices of individual disciplines and use these research materials for citation purposes.

1.2.1 Challenges Facing NMK in Using Institutional Resources to Access Institutional-generated Information

The use of institutional repositories has been a challenge due to issues relating to acceptance of electronic information, absence of information management policies, copyright and intellectual property rights, inadequate technical infrastructure, inadequate funds, and lack of awareness and understanding of the concept. NMK has rich resources that exist in isolation and scattered throughout the country with no measures in place to make sure that they are well controlled or repackaged in a way that can easily be accessed by potential customers. There is no control of Institutional Repository (IR) that brings together all this information resources at the service of the users. In spite of all this, there is a serious need or demand by information users to access and use information materials scattered at various branches of NMK across the country.

2. Statement of the Problem

The National Museums of Kenya was created to facilitate the generation, preservation and dissemination of information on historical, cultural and natural heritage of the country. NMK and external researchers have, over the years, continued to generate information in paper, print and audio visual and electronic formats. However, due to the proliferation of information, and its haphazard management, access to this vast reservoir of data has become a major challenge. This challenge has negatively impacted on open access to information by users. To address these challenges, there is need to analyse access to information by users using institutional repositories at the NMK and to suggest ways in which it can be enhanced.

3. Aim of the Study

This study was aimed at analysing the status of access to information by users of the institutional repositories at the National Museums of Kenya and to suggest ways in which it can be enhanced.

3.1 Objectives of the Study

The objectives of this study were:

- i) To identify institutional-generated information available at the National Museums of Kenya.
- ii) To find out how the institutional-generated information is organized and accessed at the National Museums of Kenya.
- iii) To examine how researchers access the institutional-generated information at the National Museums of Kenya.
- iv) To determine challenges inhibiting access of institutional-generated information at the National Museums of Kenya.
- v) To suggest strategies that would enhance access to institutional-generated information at the National Museums of Kenya.

3.2 Research Questions

The following are the research questions that guided the research:

- i) What types of institutional-generated information are available at the National Museums of Kenya?
- ii) How is the institutional-generated information organised at the National Museums of Kenya for purposes of accessibility?
- iii) How is the institutional-generated information at the National Museums of Kenya accessed by researchers?

- iv) What are the challenges inhibiting access to institutional-generated information at the National Museums of Kenya?
- v) What strategies can be used to enhance access to institutional-generated information at the National Museums of Kenya?

3.2.1 Significance of the Study

- i. Theoretical Significance
The study will be a new addition to the existing body of knowledge on open access to information and use of institutional repositories.
- ii. Practical Significance
The study will provide practical solutions to challenges associated with open access to information and the use of institutional repositories.
- iii. Policy-related Significance
The research intends to form a basis of policy formulation on the use of open access institutional repositories to access generated information at the National Museums of Kenya.

3.2.2 Scope and Limitation of Study

Scope of the Study

The scope of the study was to analyse access to information by users of institutional repositories at the National Museums of Kenya.

Limitations of the Study

The researcher experienced a number of problems. Most staff members appeared not to be committed and some thought that their bosses would hold them accountable for any information provided without their prior consent. The respondents took long to give feedback. The researcher overcame these challenges by writing an official letter to the management of the National Museums of Kenya requesting to carry out the study. This made respondents to have confidence in answering the queries.

4. Literature Review

4.1 Introduction

The researcher explored literature on the use of institutional repositories in research institutions. It involved review of written documents such as books, journals, academic papers and other previous study materials.

4.1.1 Theoretical Framework

According to Kombo and Tromp (2006), theoretical framework is as a collection of interrelated ideas based on theories and derived from and supported by data or evidence. Rogers's diffusion of innovations theory provides a conceptual framework for explaining how and why innovations come to be adopted by certain groups. Rogers's diffusion of innovations theory was used to model students' awareness and use of open access resources in their own research.

DIFFUSIONS OF INNOVATION THEORY

According to Rogers (1995:5), diffusion of innovation theory is "the process by which an innovation is communicated through certain channels over time among members of a social system". The alignment of the innovation with the existing social structure plays a vital role in the process of diffusion. Institutional repositories are relatively new innovation as an information resource. The adoption of innovations was the focus of the diffusion of innovations theory development by Everett Rogers. Diffusion of Innovation theory was relevant to this study as it has been used by early adopters of institutional repositories to support the advocacy for and population of institutional repositories (Jones et al., 2006:112). Institutional repositories are more likely to be adopted by researchers if it is perceived to be advantageous to place work in repository collections and provide easy access to information. This helps to know what other researchers do and gives an opportunity for participation.

Homans (1958) and Thibaut and Kelley (1959) put forward related theories explaining social behaviour as a process of exchange between two or more individuals within a community who are in a position to influence each other. Social exchange theorists propose that individuals engage in social exchange – that is, sharing of knowledge. Social exchange theory is used to explain open information sharing behaviour in professional environments working with the wider community through an institutional repository.

THE GREEN OPEN ACCESS MODEL

Open access refers to a variety of approaches for making intellectual output freely available for others to access and, in some, cases for reuse. In this study, the Green Open Access model has typically been considered to be the most effective as a result of an increasing number of repositories that allow authors to archive their work. Authors can self-archive their work by uploading them onto the institutional repositories. The open access model was developed and maintained by communities of researchers in several science fields who use them. The open access model is rooted in the assumption that it inherently enhances accessibility of the materials they house and as a result, help to increase citation counts, increase visibility of the institution and facilitate scholarly

communication. The use of open access model, as explained by Crow (2002), is a way to reduce costs and increase access. Jones et al. (2006) argue that IRs have a greater potential than other types of information resources for disseminating research.

The other theory relevant to the study is the Gold Open Access Model in which papers are published in open access journals often, though not always, with associated article charges paid by authors. This has not been used in the study because it is not considered to be the most effective as compared to the Green Open Access Model.

REVIEW OF RELATED LITERATURE

Overview of Institutional Repositories

Institutional repositories play a critical role in an organisation to collect, organise and provide access to a wide range of intellectual output generated by the institution that was previously scattered and inaccessible to the public. Institutional repositories are envisaged to collate the intellectual life and scholarship of an institution with the primary commitment to preserve them for distribution and dissemination on a long-term basis.

Benefits of Institutional Repository

The benefits of repositories to institutions and individuals are numerous and can be grouped into the following categories (Pickon and Barwick, 2006):

- i. Increasing visibility and prestige. A high-profile IR may be used to support marketing activities to attract high quality staff and funding.
- ii. Centralisation and storage of all types of institutional output, including unpublished literature.
- iii. Supporting for learning and teaching. Links may be made with the virtual teaching environment and library catalogues.
- iv. Standardisation of institutional records. The compilation of an institutional CV and individual online dossiers linked to the full text of articles becomes possible. Ability to keep track of and analyse research performance and breaking down of publishers' costs and permissions barriers.

Once an institutional repository is established, it paves way for better access to scientific and technical information generated by the research staff of the institution to be freely available both internally and to the general public.

ESTABLISHMENT OF INSTITUTIONAL-GENERATED INFORMATION

Research scientists have valuable information which is produced within the institution but are underused as research resources. Doctoral theses and dissertations can be used many times if in digital format than if in print. The need for access to digital content cannot be overemphasised. This is valuable information yet not easily accessible. However, few research institutions are already taking advantage of the opportunities presented by ICT and are using open access institutional repositories to increase accessibility of these research outputs.

In recent years, technical and scientific literature has continued to grow and grey literature reports now come from many different avenues. The research generated in developing and emerging countries is missing from the international knowledge bases because of financial restrictions affecting its publication and distribution (Gibbs, 1995; Arunachalam, 1994), and Africa is the most affected continent. Much of the scientific research output from Africa is in form of grey literature such as research reports, thesis and dissertations, seminar and conference papers. Very little research output finds its way into the world's well established international scientific journals due to various problems, one of which is that publication in mainstream journals faces the problems of over-subscription. In addition to this, very few local journals are published and these journals have in general poor distribution and visibility (Cetto, 2002).

ORGANISATION OF INSTITUTIONAL-GENERATED INFORMATION

According to Christian (2008), the emergence of open access initiatives as well as information and communication technologies provides a veritable medium to address the problem of poor visibility. The shift from conventional print publication to the use of digital sources and Internet media have provided research institutions with an opportunity to make their grey literature and research output accessible to the outside world. However, it may be surprising to observe that research institutions in the country are yet to take advantage of the benefits provided by open access institutional repositories.

In the light of emerging trends in digital scholarly communication, open access institutional repositories play an important role in the preservation and dissemination of institutional research outputs, which in turn becomes a constituent part of a global research output (Ng'etich, 2004). In Nigeria universities and research libraries were encouraged to organise their scholarly output into institutional repositories in order to make their research works available both nationally and internationally through open access (Bozimo, 2008).

ACCESS TO INSTITUTIONAL-GENERATED INFORMATION

Open access provides an opportunity to make an immediate impact on the sharing of scientific outputs within the organisation and outside world. Researchers who generate the documents also stand to benefit from the open access institutional repositories in that instead of their research outputs being seen and accessed only by users in their institution, other institutions will also be lucky enough to have access to them. The digital document placed

in an open archive has the potential of being accessed and used by all interested users that have access to the Internet. This increases the profile of the researchers, their institutions as well as their countries.

Manjunatha and Shivalingaiah (2003) define information access as the modes or means through which information is made available, or to an entire range of possibilities for making information services available to the users. Libraries are repositories of information sources and play an important role in the academic world by furthering research among academics and researchers. The current information landscape has offered a plethora of options for accessing the various formats and types of information. The traditional way has been to publish research work in their institutional publications and to display bound theses on the library shelves for limited or no access. However, this can cause serious plagiarism in research institutions. An alternative could be to deposit them onto an online data base of an institution which can be accessed by all members of the institution as well as outsiders.

With the introduction of modern information and communication technology (ICT), access to information is a pre-condition for becoming a knowledge society. The right of access to information has become the dominant right in the information and knowledge era. Because of this, many researchers can now be allowed to access ideas of others. This presents an opportunity to participate in the global information-based, socio-economic and political activities (Musakali and Moli, 2011).

According to Altbach (1999), although publication by faculty members in scholarly journals could add impact to prestige of the institutions they are associated with, an institutional repository stands to generate greater impact by centralising research outputs generated by the institution's researchers, thus serving as much better and simpler metrics for gauging the quality of the institution's academic scholarship, productivity and prestige. In case of research and academic institutions in developing countries, development of institutional repository will not only boost the global visibility and utility of their research, but will also introduce a novel research culture focused on meeting international standards and values. Research that is openly accessible by a global audience will have an impact on the researcher's focus and standard (Eqwunyenga, 2010).

A study by Stranger and McGregor (2006) revealed that an institutional repository could have a positive impact on visibility and accessibility to an institution's intellectual output. The opportunities presented by institutional repositories and open access archives to the development of Africa as well as the challenges hindering the development of digital information repositories on the continent have been examined by Chisenga (2006). He acknowledges the fact that several of the region's repository exist in the form of grey literature and very little research outputs find their way into the world's well established international scientific journals due to various problems in developing countries.

Additionally, local journals in general have poor distribution and visibility. This situation results in research from developing countries not being indexed in major international databases which have the capacity to increase visibility of these research outputs. Chisenga further notes that much of research generated in research institutions are not being shared or developed beyond field and laboratory research. Very useful and valuable technological and scientific information and knowledge remain unexploited and in some cases, is lost.

Open access to scientific information can greatly benefit all players in the scientific communication system – scientists, authors, institutions, libraries, publishers, funders and society as a whole. It avoids duplication of scientific efforts, which saves time and money. This is one of the main advantages of open access. In particular, open access can help authors and institutions reach a much bigger audience than that provided by subscription journals, even the most prestigious and popular ones. Various surveys have revealed an increase in the visibility and impact of papers based on the amount of citations received (Swan and Brown, 2007; Durrant, 2004).

According to Christian (2011), the emergence of open access initiatives as well as information and communication technologies provide a veritable medium to address the problem of poor visibility. The shift from the conventional print publication to the use of digital sources and the Internet have provided research institutions with an opportunity to make their grey literature and research output accessible to the outside world.

CHALLENGES FACING NATIONAL MUSEUMS OF KENYA IN ACCESSING INFORMATION

The National Museums of Kenya, like any other organisation, is still grappling with challenges in an attempt to implement their institutional repository and share it with the world. Policy issues, staffing, infrastructure, promotion and sustainability issues are some of the challenges facing the institution. Institutional repositories provide access to wealth of scientific and technological information and knowledge, which are very essential for development. The opportunities and challenges presented by the development of institutional repositories have been examined by Chisenga (2006). He acknowledges the fact that several of the research output from the region exist in the form of grey literature such as research reports, thesis and dissertations, seminar and conference papers. There is very little research outputs that find their way into the outside world due to various problems that affect institutions in accessing information.

Reasonably, research output addressing issues endemic to the region should be given wide circulation so that the results of such research can be applied in addressing the issues that they seek to tackle. Unfortunately,

these outputs gather dust in various departmental offices and institutional libraries without getting published in local journals that have minimal circulation due to poor distributorship, marketing or prestige. Thus, after so much painstaking commitment of efforts and resources in undertaking research, the outcomes are not widely disseminated. In consequences, these research findings die at the institutional level as those who need to apply the knowledge are unable to access them. This situation highlights the need for effective process of knowledge dissemination from research institutions in developing countries like Kenya.

There are some challenges in pushing for the establishment of open access repositories. For instance, Asamoah-Hassan (2009) argues that it is difficult to convince the management of research institutions that it is necessary to have institutional repository and get them to agree to plan and support it on a long-term basis. Funding, reliable electricity supply and reliable Internet connectivity are major issue. Other challenges include getting permission for licensing, copyright issues and resistance as a result of computer phobia in some faculties and researchers. Major challenges in developing repositories are recruiting qualified staff, finding appropriate content and obtaining faculty buy-in for the programme, adequate funding developing workflows and resolving copyright issues (Bailey et al., 2006).

Lynch (2003) states that most individuals lack the time, resources or expertise to ensure preservation of their own scholarly work even in the short term and clearly cannot do it in the long term which extends beyond their careers; the long term can only be addressed by an organisational strategy. Institutional repositories can address the short-term questions about continuity of access by providing an environment in which such new works of scholarship can be managed and disseminated.

IMPORTANCE OF INSTITUTIONAL REPOSITORIES

Institutional repository has been increasingly used and now crops up relentlessly in professional literature. This is not surprising, as the combination of low cost computing and high speed networking now affects all areas of life in the developed world and these are transforming ways in which we transact business in our daily lives. The development of Internet technology has brought enormous opportunity to communicate research results instantaneously to people irrespective of distance. Institutional repositories have largely been developed in most research institutions and have been of great benefits. Gradually, it is becoming clear that research institutions may in the near future no longer pay the subscription prices charged by publishers of scholarly publications. It is now obvious that most institutions have established repositories in order to collect, preserve and disseminate institutional research outputs which in turn becomes a constituent part of a global research output. These materials will be organised and accessed in digital form. Since institutional repository is an important tool for preserving an organisation's legacy, it will facilitate digital preservation and scholarly communication.

According to Moller (2006), institutional repositories enable institutions to offer long-term access to digital objects that have president value. They extend the core missions of libraries into the digital environment by providing reliable, scalable, comprehensible and free access to libraries' holdings for the world as a whole. In some measure, repositories constitute a reaction against those publishers that create monopolies, charging for access to publications on research they have not conducted, funded or supported. A study by Stanger and McGregor (2006) reveals that an institutional repository can have a positive impact on the visibility and accessibility of an institution's intellectual output.

The establishment of institutional repositories in research institutions in Africa is a serious development issue that requires urgent attention. Chisenga (2006) rightly observes that institutional repositories are valuable for research and development because they can offer instant access to information and knowledge resources being generated on the continent. Research institutions are the major generators of research-based data, information and knowledge. The scientific and technological information and knowledge which they are generating should be easily accessible and the creation and use of institutional repositories could be the first step in this process (Houghton and Sheehan, 2006).

Institutional repositories promote institutional research output and prestige of the institution. Repositories provide access to wealth of knowledge in the form of scientific and technological information, which are very essential for development. According to Chisenga (2006), much of research outputs from Africa exist in the form of unpublished information and knowledge resources such as research reports, thesis and dissertations, seminar and conference papers. Very little research outputs find their way into the world's well established international scientific journals. Foster and Gibson (2005) observe that faculty members want to be able to make their own work available to others while at the same time enjoying easy access to other people's work. IRs also serve as tangible indicators of an institution's productivity thereby increasing an institution's visibility, prestige and value.

Another benefit of institutional repository is the increased impact that open access papers enjoy as compared to their offline, fee based counterparts, print or electronic. IR enhances research. The most persuasive reason for 15 institutions to set up inter-operable open access institution repositories both in the developed and developing world is the growing evidence of citation and the impact of papers that are openly accessible. Articles that are made freely available in open access repositories tend to be cited more often than similar articles

that can only be viewed by paying subscribers.

I. CITATION AND RESEARCH IMPACT

According to Suber (2002), “open access articles are cited significantly more than non-open access articles, even when other variables are taken into account. A growing number of institutions and research funding organisations are starting to put in place requirements regarding open access”. Lawrence (2001) further states that, “With appropriate indexing and search mechanisms in place, open access online articles enjoy appreciably higher citation rates than the traditionally published articles.”

II. ACCESS TO INFORMATION

Seibert et.al (2001) argue that “a person seeks information to enhance his competency and skills and greater access to information and information resources would lead to his higher level of motivation.” The nature of information seeking may range from trivial information to sensitive research area. Asamoah-Hassan (2009) says that well understood, well managed and easily accessible information can mean the difference between prosperity and destitution.

Tise (2010) argues that reading, which is a tool for growth and development, was alien to Africans and was clearly absent. This has contributed to growing unemployment, widespread poverty and limited availability of social services. Availability of and access to information is a significant contributor to the growth of the country.

Repositories are very important for institutions in helping to manage and capture intellectual assets as part of their information strategy. They provide a link to other repositories and can also provide machine-processable data to support institutions to address the challenges of access to print journals. They serve as tangible indicators of an institution’s quality, thus increasing its visibility, prestige and public value. Institutional repository can further provide an immediate and valuable compliment to the existing scholarly publishing model, thereby stimulating innovations in a new disaggregated publishing structure while at the same time building on a growing grassroots faculty practice of self-posting research online. The growth of open access institutional repositories has been very remarkable in developed countries like Brazil, India and South Africa (Christian, 2008).

III. RANKING VISIBILITY OF THE NATIONAL MUSEUMS OF KENYA

The immediate benefit of IR is that all the research outputs which are collected and stored in its repository are unconditionally made available to its institution and to all other members who are associated with it. Institutional repository is a good marketing tool. This is because it communicates the capability and quality of the institution by showcasing the institutional research output and other intellectual activities.

VI. FUNDING INSTITUTIONAL REPOSITORIES

Financiers provide financial support to institutional projects and programmes to broaden knowledge in particular domains. There is an expectation that the results will be disseminated through public mechanisms so that the full benefits of the research reach the community for which it is intended. It can be difficult for a funder to access the publishing success of a particular programme due to the inherent problems in collecting this information. Institutional repositories are more aware of the funding issues and it may be possible to locate this information as a result. In certain fields, funders require those who receive money to deposit their research output in defined repository as part of the reporting and accountability process. This may result in tension between external funding sources and the institution itself.

VII. MEETING REQUIREMENTS FOR USING INSTITUTIONAL REPOSITORIES

The use of institutional repositories has emerged as a new strategy that allows research institutions in the developed world to apply serious control measures to accelerate changes taking place in scholarship and scholarly communication. It is, therefore, important for organisations to be involved in institutional repository projects. Institutional repositories fulfil the requirements for an organisation by disseminating the quality of the organisation’s work to the world. This requirement is important in setting the remit of the system and subsequently generating explicit knowledge. This statement makes clear what the institutional repository does, who the main stakeholders are and who is responsible for it and the constituent parts. This ensures clear lines of responsibility and a fixed point of reference should any questions arise in future.

VIII. INFRASTRUCTURE REQUIREMENT

There must be software to be used and the associated support. Although there may not be a direct cost of the software, there may be costs involved in belonging to user groups or outer support communities. Establishing an institutional repository is not a cost-free exercise. Open source software provides an institution with the ability to customise the programme and develop a system that meets local needs. It means, however, that the institution will need programming and systems staff to run the system. Choosing a commercial software programme can limit the number of technical staff needed and may limit the amount of customisation that can be done.

According to Lynch (2003), the development of institutional repositories emerged as a new strategy that allows universities to apply serious, systematic leverage to accelerate changes taking place in scholarship and scholarly communication. He further states that many technology trends and development efforts came together

to make this strategy possible. Online costs have dropped significantly; repositories are now affordable.

IX. IMPROVED SERVICES OFFERED BY INSTITUTIONAL REPOSITORIES

Repositories are rapidly becoming ubiquitous in research institutions and libraries need to play a very active role in service development. Everyone needs to be developing expertise in this arena to participate in shaping these essential services. Diverse experience with seed collections will deepen understanding the user needs. This can only be realised if research institutions have good repository services. Researchers with access to a wide spectrum of repository services will possess a substantial advantage in conducting cutting edge research, delivering high quality teaching and contributing valuable services to society. There are many services that may be provided by institutional repositories, some of which are currently supported by available technologies. For instance, some types of repository services provided by research institutions include long-term archiving and migration of content, dissemination and access management, metadata and format management, search and discovery tools, pushing data mining, among others. Repository services can also be deployed across nearly an unlimited diversity of content, ranging from preprints of articles to born digital primary source materials, research data or from software to video.

According to Seibert et.al (2001), "A person seeks information to enhance his competency and skills and greater access to information and information resources that would lead to his higher level of motivation." The nature of information seeking may range from trivial information to a sensitive research area. For example, the information access could be to monitor development of well-known topic or subject over the period of time or carrying out stereotyped series of searches to achieve a particular goal or to explore and understand the new subject of interest.

x. Dissemination of Information Services

Digital is not merely a new mode for collecting and disseminating the kinds of collections traditionally managed by research institutions. The digital age has unleashed a torrent of new kinds of content generated by wide range of activities in which researchers engage. In addition, it requires libraries to play a leading role in converting much of the content in their collections into digital format.

Lynch (2003) sees it as a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its members. Lynch further notes that essential services include "management of technology changes and the migration of digital content from one set of technologies to the next as part of the organisational commitment to providing repository services."

Further, Lynch observes that IR can provide users with online access to various research articles produced within and outside their institutions. Ease and speed of use to a great amount of information sources just at the touch of a few keys is encouraging. Such information can be accessed by multiple users at the same time, any time and any day once the host server is on and with uninterrupted power supply for the user. This saves shelf space and labour cost in institutions.

Institutional repository is a set of services that an institution offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organisational commitment to the stewardship of these digital materials, including long-term preservation (Bailey 2005).

xi. Information Management Service

Furlough (2009) notes that repositories are services that can help an institution manage content and preserve its intellectual work. Repositories are the means by which an institution can distribute information in an open access mode that makes that research accessible throughout the world.

xii. Reference Services

Bell, Foster and Gibbins (2005) state that "the recruitment of content for the IR offers a wonderful new opportunity for reference librarians." They go ahead to say that, "Indeed, IR content recruitment puts the librarian into the role of reference librarians outlining possible activities that reference librarians can engage in. Jenkins, Breakstone and Hixson (2005) conclude that the skills of reference librarians uniquely position them for a dual role in the IR community: as facilitators in getting the content into the repository and out to users.

xiii. Technical Services

There is need for technical services staff to learn new procedures and technologies. There is also need for realigning responsibilities of technical services staff so that the work of the institutional repository can be performed without increase in the number of staff (Cohen and Schmidle, 2007; Hudgins and Macklin, 2000).

Walter (2007) discusses the advantages of having institutional repository as technical services. It acts as a conduit through which collecting, disseminating, preserving and collaborating with other organisations occur. This can develop the single voice and vision needed to articulate the myriad possibilities for scholarly communications, promoting new services and developing and explaining new processes. They also may act as conduits for other departments within the library, exploring the contributions these areas can make to IR development. It is composed of librarians, archivists, technologists and other staff who make the case for overall

changes in scholarly communications.

There will be some staff costs involved with the technical running of the service such as installation of software upgrades and ensuring that the security patches of the software are up to date. Irrespective of the scope, all institutional repository projects have so far proved that the effort and organisational costs required in developing repository policy, content management and marketing issues dwarf the technical implementation effort.

These tasks may include:

- a) Development of content management policies.
- b) Deciding on what metadata to store and present.
- c) Creating digital document identifiers (DOIs).
- d) Crafting author permission and licensing agreements to disseminate work indefinitely.
- e) Developing document creation and input guidelines suitable to long-term archiving and proper presentation.
- f) Training staff and authors in using the chosen software to submit content.
- g) Creating document submission instructions and marketing the repository concept to prospective depositors.

5. Research Methodology

5.1 Research Approach

The study used both quantitative and qualitative approaches because they encourage greater interaction between the researcher and the respondents.

5.2 Research Design

Since the study population was scattered all over, the study adopted a case study research design. This enhanced access and sharing of information and brought out deeper understanding of the development of repositories in Kenya and in developing countries in general. This could help the researcher to be in a position to place the findings in a general context to reflect the actual realities on the ground.

5.3 Study Population

Mugenda and Mugenda (1999) define to study population as the total number of subjects or interests to a researcher. Study population is a group of individuals, objects or items from which samples are taken for measurement. It is an entire group of persons or elements that have at least one thing in common.

The information available from the human resource section showed that the population of the National Museums of Kenya were stratified in three levels. The category of respondents comprised of researchers, management staff and external information users. Table 1 shows that the population comprised of 15.5% researchers, 32.83% management staff and 51.67% external information users, totalling to a population of 100%.

5.4 Study Sample

The researcher used stratified and simple random sampling. The National Museums of Kenya was divided into three groups. The technique ensured that different groups were adequately represented in the sample results. The method was simple and cost-effective as it consumed less time as compared to other sampling designs. As indicated in Table 1, the study sample size consisted of 15.5% researchers, 32.83% management staff and 51.67% external information users. According to Mugenda and Mugenda (2003), 10% of a large study population can constitute an adequate representative study sample size.

Table 1: Study sample size

STATION	PERCENTAGE	STUDY POPULATION	SAMPLE SIZE
Researchers	15.5	93	9
Management	32.83	197	20
External	51.67	310	31
TOTAL	100	600	60

5.5 Sampling Methods

In this study, the researcher used non-probability sampling method to select people by areas in which they belong. The respondents were categorised into researchers, management staff and external users. The sample size was derived from each category using postulations of Mugenda and Mugenda (2003) who argue that 10% of a large study population can constitute an adequate representative study sample size.

5.6 Sampling Techniques

The researcher used purposive sampling techniques because it gives the researcher the opportunity to use cases

that would have the required information with respect to objectives of the study. It was also useful where the researcher needed to conduct a quick sampling. It was not easy to conduct the research by being in contact with the entire population of the National Museums of Kenya.

5.7 Data Collection Methods

5.7.1 Administration of Questionnaires

The researcher employed administration questionnaires as a data collection method as it would give respondents time to consult with colleagues and get reliable information. The questionnaires were brief with both closed and open-ended questions. Structured questions were used in an effort to conserve time as well as to facilitate easier analysis. Unstructured questions would encourage the respondents to give in-depth response without feeling held back in revealing any information. This would give them enough time to consult with colleagues for more reliable information while personal interview would help the researcher to get clarifications on the information provided.

5.7.2 Interviews

The researcher used interviews as a data collection method because it could produce more satisfactory results. It also gave the researcher an opportunity to observe the interviewee's non-verbal communication to determine the veracity of the responses. The method was flexible since the questions could be clarified when not well understood by the respondents.

5.7.3 Observation

This allowed the researcher to get involved in the research so as to gather factual information about the items being researched on without their knowledge.

5.8 Data Presentation, Analysis and Interpretation

The data collected were organised, analysed, interpreted and presented in an attempt to give answers to research questions. This would enable the researcher to interpret the results of the study quite easily. The information collected qualitatively would be edited and cleaned up in the process of organising the data based on the key thematic areas. Frequencies and percentages were used to present qualitative data in tables, pie charts and bar charts based on the major research questions. The qualitative data generated from open-ended questions were categorised into thematic areas based on the research objectives. The researcher analysed data collected and an effort was made to identify common themes related to access to institutional-generated information by use of open access institutional repositories. The results of the research questions were interpreted by use of frequencies, percentages, tables, pie charts and bar charts.

5.9 Ethical Considerations

The researcher gave an assurance to all the participants of the study that any information they would provide would be treated as confidential and would not be used anywhere for any other reason other than the initial reason for which it was sought. Care has also been taken to ensure that all works referred to in this study are acknowledged to avoid cases of plagiarism.

6. Research Findings

6.1 Institutional-generated Information

6.1.1 Type of Information Generated by the National Museums of Kenya

The study sought to determine the major types of information generated by NMK staff. As shown in Table 2, the options provided in this item were scientific information, technical information and other information. 63.2% of the respondents selected scientific information as the major type of information generated by NMK; 34.5% of the respondents selected technical information; 0.08% selected other type of information (including advertisements) while 1.3% of the respondents didn't respond.

Table 2: Institutional-generated information

Responses	Frequency	Percentage
Scientific information	143	63.2
Technical information	78	34.5
Other (specify)	2	0.08
No Response	3	1.3
Total	226	100.0

6.1.2 Organisation of Institutional-generated Information

The study sought to determine the organisation of institutional-generated information. The options provided in this item were good, better, bad, worse. 25.2% of the respondents said the organisation of the information was good, 13.2% said it was better, 46% chose bad and 15.4% said it was worse. The summary is shown in Table 3.

Table 3: Organization of institutional-generated information

Responses	Frequency	Percentage
Good	57	25.2
Better	30	13.2
Bad	104	46
Worse	35	15.4
Total	226	100.0

6.1.3 Format of the Information Generated

The study sought to determine the formats of the information generated at NMK. As indicated in Table 4, the options provided in this item were print, audio-visual, electronic and others. 5.3% of the respondents said most of the information was in audio-visual format, 3.9% said it was in electronic format, 90% said it was in print, and 1.8% said others.

Table 4: Format of the information generated

Responses	Frequency	Percentage
Audio visual	12	5.3
Electronic	9	3.9
Print	201	90
Others	4	1.8
Total	226	100.0

6.1.4 Access to Institutional-generated Information

The study sought to determine ease of access to institutional-generated information. As shown in Table 5, the options provided in this item were good, better, bad and worse. 16% of the respondents said the organisation of the information was good, 13.2% said it was better, 54.8% said it was bad and 16% said it was worse.

Table 5: Access to institutional-generated information

Responses	Frequency	Percentage
Good	36	16
Better	30	13.2
Bad	124	54.8
Worse	36	16
Total	226	100.0

6.1.5 Infrastructure to Access Institution-generated Information

The study sought to determine if the institution had an infrastructure established for open access to the NMK institutional repositories. The options provided in this item were agree and disagree. 24.8% of the respondents agreed there was infrastructure, 59.7% said there was no infrastructure while 15.4% did not respond to this question, as indicated in Table 6.

Table 6: Infrastructure to access institutional-generated information

Responses	Frequency	Percentage
Agree	56	24.8
Disagree	135	59.7
No response	35	15.4
Total	226	100.0

6.1.6 Challenges Inhibiting Access to Institutional-generated Information

The study sought to determine challenges inhibiting access to institutional-generated information. As shown in Table 7, the options provided in this item were lack of policy, lack of infrastructure, inadequate funding and lack of trained personnel. 12.5% of the respondents cited lack of policy, 16.3% identified lack of policy, 21.2% said it was inadequate funding for the information centre and 50% said it was due to lack of trained personnel to handle access to information.

Table 7: Challenges inhibiting access to institutional-generated information

Responses	Frequency	Percentage
Lack of infrastructure	80	12.5
Lack of policy	104	16.3
Inadequate funding	135	21.2
Lack of trained personnel	318	50
Total	637	100.0

6.1.7 Strategies to Enhance Access to Institutional-generated Information Strategies

The study sought to determine strategies that may be used to enhance access to institutional-generated information. As shown in Table 8, the options provided in this item were to develop policy, to improve

infrastructure, to allocate funding and to build capacity and train personnel. 8.7% of the respondents said improving infrastructure would enhance information access in the institution, 12.6% identified development of policy, 23.1% cited allocation of funds, and 55.6% said capacity and training of personnel would enhance information access in the institution.

Table 8: Strategies to enhance access institutional generated information

Responses	Frequency	Percentage
Improve infrastructure	54	8.7
Develop policy	78	12.6
Allocate funding	143	23.1
Capacity build and training personnel	345	55.6
Total	620	100.0

7. Discussion

The respondents were in three categories, namely, researchers, management staff and external users. Based on the above information, most of the respondents came from external information users.

7.1 Institutional-generated Information

The research found out that the National Museums of Kenya had information touching on scientific information, technical information and other type of information including the advertisements. The researcher discovered that, the most generated information at the National Museums of Kenya was scientific information. The researcher further discovered that the type of institutional-generated information could only be found in print and Audio-Visual format which has not been converted into digital format. Moreover, the study sought to determine the quality of information generated by NMK staff if it was to meet the customer needs. According to respondents, majority of them disagreed; least of the respondents agreed while others did not respond. Therefore, the study showed that the information generated at the National Museums of Kenya did not meet the needs of their potential customers because of the nature in which the information is packaged.

7.2 Organisation of Institutional-generated Information

The research found out that, the organization of the institutional-generated information at NMK was in bad state as it was evident by majority of the respondents interviewed. These could be a result of the information being scattered all over across the country. The study further, confirmed that most of the institutional-generated information at the National Museums of Kenya was in print format, which has not been converted to digital format. This makes it difficult to organize information so that it can be easily accessed from within the institution and outside world.

7.3 Access to Institutional-generated Information

Most of the respondents disagreed that, the information users had ease of access to information generated by the institution. The researcher found out that for this to happen, there is need for the management to develop policy, improve infrastructure, allocate funding; and capacity building and train personnel to support the digital access of information at the National Museums of Kenya.

7.4 Challenges Inhibiting Access of Institutional-generated Information

The study revealed that the most challenge inhibiting access of institutional repositories at the National Museums of Kenya is lack of trained personnel. However, according to the respondents, there were other challenges including inadequate funding, inadequate technical infrastructure, lack of awareness and understanding of the concept, lack of policy and lack of trained personnel.

7.5 Strategies for Enhancing Access of Institutional-generated Information

A majority of the respondents suggested the institution should put in place strategies to support the use of open access to institutional-generated information by use of institutional repositories. For this to succeed, NMK must develop a policy, improve infrastructure, allocate enough funds and have capacity building and train personnel to enhance access to information in the institution.

8. Conclusions and recommendations

8.1 Conclusion

In spite of the time given to the institution to acquire new technology, the National Museums of Kenya has been very slow in adopting these new technologies. The National Museums of Kenya need to be part of the global movement towards providing open access to information generated by the institution. More people are likely to benefit from this institutional repository as it provides access to scientific information, technical information and other types of information produced by the institution's research staff.

However, for this to happen the institution should put in place strategies that would create an environment to support access to information by users of institutional repositories by placing emphasis on advocacy for institutional repositories and adopting an approach that takes into account the major concerns. There is need for institutions to use institutional repositories and ensure that management staff and researchers are familiar with various issues concerning digital information, copyright issues and many others.

Generally, results of the research finding show that the National Museums of Kenya does not have policies and strategies to support the management of digital information resources.

8.2 Recommendations

The study recommends that there should be policy formulation on institutional repositories to support the use of institutional repository at the National Museums of Kenya and help in addressing issues affecting access to institutional-generated information. There should be improved ICT infrastructure in place to help NMK in enhancing access to institutional-generated information. There should be allocation of enough funds to uplift the state of Information and Communication Technologies at the National Museums of Kenya. The study also recommends that NMK should organise trainings to help the management and researchers understand how to use institutional repositories in accessing institutional-generated information. In this way, their knowledge of access to information would be enriched and they would be in a better position to advocate for change in policies within the institution.

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