

JIMMA UNIVERSITY

COLLEGE OF NATURAL SCIENCES

DEPARTMENT OF INFORMATION SCIENCE

**ASSESSMENT OF THE STATUS AND CHALLENGES OF THE
DEVELOPMENTS OF INSTITUTIONAL REPOSITORY: THE CASE OF
JIMMA UNIVERSITY**

**A Thesis Submitted to the Department of Information Science of Jimma
University in Partial Fulfillment of the Requirements for the Degree of Master of
Science in Digital and Electronic Resource Management**

By

TADELE MULAT

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November, 2013

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DECLARATION

I hereby declare that the research work entitled “assessment of the status and challenges of the developments of institutional repository: the case of Jimma University” is a record of an original work conducted under the guidance of Getachew Bayissa and Worku Jimma, Jimma University, Department of Information Science.

Name	Date	SIG.
_____	_____	_____

The thesis has been submitted for examination with my approval as university advisor:-

Advisors

Principal advisor _____

Co-advisor _____

DEDICATION

This research study is dedicated to my family Meaza Tamire and Christian Tadele for their encouragement during the study.

ACKNOWLEDGEMENT

First and foremost I would like to thank my advisor Getachew Bayissa, for his support throughout my research writing.

Avery special thank you goes to my second advisor Woku Jimma for the time, interest he invited in my research work with wise and insightful remarks. I attribute the level of my work to their encouragement and effort and without them this research work would not have been completed.

I would like to thank the Jimma university librarians who assisted me while writing this study, especially the social science library staff of Jimma University who gave me their time and effort in finding related books and electronic resources during the study.

I would also like to thank my family, Meaza and Christian, for all their comments and encouragement. I could not have completed this work without their support and willingness to work with me at a distance.

ABSTRACT

Institutional repositories are emerged to facilitate preservation and to disseminate research outputs in any academic institutions. These days the world is changing from manual/analog to digital services, so it is very important to collect, store, disseminate and create accessibility to imperative documents, research reports and publications produced by faculty and graduate students in the universities. The importance of institutional repositories is to offer collaborative production and dissemination of scholarly information towards assisting academic and research institutions. Due to the absence of Institutional Repository (IR) in Jimma University (JU) local resources are scattered everywhere in the campus without reaching the communities easily plus it was disorganized, deteriorated, torn out and covered with dusts on their placement. The main objective of this study was to assess the status and challenges of institutional repositories development in Jimma University and instigate the need for the successful implementation of institutional repository in the university. The method used for the study was survey method; stratified sampling technique and different instruments like questionnaire, interview and observations were used. The study result shows that there is no institutional repository and policy in the university. The major barriers of implementing IR were found to be training, awareness, administrative support and skills. In order to implement institutional repository effectively, it needs faster Internet connectivity, availability of up-to-date hardware's and software's, training of the researchers and awareness creation. It is recommended that the establishment of IR supported with policy is vital. In addition to that upgrading of the librarians education, training of the researchers and the university community to submit their resources to the institutional repository willingly is very influential so that information and knowledge can properly be shared without time and distance impediments. In addition to that university libraries shall follow and establish national digitization standards and consortium in the country. Jimma University is not an exceptional and should have a well developed and effective institutional repository to fully satisfy its own researchers, students, and the community. So, to implement IR and to continue with that pace, the university should have to create commitment to the concerned body to implement IR, so that local resources can be available for the entire community.

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LIST OF ACRONYMS

A	Agree
AAU	Addis Ababa University
AIP	Archival Information Package
AV	Audio Visual
BA	Bachelor of Art
CBE	Community Based Education
CBTP	Community Based Training Program
CD	Compact Disk
COM	Commercial
D	Disagree
DIP	Dissemination Information Package
Dlib	Digital Library
DTTP	Developmental Team Training Program
DVD-CD	Digital Versatile Disk- Compact Disc
ECA	Economic Commission for Africa
EDU	Education
ET	Ethiopia
ETD	Electronic Theses and Dissertations
FIG	Figure
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
ICT	Information Communication Technology
IEEE	Institute of Electrical and Electronics Engineers
IFLA	International Federation of Library Association
IR	Institutional Repository

JU	Jimma University
JU-CAVM	Jimma University College of Agriculture and Veterinary Medicine
JU-CBE	Jimma University College of Business & Economics
JU-CNS	Jimma University College of Natural Sciences
JU-CPHMS	Jimma University College of Public Health & Medical Sciences
JU-IEPDS	Jimma University Institution of Education and Professional Development
JU-IT	Jimma University Institute of Technology
JU-SSL	Jimma University College of Social Science & Law
KM	Kilo Meter
LIS	Library and Information Science
MA	Bachelor of Science
MD	Medical Doctor
Medline	Medical Literature Analysis and Retrieval System Online
MIT	Massachusetts Institute of Technology
N	Neutral
ND	No Date
NGOs	Non Governmental Organizations
OAI-PMH	Open Archives Initiative Protocol for Metadata Harvesting
OAIS	Open Archival Information System
ORG	Organization
P	Page
PDF	Portable Document Format
PHD	Doctor of Philosophy
PubMed	Public Medicine
SA	Strongly Agree
SD	Strongly Disagree
SIP	Submission Information Package

SPARC	Scholarly Publishing and Academic Resources coalition
SPSS	Software Package for Social Sciences
TELL	Telephone
UK	United Kingdom
UNISA	University of South Africa
UPS	Uninterruptable Power Supply
VOL	Volume
WWW	World Wide Web
XML	Extensible Markup Language

CHAPTER ONE

1. 0. INTRODUCTION

1.1. BACKGROUND OF THE STUDY

Institutional repositories are emerged to facilitate preservation and to disseminate research outputs in any academic institutions. In addition to this, the library services have changed from manual /analog to digital services, so it is very important to collect store and disseminate crucial documents or research documents in any university in digital format. In the first case it was the publisher's responsibility to publish and disseminate printed documents to the users but in the later case, it is the librarians or institutions and also the authors' responsibility to publish and disseminate information digitally. Thus, libraries can be publishers, distributors and institutional presses for the digital and printed documents.

The university communities producing large information resources in the university need proper archival for storage and should be accessed freely by using Internet and Intranet. The idea of institutional repositories is a result of the development of Information and Communication Technology (ICT). Institutional repositories are very important to create a knowledge society. Nakkiran and David (2003) stated that knowledge is the main commodity and more important in the economic development of a country. We are living in a virtual world where information plays a significant role in the everyday activities of our life. The way of managing documents and also the role of library and librarians are changed.

An institutional repository is a set of services and technologies that provide the means to collect, manage, provide access, disseminate, and preserve digital materials produced at an institutional level (Shreeves & Cragin, 2008). The demand of institutional repository increases from time to time, however it requires specific guideline in order to ensure success. Different authors like Palmer et al (2008) stated that:-

“...this type of work is highly technical, requiring the design and implementation of strong information infrastructure and functional systems, but it is also managerial, requiring continual planning, prioritizing, and coordinating with respect to the expectations of various stakeholders,

including faculty, university administration, and publishers, as well as academic librarians already serving in established professional roles.”

There are different resources/documents produced in the universities/organizations, museums etc. According to Greenstein and Trant (1996), these documents are like Electronic Thesis and Dissertations (ETDs), manuals, modules, proceedings, lecture notes, procedure manuals, office documents, etc for their organizational development and the transfer of information to the coming generation. Institutional repositories are mostly called digital repositories or digital libraries of the intellectual products of the institution by researchers, students and any community in the institution and accessible to the end users inside and outside of the campus (Harnad, 2003). According to Lynch (2003), a university based institutional repository is 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 community members.

The present knowledge society expects that every information and knowledge should be made available to all. To enable equitable and universal access to knowledge resources, libraries should be encouraged to create their own digital resources by digitizing documents and research materials generated in their institutions in different languages, which can be shared at all levels and particularly at local level (Chandel, 2011). Institutional repository development has several advantages for the university and its community. According to Crow (2002), institutional repositories have the potential to serve as tangible indicators of an institution’s quality and demonstrate the scientific, societal, and economic relevance of its research activities, thus increasing the institutional status and visibility.

The main reason to carry out this research at the institutional level is that there are local resources in Jimma University, which needs a standardized organization in one centre because most of the resources in the university are scattered at the college and department level. At this movement the staff members can’t access any local document via internet because these documents didn’t collected centrally and they are found in a bad situation like full of dusts, deteriorated and torn out in their placement. If it is collected centrally and professionally, patrons can read, download, copy,

distribute, and print, these documents easily and at any time and place as far as there is a computer and Internet and Intranet connections.

In Ethiopia, institutional repository implementation is almost a new concept to institutions like universities and colleges except Addis Ababa University which has repositories on Electronic Theses and Dissertations using D-Space software. According to Alemu (2009), there is no research done in Ethiopia about institutional repository. His research work revealed that first, Ethiopian universities suffer from an acute shortage of access to scholarly research. Second, Ethiopian universities and research institutions especially those run by the government have lagged behind in terms of having an organized collection of their research results and publishing their research works. Ethiopia never had a single institutional repository until January 2009 when Addis Ababa University (AAU) has started publishing its Electronic Theses and Dissertation on D-space software.

In Jimma University even though IR not yet implemented, but there was a movement to establish it. With the collaboration of library, ICT and research and publication office they have formulated draft policy to implement IR in the near future. There was a controversial issue for the placement of IR: - some of them wanted to setup IR in the ICT, others in research and publication office and most of them are in the library.

The study area for this particular research was Jimma University. Academic staff, librarians and university management officials working in different colleges of the University were the target population of this study. Jimma University is a public higher education institution established in December 1999 by the amalgamation of Jimma College of Agriculture (founded in 1952), and Jimma Institute of Health Sciences (established in 1983) and found /located in Jimma city 352 K.M. South West of Addis Ababa Oromiya region, Jimma Zone.

1.2. STATEMENT OF THE PROBLEM

The emergence of ICT helped in the wide spread of information as well as to generate, store and distribute scholarly information in digital formats. The library has passed through different generations from printed documents to Compact Disks (CDs) and from CDs to web technology. This means that before a few years ago libraries collect and disseminate resources which are written

manually (printed documents only). It was very difficult to share a single resource for many patrons at the same time. But now since resources are digital, it is possible to share a limited document for many patrons at the same time if there is computer and Internet for them. Based on this changing environment; collecting, organizing and making available of resources on the user's desk is vital. It is now possible for individuals on their computer screen to have access to full-text journal articles, conference papers, research reports, technical documents, statistical information, data sets, and much more, (Chisenga, 2003).

In Jimma University, there is no research conducted on the institutional repository development, such as organizing, accessing and self-archiving of the institutional repository. Besides, there is no centralized digital institutional repository with specific software in the University and thus most of the local resources are scattered in the colleges and departments office without giving services to the users. In addition to that the way the resources are shelved was under question, they are full of dusts, deteriorated, and the CDs which are submitted with the paper are in danger situation.

If these resources are collected or organized in a centralized manner by using repository software like D-space, Greenstone or other softwares for the purpose, it is possible to manage, share and collect the institution resources effectively. Moreover, effort duplication, i.e., repeating the same research work due to fragmented approach currently followed will be avoided, easy to control plagiarism and the limited resources available can be used efficiently.

Therefore, the main goal of this research came from different angles; first the university has a problem of shortage of accessing local resources by its communities via web technology. Second, the university is poor in organizing institutional repositories in a centralized/organized manner. Third the publication and users pattern is changing, so that organizing resources online is a very crucial thing in the modern institution or library world and the last one is there is a confusion/disagreement between some offices to implement IR in a dedicated place even though the library is appropriate place to run the system as mentioned by different researchers like Pelizzari (2003) who indicated that over 70% of the respondents in his study singled out the library as the structure to be given the mandate of managing an institutional archive.

1.3. RESEARCH QUESTIONS

This research study answers the following questions:-

- 1.3.1. What is the current status of institutional repository in the University?
- 1.3.2. What are the challenges of the developments of institutional repository in the university?
- 1.3.3. What institutional information resources are available to be organized through institutional repository?
- 1.3.4. What type of technology does the university use to store, retrieve and share resources for the institutional repository?
- 1.3.5. What are the major factors that help to develop an effective institutional repository in the university?
- 1.3.6. Is there any institutional repository policy available to enhance institutional repository?

1.4. OBJECTIVE OF THE STUDY

1.4.1. GENERAL OBJECTIVE

The general objective of this research is to assess the status and challenges of the development of institutional repository in Jimma University.

1.4.2. SPECIFIC OBJECTIVES

The specific objectives are very crucial, therefore, the specific objectives of this study are to:-

- 1.4.2.1. Identify the status of institutional repository in the university.
- 1.4.2.2. Find out the challenges of the implementation of institutional repository in the university.
- 1.4.2.3. Identify potential resources to be made accessible through institutional repository.
- 1.4.2.4. Identify the type of technology the institution is using.

1.4.2.5. Identify factors that help in order to implement an effective institutional repository in the university.

1.4.2.6. Recommend the way forward on the implementation of institutional repository in the university.

1.5. SIGNIFICANCE OF THE STUDY

Institutional repository is a vital resource/database of an institution or organization. It is a set of services that helps in order to capture, preserve and distribute the university local scholarly resources in a digital format. Therefore, organizing local resources generated within the institution is crucial for the success of the institution/organization.

First institutional repositories are very important from the institutional aspects because, it increases collaboration, visibility and prestige, stewardship, cost reduction, centralization and storage, increase access of unpublished reports, support for learning and teaching, breaking down of publishers cost, and long term accessibility. Secondly, when we see from the authors' aspect, it is used for the increasing of authors' citation and grant revenue/income (Crow, 2002).

In Jimma University even though IR not yet implemented, but there was a movement to establish it. With the collaboration of library, ICT and research and publication office they have formulated draft policy to implement IR in the near future. There was a controversial issue for the placement of IR: - some of them wanted to setup IR in the ICT, others in research and publication office and most of them are in the library. As Pelizzari (2003) who indicated that over 70% of the respondents in his study points out that the library as the structure to be given the mandate of managing an institutional archive. Even though IR is a collaboration work between offices like library, ICT and research and publication and other offices, the library is the most appropriate place to run it. As Nixon (2002) also point out that librarians are the eyes and ears of the library. They are familiar with things like understanding of users' needs and perceptions, they are subject specialists, they know how to help patrons etc. So to implement IR in the library, librarians are very essential and are critical persons to establish and maintain IR through advocacy, content building, organization of metadata and giving training for the self archivists (self submitters).

Thus, the significance of this study is to show the way forward in how to organize the resources in the university to be digitized centrally to get the above listed benefits. The university will be competitive by adding to institutional prestige through the showcasing of its academic research and sharing it for the patrons. Moreover, it reduces duplication of repeating the same research work and helps to use the limited resources available efficiently. In addition to these, since the university was under confusion between some offices for the placement of the institutional repository (ICT, Library and research and publication office) this research would give them evidence where the IR will be going to be settled. So, it is expected that the beneficiaries of this study are academic staff, administrative staff, students, and also could be used globally if the institutional repository follows interoperability principle using the Open Archive Initiative.

Generally, the present study was initiated with the main aim of assessing the status and challenges of developing institutional repository in the university, and recommend further implementation of the local resources to be available digitally and accessible within and outside the university. This helps the university in adding prestige, collaboration and cooperation among university researchers, students, and guests, if it is collected scientifically in a digital format with Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) platform.

1.6. SCOPE OF THE STUDY

The scope of this research focuses on assessing the local resources produced in Jimma University; and assesses the challenges, status of institutional repositories for the sake of facilitating scholarly communication and utilization centrally. It has focused only for local resources which are found in an electronic form. But in the campus there are more electronic resources like Hinary, EBSO, EMERALD etc, so the researcher doesn't include or incorporate such resources which are produced outside the campus in the study. It is only limited to local resources found and produced by the staff members. The study covered the five colleges and two institutes of Jimma University. The populations used or included for the study were academic staff, librarians and the university management officials.

1.7. LIMITATIONS OF THE STUDY

Studying institutional repositories in any university or organization requires different methods. In order to do a research on institutional repositories, the researcher conducted a survey using questionnaire, interview, and observation. Through the data collection process respondents that had

given questionnaire and appointed for the interview were not available or unwilling to participate, necessitating the researcher to shift to other appropriate respondent.

1.8. DELIMITATION OF THE STUDY

Even though delimitations are factors that affect the study, the researcher can also control the problems at hand. Therefore, for the sake of manageability of the data, most of the questionnaires are multiple-choice items /Likert scale and very few open-ended response items. The researcher asked only two higher officials even though there are many in the campus; this is due to the fact that, these two higher officials have much more information than the remaining ones.

The researcher didn't incorporate the whole library staff and administrative staff, because most of them did not have direct work relation with digitization and automation of resources. In addition to that the researcher was considered respondents academic status starting from first degree and above. It was also delimited to only in Jimma University because of time and financial resources constraint.

1.9. OPERATIONAL DEFINITIONS

Challenge: - It is a general term referring to things that are imbued with a sense of difficulty.

Digital Library: - It is an electronic library where collections are stored in electronic media formats as opposed to print, microform, or other media and accessible via computers. The electronic content may be stored locally, or accessed remotely via computer networks. It is a type of electronic library information retrieval system.

Institutional repository development: - It is the way of developing institutional local documents in a centralized manner.

Institutional repository: - An institutional repository is 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 community members. It is a digital collections capturing and preserving the intellectual output of a single or multi-university community.

Interoperability: - Is the ability of diverse systems and organizations to work together (inter-operate). It is used to allow for information exchange. Describing a resource with metadata allows it to be understood by both humans and machines in ways that promote interoperability.

Library: - It provides physical or digital access to materials and it is a collection of books, periodicals, newspapers, manuscripts, films, maps, documents, microforms, CDs, cassettes, videotapes, DVDs, e-books, audio books, databases, and other formats.

Local contents: - Local contents are an expression and communication of a community's locally generated, owned and adapted knowledge and experience that is relevant to the community's situation. Local content are generally mean as a work which is produced under the creative control of nationals of the country.

Metadata: - Is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource. Metadata is often called data about data or information about information.

OAI-PMH: - Open Archives Initiative Protocol for Metadata Harvesting is a protocol developed by the Open Archives Initiative. It is used to harvest (or collect) the metadata descriptions of the records in an archive so that services can be built using metadata from many archives.

Open access: - It is a free availability of documents on public Internet, permitting any users to read, download, copy, distribute, print, search or link to the full-texts of articles/documents, pass them as data to software or use them for any other lawful purpose, without financial legal or technical barriers.

Repository: - It is a location for storage, often for safety or preservation of digital resources in the institutions.

Scholarly communication: - is the process of academics, scholars and researchers sharing and publishing their research findings so that they are available to the wider academic community such as university academics and beyond.

Status: - It is a state, condition, or situation of phenomena or thing or the relative position or standing of things.

CHAPTER TWO

2.0. LITERATURE REVIEW

2.1. INTRODUCTION

Information access method has changed from printed documents to electronic formats. Due to the development of Internet, accessing electronic information provides greater diversity and choice (Schauder, 1994). Libraries store printed documents but now it has shifted to collect, organize and give access to their patrons electronically. No longer are libraries simple storehouses of printed materials; but by providing access to electronic documents and faster retrieval of information, libraries are adding to the choice and diversity in scholarly publishing.

The growth of Internet technologies has made resources on the World Wide Web (www) directly accessible to various user communities. The educational community has utilized this new world with modern strategies to expand their academic career like e-learning, e-resources, medical care, distance learning, institutional repositories etc. According to Ram et al., (1999), the general public including scholars and students use the Internet to access and share information stored throughout the world.

To organize and preserve digital contents, institutions are creating institutional repositories to manage the scholarly materials created by the campus community. An institutional repository is a digital library, in that it has an organized collection of digital objects pertaining to a particular research or educational organization (Jones et al., 2006). There are different definitions of institutional repositories by different scholars. Whatever definitions they have institutional repositories are digital resources produced by the institution communities. When I say digital resources it includes theses, dissertation, videos, films, manuals, guidelines, conference proceedings etc.

According to Lynch (2003), institutional repositories are 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 community members. It is most essentially an organizational commitment to

the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution.

2.2. HISTORY OF INSTITUTIONAL REPOSITORY

Everything has its own sequence of time for creation, development and end date. Like that of other phenomena, institutional repositories have evolved in the fall of 2002, something amazing occurred in the continuing networked information revolution, shifting the dynamic among individually driven innovation, institutional progress, and the evolution of disciplinary scholarly practices. The development of institutional repositories has emerged as a new strategy that allows universities to apply serious, systematic force to bring about visible changes in scholarship and scholarly communication (Lynch, 2003).

Harned (1990) pointed out that, the first seeds of institutional repository can be traced back as far as the most influential articles by William Garden and Steven Harned in 1990, when networked electronic communication was starting to become available tool for the dissemination of scholarly publications. He emphasized that the whole process of scholarly communication is currently undergoing a revolution comparable to the one occurred after the invention of printing.

“Then 10 years later, at the beginning of the 20’s century disciplinary archives born out with the development of arXiv in 1991. Later on, in 2001 and 2003, there was an explosion of articles covering the ground work for institutional repositories (Crow, 2002). Then after the creation of institutional repositories software’s like D-Space in 2002, the development of OAI-PMH in 2001, the creation of open access repositories (journal crisis) i.e. The increase of the serials price by 273 % between 1986 up to 2004 and the declining of the library budget lead to the creation or innovation of the institutional repositories worldwide. So, an institutional repository is old enough in history but it is still young in implementation especially in developing countries.”

In this networked world the availability of libraries is very important in order to create collections in any organization especially in the higher institutions, so that resources can be shared in the principle of interoperability if it has the same metadata standards. During the last few years’, academic libraries worldwide have realized the importance of institutional repositories in the intellectual life

and output of an institution as these are considered to be supporting tools in the dissemination of the scholarly output, (Kounoudes & Zervas, (2001). This shows that libraries have a great impact in collecting and disseminating resources worldwide. Institutional repositories have emerged through the open access movement in order to promote free, online access to the research product of the institution. Most university libraries have built or are currently building their own institutional repository in order to capture, preserve and provide access to the intellectual output of its academic members.

2.3. TARGETS /OBJECTIVES OF INSTITUTIONAL REPOSITORY

The basic objective of the institutional repository is to facilitate researcher, academic community and those who are interested to know the recent trends in research and development in their respective areas of interest. In most cases it is free for the readers and can therefore be used freely for research, teaching and other purposes. If it is collected and managed in a centralized manner, beneficiaries to the institutional repositories will be faculty, research scholars, and postgraduate/ graduate students from the third world or developing countries which give them an opportunity to access, communicate and publish their research findings without any delay and simultaneously they may participate in global research activities, conferences, workshops and trainings.

So, for the collections of such resources the demand of libraries is crucial. Libraries have seen their roles as collection developers diminishing with the adoption of institutional repositories as authors of intellectual works themselves depositing their works and creating metadata for it. Librarians should not only bring awareness about such repositories but also they should still play their traditional roles of intermediaries; in this case between researchers and institutional repositories (Rockman, 2005) .

Bailey (2006) also identified three main benefits of institutional repository in his survey work: visibility and increased dissemination of the institution's scholarship; free, open, timely access to scholarship; and preservation and stewardship of digital content. Crow (2002) also identified that the main important characteristics of institutional repositories is to provide a way of capturing and preserving the intellectual outputs of the faculty, students and staff of a particular institution. He emphasized that open access institutional repositories facilitated the free availability and distribution of scholarly research globally which reduced the problems created by journal access barriers which are common among developing countries.

According to Chowdhury, H. H. (2011) the following are the main objectives of establishing an institutional repository in any universities/institutions: -

- ☛ To enable the organization/institution develop its own digital contents and make them accessible to the users through Internet/Intranet.
- ☛ To collect and preserve various teaching and learning materials, and research outputs usually generated by faculty members, scientists, researchers, and students and make them accessible to interested individuals/groups;
- ☛ To make the institution's library capable of providing e-library services with their e-resources, and ensure access to them for faculty members, scientists, researchers, and students;
- ☛ To store digital information and their descriptive metadata;
- ☛ To capture and preserve research and related contents in digital form, and to make it available online;
- ☛ To make a bridge between users and electronic resources through the web-based technology;
- ☛ To develop human resources of the respective library for providing better library services; and
- ☛ To help the libraries of other universities and research organizations in establishing institutional repositories by sharing experience, knowledge and expertise.

Therefore, the objectives of an institutional repositories are to create global visibility for an institution's scholarly research, collect content in a single location, provide open access to institutional research output by self-archiving it, and store and preserve other institutional digital assets, including unpublished or otherwise easily lost ("gray") literature (e.g., thesis or technical reports).

2.4. STEPS OF MAKING AN EFFECTIVE INSTITUTIONAL REPOSITORY

Due to the advancement of ICT, the world is becoming a small village and accessing resources everywhere is becoming simple through digital technologies. There for, everybody/institution needs to digitize its resources. An institutional repository as mentioned above has several advantages,

especially collecting the local resources in a central database for the scholars and students. So, these resources need proper utilization and management in order to give service for the future. An institutional repository is not a onetime work and also not a one person's duty to make it available for the users. It requires different stakeholders like libraries, ICT staff and others.

Before implementing institutional repositories, different steps are required in order to do a better and quality service (Jabbour, 2012). The first thing is securing approval from the management. This is because without the management decision it will be difficult to begin the process. The second step is the assembling of the project committee. This committee should be from different stakeholders like from the library, ICT, research and publication office etc. The third and other steps to implement an institutional repository is like creation of schedule and time line, conducting need assessment, developing a service definition (purpose and benefit), drafting policies and procedures, choosing and implementing softwares, staffing and training, depositing existing collections, marketing the product and finally running the service. Jabbour emphasized that, at this electronic age where e-documents can be easily lost and access sustainability is not guaranteed. Therefore, it is highly recommended that universities have to start building institutional repository as much as possible.

According to Drake (2004), there are different key issues in order to establish an effective institutional repository. Policies, systems architecture, and other elements will depend on institutional context and the scope and purposes of the repository. Policies drafted for the one institution may not work for another institution or organization. So we have to consider the key issues when we develop repositories like the institutional culture, the scope of the repository, content, access levels, legal aspects, standards, sustainability and funding.

In addition to these, Drake also mentioned that librarians, archivists, faculty, and information technology staff have gained increased understanding of each other's work and learned to work more collaboratively in recent years. Creation and sustainability of a repository heavily depend on thinking together and learning what others on the team think so that decisions are made within their working context. Based on these, in order to build effective institutional repositories, the following are very vital like comprehension, collaboration, caring, commitment, creativity and competence.

Each and every institution may follow its own strategy in order to implement IR on their desire. However, in addition to Drake; Gibbons (2004) has also identified eight essential approaches to the development of institutional repositories. These are: defining the purpose of the repository; defining repository services; choosing repository software; developing repository policies; staffing; setting up communities; and marketing the repository. By doing these, several institutions/countries especially developing countries can use these steps as a principle and guide in order to build institutional repositories.

2.5. PRINCIPLES OF INSTITUTIONAL REPOSITORY

There are different purposes/principles of institutional repository for different individuals, institutions and the researcher /producer like the faculty staffs (Giesecke, 2011).

For the institution, the repository can raise the visibility of faculty research, help preserve the intellectual output of the institution, and, particularly for public institutions, can be an effective way to share research outputs with their constituencies.

For the producers of the research, the faculty, the repository is a way to disseminating their research work within their community and to increase citations to their work. These two major stakeholders, the institution that supports the repository and the researchers who create the works, have therefore different viewpoints and needs of how a repository should be structured.

From the library world, repositories may be seen as a way to address some of the economic challenges of obtaining access to scholarly works. As subscription costs increase at rates higher than inflation, and libraries face continuing budget reductions and challenges, open access repositories can help provide access to research findings (Giesecke, 2011).

So, based on the above explanation institutional repositories have different benefits like institutional access to international research outputs, international access to research generated in developing countries, promotion of institutional research outputs, creation of partnership & networking, improved access to additional data etc.

Kounoudes & Zervas (2011) stated that, an institutional repository is the means to prove that the product of the research activity of a university will be represented, documented and shared in a

digital form and thus the most basic and fundamental. In universities, institutional repositories can be used as marketing tools used to demonstrate the faculty and students research.

When we come to developing countries like Africa, the university environment is changing from time to time. There are a lot of progress like e-resources facilities, ICT infrastructure and Internet usage etc. As a consequence, a great amount of contents became available from computers lacking the necessary identification and access control. Identification (description of the digital contents) is important for the search and retrieves actions by users (Pavani, 2007).

People use institutional repositories for several purposes in universities or in the organizations. According to Chang (2003) in his study of why people use/adopt institutional repositories for different circumstances. He has put more than four reasons about peoples' usage of institutional repositories. First, he observed the fact that e-print service has started. Secondly, there is a technological advancement especially in the ICT areas. Thirdly, there is a great shrinking of budgets especially in libraries and finally there is a skyrocketing journal subscription costs in every field of study. Generally there is a technological advancement that helps us to use institutional repository and also the increase of journal price forced us to use institutional repository for our scholar and other purposes.

2.6. ADVANTAGES OF INSTITUTIONAL REPOSITORY

Institutional repositories are a recent phenomenon that evolved based on the development of the www. There are different advantages of institutional repositories mentioned by different writers. Sinha & Bhattacharjee (2006) explained that institutional repositories are a concept of collecting, managing, disseminating, and preserving scholarly works created in digital form by faculty and students of the respective universities and colleges. It is a method of collecting, preserving, and disseminating an institutional documents/outputs such as research journal articles, before (pre-prints) and after (post prints) undergoing peer review, and digital versions of thesis and dissertations, and also include other digital assets generated by normal academic life, such as administrative documents and course notes.

In addition to Sinha and Bhattacharjee (2006), Pickton & Barwick (2006) has also clarified the importance of institutional repositories as a collaborative production and dissemination of scholarly information has been evidenced by intensive efforts geared towards assisting academic and research institutions in developing open access institutional repositories. Based on their assessment the authors have formulated requirements for information infrastructure to develop institutional repositories, design architecture, need of information infrastructure and hardware, which comprises of D-Space, E-prints, and Fedora etc.

Ram et al., (1999) expressed the access of information as: Access to appropriate scientific and technological information and knowledge at the right time could play a critical role in the development of the countries in Africa. It could assist in finding solutions to most of the problems, such as inadequate food supply, poverty, water pollution, diseases, environmental degradation, deforestation, and many others surrounding the continent today.

Institutional repositories have two basic advantages especially in academic institutions according to Crow (2002). These two advantages are: First, it expands access to research, reasserts/strength control over scholarship by the academy, increases competition and reduces the monopoly power of journals, and brings economic relief and heightened relevance to the institutions and libraries that support them. Secondly, it serves as a tangible indicator of a university's quality and to demonstrate the scientific, societal, and economic relevance of its research activities, thus increasing the institution's visibility, status, and public value. In addition to this it is also used to raise profile and prestige of the institution, pride to the institution, for re-using of expensive materials again, for long time preservation, increase visibility of authors, increase global ranking of institutions, and attract global audience.

Institutional repositories have also advantages for the writers or researchers as this author explained. For the writer or researcher, it improved wide dissemination of information (work more visible, retrievable and cited), rapid dissemination of information, easy access, cross searchable, as feedback and commentary, and so on.

“The primary goal of institutional repositories is to make the institution's intellectual product visible to users across the world through an interoperable and persistent online storage, interoperability

with other repositories, peer review, self archiving of research not published in recognized journals, tools for assessment of researchers and academics, sharing of knowledge internationally. To facilitate the above usages, institutional repositories use technical standards such as the Open Archive Initiative Protocol for Metadata Harvesting (OAI-PMH) (Barwick & Pickton, 2006).”

Generally the universities and any organization’s community will generate large information inside the institution which needs proper organization for future access. These outcomes from different individuals may keep institutional repositories in digital forms and this information might be made available through Internet and Intranets in the campus and out of the campus for free access for research and academic works.

It is clear that in this information era organizing digital resources is very important in order to access resources easily and the goal of institutional repositories is making the institution’s intellectual product visible to the users across the world through an interoperable and persistent/long time existence online storage (Barwick & Pickton, 2006).

To sum up, institutional repository has the following potential advantages according to (Barton and Waters, 2004). The potential uses of an institutional repository are: scholarly communication; management and storage of learning materials, electronic publications and research collections; preservation of digital research works; building university profile by showcasing academic research work; providing an institutional leadership role for the library; research assessment; encouraging open access; and housing digitized collections. So, institutional repositories generally provide an excellent method of distributing research and scholarly works to the whole community within and outside the institution.

2.7. ESSENTIAL CHARACTERISTICS OF INSTITUTIONAL REPOSITORY

In any university in the world of which repositories are functional, libraries play an important role in building and maintaining the infrastructure of institutional repositories. But from university to university or country to country institutional repositories have different characteristics.

There are different characteristics of institutional repositories according to Chang (2003). These are:-

- ☛ *Institutionally defined* which means resources are created by the institution members,
- ☛ *Scholarly content* i.e. resources created by the institution are for the purpose of teaching, learning and research like journal articles, lectures, databases.
- ☛ *Cumulative and perpetual* which means collected based on an OAI principle and sometimes difficult to borrow for a long time period.
- ☛ *Interoperability and open access* i.e. the institutional repositories should be interoperable to another organizations that do not have sufficient resources and should follow the open access software's than commercial ones if the institution do not have enough money to buy commercial software's. In order to develop or run institutional repository, we need to have different resources, among them is the software. There are different types of software's like commercial and open source. Commercial software's are as the name indicates, it is based on money while open source is free and we can also customize the software code into our own style and into our own local languages and preferences.

Crow (2002), also identified the characteristics of IR as digital, institutionally defined, scholarly, cumulative and perpetual, open access and interoperable.

2.8. CHALLENGES OF IMPLEMENTING INSTITUTIONAL REPOSITORY

Researchers and the university community in general needs to store their local resources to be available in the institutions' repository centrally. Even though institutional repositories have many advantages, there are also barriers to do so. According to McCord (2003), there are different challenges to implement institutional repositories. Even if the problems are different from country to country and institutions to institutions, the most common ones according to McCord (2003) are administrative attention span (i.e., the commitment of faculties to preserve resources), the development of metadata during conversion, the absence of IT infrastructure, media capture technologies-how best digitize non-digital resources, diversity of media types, long term preservation and migration issues (i.e., problem of obsolescence), copyright issues, absence of a well defined institutional policy, lack of institutional expertise, insufficient funds, lengthy deposition procedure, lack of literacy program for the depositors and users, and publishers rigid attitude towards copyright policy.

On the other hand Pickton and Barwick (2006) also identified the barriers of implementing institutional repository. As IR has different advantages; there are also potential barriers in order to implement it. Some of the barriers are cost, copyright, policy, lack of incentives for the researchers, working culture issues, and commitment. Durrant (2004) also reported that in most of the Nigerian universities, there are different challenges for the implementation of institutional repositories like low funding, low staff morale due to salary, brain drain, overburdening of researchers, low of ICT/ poor state of ICT and the serial crisis. Looking at the case of African countries status in the development of institutional repository, there are different challenges such as lack of knowledge, lack of awareness, poor state of ICT infrastructure, inadequate information literacy, poor funding, and poor intellectual property rights/copyright issues (Christian 2008).

In addition to the above challenges there are also other challenges for the implementation or after the implementation of institutional repositories in any institution or organization like storage failure, obsolescence or outdated format of hardware and software, human or software errors, external events/catastrophes like flood, rain, and fire.

2.9. CONTENTS OF INSTITUTIONAL REPOSITORY

One institution/university is different from the other by size, types of colleges or departments it has, academic career etc. In addition to that the type of collections in each university might be different from each other. Whatever the case, each university may collect local resources based on their policies and procedures. As Hirwade & Hirwade (2006) expressed, in the academic institution an institutional repository may contain a variety of materials produced by the researchers of the respective institution. He emphasized that the type of resources in which a university will have the following: -

Research papers produced by the staff members or students both graduate and undergraduate, conference papers, teaching materials like notes and modules produced by the instructors, papers produced by the committee, computer software's produced locally, artworks, photographs and videos taken during the university work (Hirwade & Hirwade 2006). These resources are not the only one in each university, but depending on the establishment, the size, the type, and the institution and the culture of the community, the number of the resources in each university may vary.

Generally, the role of institutional repository is basically to collect, to preserve and to disseminate an institutions research and other local resources to the community nationally and internationally. In the majority of any country these documents and databases are run by libraries. With regard to this, there are a number of problems among which self-archiving; lacks of willingness of authors to upload their works on the database are the major barriers. Studying nine important institutional repositories worldwide, Xia and Sun (2007) reported that the archiving of the articles is mainly done by librarians or administrative staff and because of this reason, the self-archiving rate of authors is small. This shows that the role or the duty of librarians in the preservation and dissemination of institutional repository is vital in any country.

According to Ware (2004), who studied a total of 45 institutional repositories and 42,700 documents of which 22% were e-prints, 20% thesis and dissertations, and 58% others like grey literatures and images concluded that, institutional repositories are still at an early stage of development, because the documents were textual based than digital.

One of the most famous institutional repository researcher (Lynch 2005), also conducted studied in 13 countries and reported most of the documents were articles, books and theses, primary data, video, music's, etc. Based on his study Norway, Sweden and Belgium have highest resources in books, and thesis, and also France, Italy and UK have different resources like articles. From the above nations Netherlands has 40% thesis and 20% articles and also Australia has 83% of its collection is primary data. Finally what he has concluded is that, European nations have good subject repositories than US and other countries.

The other famous institutional repository researcher McDowell (2007) also studied that most of the institutional repositories as "institutional repositories" than subject based repositories, so that content types are categorized in to Electronic Thesis and Dissertation (ETD), e-prints, working papers, proceedings and presentations, e-journals and e-books, learning objects, multimedia files, datasets, pictures, institutional records, undergraduate and postgraduate works, etc. Based on the above works Lynch concluded that 40% are student works, 13% e-prints (pre and post) and e-books, 20% grey literatures, 1% proceedings, 13% images, 4% administrative materials and 3% historical documents.

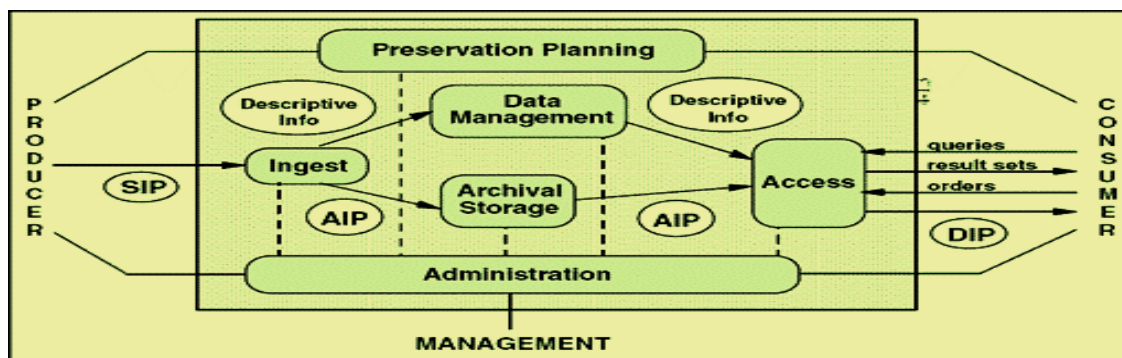
2.10. CONCEPTUAL FRAMEWORK OF INSTITUTIONAL REPOSITORY

To see how the institutional repository functional models, it is better to look the reference model for an Open Archival Information System(OAIS), which provides a conceptual framework for an archival system dedicated to preserving and maintaining access to digital information over the long run. This model was introduced in 2002 as the basic functional arrangements and responsibilities of an archive or repository. This model has three basic players: producer, management, and consumer (Branin, 2003).

As Branin expressed that an archive or repository has six basic functional activities or responsibilities in order to fulfill its functionalities like “ingest, archival storage, data management, access, administration, and preservation planning.”

“In this model, the producer prepares a submission information package (SIP), which has content and metadata information. The repository ingests the SIP and generates an archival information package (AIP), which complies with the archive’s data formatting and documentation standards, and extracts descriptive information from the AIP for inclusion in the Data Management function. Archival Storage provides services and functions for the storage, maintenance and retrieval of AIPs; while Data Management maintains descriptive information that identifies archive holdings and administrative data used to manage the repository. Access is the function that allows consumers to learn what is in the repository and request and receive a Dissemination Information Package (DIP) from the repository. Administration and Preservation Planning are high-level responsibilities of the management of the repository, ensuring overall operation of the repository system and ongoing preservation of content accessibility for the consumer even if the original information format or computing environment becomes obsolete (Branin, 2003).”

Fig. 2.1. Open Archival Information System



2.11. REPOSITORY SOFTWARES WORLDWIDE

There are a number of softwares which are used to run repository collections. In order to organize these resources, both open source and proprietary/commercial software's available in the market for institutional repository development. Selecting among the two is depending on the organizations economic status and choice. But most of the software's are open access which is known all over the world. Among the known softwares are E-Prints, D-Space, Fedora and Proquest's Digital Commons, formerly Bepress (Millington, 2007).

According to openDOAR (2007) report, open access institutional repository softwares are used, highly when compared with their share of percentage. Generally there are different types of open source softwares which are very important for the development of the building of an institutional repository. Among them E-Prints (21%) takes the lion's share followed by D-Space (20%), and Bepress (6%). The D-Space information model is based around the idea of communities that manage collections. D-Space allows different communities to set their own collection policies, including permissions to deposit, types of materials that are allowed for deposit and so forth. The software uses a system for persistent/constant identifiers in order to help ensure long-term stable access and aid with preservation issues (Barton et al., 2003).

But there are unknown software's that are used in every country globally and that is why the largest proportion (27%) of the report shows "unknown". The distribution of the usage of institutional repository worldwide shows that developed countries like Europe, North America have more institutional repositories than developing continents like Africa. It shows how African countries are behind the world for the contribution of resources i.e., only 2% of the world's open access repositories. This is the reason why African academic institutions, particularly universities, are ranked lowest in the world (Moahi, 2009). So Africa's academic works and research are not yet visible and accessible.

2.12. SCHOLARLY COMMUNICATION

Digital and electronic publishing and its access have brought incredible changes in scholarly communication, especially for newspapers, journals, books and other resources. Before it was the publisher's duty to publish and distribute the printed resources, but in recent years universities,

libraries, and scholars are re-examining publishing models, especially with ever-increasing journal prices and constrained library budgets (Gibbons, 2004).

Scholarly Publishing and Academic Resources Coalition (SPARC), Open Archive Initiative (OAI) and the Budapest Open Access Initiatives have been established to bring about change in scholarly publishing. SPARC is an association of academic and research libraries that struggle for the scholarly communication to be free for any individuals. It is focusing on access to peer-reviewed scholarship, promoting open access and the preservation of copyright by authors (SPARC, 2006).

OAI, on the other hand, seeks to facilitate the efficient dissemination of content, focusing on the technology and standards necessary to promote access to scholarly information (OAI, n.d.), whereas the Budapest Open Access Initiative was formed in 2001 to accelerate the progress in the international effort to make research articles in all academic fields available freely on the Internet (Budapest, 2003).

2.13. OPEN ACCESS

Open access is the practice of providing unrestricted access via the Internet to peer-reviewed scholarly research and other important documents. According to the Berlin declaration of open access (2003) definitions, open access is defined as “a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community.” In addition to the Berlin declaration, the Budapest Initiative (2002) also define as “its free availability on public Internet, permitting any users to read, download, copy, distribute, print, search or link to the full-texts of these articles, crawl them for indexing, pass them as data to software or use them for any other lawful purpose, without financial legal or technical barriers other than those inseparable from gaining access to the Internet itself”

It is most commonly applied to scholarly journal articles, but it is also increasingly being provided to thesis, and scholarly monographs. Authors publish in any journal and then submit a version of the article for free public use in their institutional repository, in a central repository e.g., PubMed Central, or on some other open access websites (Suber, 2005). This author emphasized that self-archiving allows authors to expand access to their works, by providing additional access points. “Open access to scientific article means online access without charge to readers or libraries.

Committing to open access means dispensing with the financial technical and legal barriers that are designed to limit access to scientific research articles to paying customers (Suber & Arunachalam, 2006)”

Cetto (2001) identified that, open access has been emerged due to the increase of legal and economic barriers by commercial publishers, which restrict developing countries from accessing scholarly publications. This creates the movement of free and open access for the research outputs. This seeks the use of Internet to provide free access to research and scholarly output without any geographical, physical, social and economic barriers.

2.14. INSTITUTIONAL REPOSITORY IN DEVELOPING COUNTRIES

Nowadays, institutional repositories in developed countries have got tremendous attention in archiving and disseminating scholarly communication outputs for the users. Institutional repository does not only improve the global visibility and utility of the research outputs but also introduces the culture of producing or writing of research outputs for the development of their institutions. However, in developing countries it is not yet the case due to several reasons. According to Christian (2009), academic and research institutions in many developing countries like Nigeria are still battling to overcome many challenging issues in an attempt to make their research outputs openly accessible by means of Internet technologies. Such challenges are like lack of awareness of institutional repositories for the researchers and academicians, lack of ICT infrastructures and inadequate funding for the researchers or self archivists.

2.15. INSTITUTIONAL REPOSITORY IN AFRICA

In Africa as Chisenga (2003) acknowledged several research outputs exists in the form of grey literature, i.e., unpublished information and knowledge resources such as research reports, thesis and dissertations, seminar and conference papers. He also concluded that, local journals in general have poor distribution and visibility. This situation resulted in research from developing countries not being indexed in major international databases which have the capacity to increase the visibility of these research outputs.

The creation and use of institutional repositories in academic and research institutions in Africa are a serious developmental issue that requires urgent attention in this networked environment. Chisenga rightly stated: “They are valuable for research and development because they can offer instant access

to information and knowledge resources being generated on the continent. The universities and research institutions in Africa are the major centers of research and consequently the major generators of research based data, information and knowledge.”

Chisenga observed that African countries are behind the world in institutional repositories compared to developed countries. Due to the slow pace of the development of information and telecommunication infrastructure in Africa the distribution of IR is very slow, but there are tremendous progresses on the establishment in most of the universities. Currently it is said that Africa accounts for less than 2% of the research output of the world. Although institutional repositories are a relatively new phenomenon, from the 1,000 institutional repositories in the world, only 20 are in Africa, and most of these are in South African universities.

Moahi (2009) quoted a World Bank report which states: a weakness in the application of knowledge is a major factor behind the economic stagnation in Africa. This, of course, is not in favor of the fact that information and knowledge are the drivers of socioeconomic development anywhere, anytime. Moahi also worried that the greatest challenge in applying knowledge for development in Africa is not that knowledge was not generated but the fact that several research generated in the universities and research centers scattered all over the continent are either disseminated in expensive foreign journals or gather dust in remote places where they were generated. With low accessibility by researchers in the African region, the publications were usually replicated or entirely not utilized for any purpose.

In addition to African countries researchers are producing less knowledge and what they produce is not shared globally (Arunachalam, 2003). Africans’ lacks access of knowledge of contents produced inside and outside the region. Some people call this famine of scientific information; this is due to several reasons like lack of research and technological infrastructures, language problems, unsubscribed scholarly journals due to economic barriers etc. In addition to these, as (Christian 2003) reported, there are different reasons that Africa become slow which includes lack of knowledge or awareness of open access institutional repository, poor state of ICT, inadequate advocacy for open access repositories, poor or inadequate funding, and copyright and intellectual property rights.

“The goal of implementing an institutional repository is mainly to have the intellectual output of an institution in a central source; institutional repositories also provide access to others who may have an interest in the output, and they promote the visibility of an organization on the Internet. A scholarly research presence online is one of the criteria used in ranking universities. According to the world universities ranking report, “African universities are ranked lowest in terms of research output. From the universities found in Africa, the University of Cape Town is ranked at 359 in the world out of 6,000 universities and University of Botswana is ranked at 5375 in the world and 41 in Africa (Kgautlhe, 2009).”

Uzuegbu (2012) reported that the types of contents in African repositories are mostly journal articles (32%); thesis and dissertations (31.9%) are the prime/major content in African repositories. This is seen in thirty-two repositories, out of the fifty-four academic and research repositories in Africa. This is followed by conference papers (25%), unpublished reports and working papers (16%), Av materials (13%), books (12 %) learning objects (7%) in that order.

Uzuegbu also mentioned that, thirty-six of the fifty-four repositories in Africa contain items that are multidiscipline (36%), agriculture food veterinary and law and politics together accounts (5%) and the remaining fields have fewer repositories than the previous one.

Some of the African countries are using institutional repository software’s very well. For example South Africa uses 16 types of repository software’s for her collections while Egypt uses 2, other African countries share the same proportion and there are others which do not have any at all.

When we look at the African continent proportion of repositories according to (Uzuegbu, 2012), he summarizes that:

“The African countries are changing with the development of institutional repositories for the collection of local resources for them and for the rest of the world. It looks encouraging to see that Africa has many documents for global view, information dissemination and creation of knowledge which leads to the development of a nation. It is easy to see that less than half of African countries (16 out of 54) have academic and research repositories which cover about twenty-one (21) subject areas, ten (10) broad content types and thousands of items in them the size of the majority of the repositories encouraging.”

2.16. INSTITUTIONAL REPOSITORY IN ETHIOPIA

Even though Ethiopian universities have many local documents inside, there are a number of challenges to organize it and make them available to the community. Palmer et al. (2008) expressed that the rising cost of serial subscriptions, rapid changes in technology and document delivery, and the open access movement have brought new challenges and opportunities to libraries as participants in the scholarly communication process worldwide. Accordingly, Ethiopian university libraries should be aware of this and establishing an institutional repository is a must.

Even though using electronic resources is not a new concept in Ethiopia, the practice of building digital repositories in Ethiopia is a very recent phenomenon. There are a number of initiatives taken by higher learning institutions like Addis Ababa University in which it has repositories on electronic thesis and dissertations using D-Space software. According to Alemu (2009), there is no research done in Ethiopia about institutional repository. In his report, Alemu stated that firstly Ethiopian universities suffer from an acute shortage of access to scholarly research and secondly Ethiopian universities and research institutions especially those run by the government have lagged behind in terms of having an organized collection of their research results and publishing their research works. Ethiopia never had a single institutional repository until January 2009 when Addis Ababa University (AAU) started publishing its electronic thesis and dissertation on DSpace software.

The role of an institutional repository is basically to collect, preserve and disseminate the host institution's research outputs. In Ethiopia the implementation of institutional repositories is very weak or does not at all except Addis Ababa University which has already started collections of Electronic Thesis and Dissertation (ETD) in the university web site by the good participation of libraries, postgraduate school and students. But there are no any other collections like modules, seminar documents, manuals, rules and regulation etc. The library uses D-space software for the collection of ETD to be accessed through the university website (Alemu, 2009).

One could imagine that if there is no ICT infrastructure in any country, the level of institutional repository in that country will be less. According to the Ethiopian information communication technology development agency in 2008, even though Ethiopia has ICT policies like worda and

school nets, there are different reasons for the low level of its distribution: In the report the following is stated:

“Underdeveloped physical and Tele infrastructure and limited number of both fixed and mobile telephones, lack of skilled expertise in ICT, high number of ICT illiterate public, low Internet bandwidth, low ICT market for ICT infrastructure, underdeveloped private sector, lack of organized data and information resources, and legal and regulatory constraints.”

2.17. INSTITUTIONAL REPOSITORY IN JIMMA UNIVERSITY

In Jimma University, there is no centralized documentation of institutional repository using open or commercial institutional repository software's. But there are some research documents which has been done by staff researchers and students which are scattered everywhere in the colleges, departments and instructors office in the form of hard copies. In Jimma University there is no research conducted on the institutional repository development, and also there is no centralized digital institutional repository with a specific software package and policy approved by the university higher officials and accessible to the community.

Since local resources which are produced in the university are highly valued by users the collection of them reflects the social, economical, political and cultural values of the community because the resources are representatives of the cultural heritage of the community or the nation at all.

2.18. INSTITUTIONAL REPOSITORY - THE FUTURE

In recent years, with the development of the WWW the globe becomes a small village. Due to this, there are habits of sharing resources using open source technologies. According to Anbu (2006) , the latest developments around the globe there seems to be more awareness especially in areas of open access and open content. Based on the availability of this technology, and in-order to preserve and share resources in the UK House of Commons and the US House of Representatives urges the government to allocate funds to each and every university to start institutional repositories and ensure long term preservation of digital scholarship from these digital repositories and directing all its research to be published in Open Access.

The increasing awareness among the authors and researchers is a very good sign for the future of scholarly publications. With these developments, there is no doubt that the scholarly

communications are balanced for an exciting future. Africa should also have a commitment in order to create and maintain institutional repositories in her universities and this will consolidate the digital divide among the nations especially in the developing countries.

Generally, the concept of institutional repositories is a powerful force to bring intellectual prosperities into higher education institutions. If there are mutual agreement among leaderships, stakeholders and libraries, it is possible to build, preserve and continues to go forward for the growth of knowledge in order to use it now and to transfer for the coming generation. This means that institutional repository development is not a one person or group or a onetime work, but it needs the commitment and collaboration of the concerned bodies especially the top management, librarians, ICT professionals and researchers.

CHAPTER THREE

3.0. METHODOLOGY

3.1. STUDY AREA

The study area for this particular research was Jimma University. Academic staff/researchers, librarians and university management officials working in different colleges of the University were the target population of this study. Jimma University is a public higher education institution established in December 1999 by the amalgamation of Jimma College of Agriculture (founded in 1952), and Jimma Institute of Health Sciences (established in 1983). The two campuses are located in Jimma city 352 K.M. South West of Addis Ababa Oromiya region, Jimma Zone. Jimma University is the only university in Ethiopia which begun innovative community oriented education institution of higher learning. It is organized or classified according to colleges and institutes. At this moment the university has 72 MSc programs, 9 PHD programs and 9 specialties in different fields of study (JU, 2013).

3.2. RESEARCH METHOD

The method used for the study was survey method which helps in order to collect data on a specific place and time to observe the feelings and opinions of the respondents. Both qualitative and quantitative data were collected and a theoretical analysis of the concept and significance of institutional repositories was done using various literatures in the field.

3.3. POPULATION

The study populations of this research were academic staff of the five colleges and two institutes, purposefully selected library professionals and management officials of Jimma University. The total numbers of the academic staff were one thousand three hundred thirty five (1335), professional librarians were ten (10) and the management staffs were two (2). Because academic staffs are large in number while the librarians and administrative concerned staff are very few in numbers and that is why the researcher take samples from academic staff based on their strata while librarians and administrative staffs are based on purposive sampling technique.

3.4. SAMPLING TECHNIQUE AND SAMPLE SIZE DETERMINATION

3.4.1. SAMPLING TECHNIQUE

A stratified random sampling and purposive sampling technique was used for this study in-order to address representative staffs from each of the colleges and institutes. Based on the method, the researcher divided the total number of the academic staff according to their colleges and institutes size. So, after having the colleges and institutes sample size, questionnaire was distributed randomly for each college and institute number ratio. Purposive sampling was used for the interview in order to focus on a limited number of participants that have direct access to the study area/working environment. Since the librarians and concerned management staffs were very few in number, the researcher had purposefully used an interview method for all members than taking samples from them. Even though research questions were made on academic staff/researchers, a few librarians and some administrative staff were also interviewed because the researcher consider a few librarians and administrative staff have good background on the area and some questions may not be fully answered by the questionnaire or extra questions can also raised for the interviewee which is not asked by respondents by the questionnaire.

3.4.2. SAMPLE SIZE DETERMINATION

Sample size determination was used to carry out by Cochran, (2007), formula as follows:

$$n_o = \frac{z^2(\alpha/2)^{2q}}{d^2} \quad n = \frac{n_o}{1 + \frac{n_o}{N}}$$

Where N= population size

n_o = unadjusted sample size

n = adjusted sample size

z = the standard normal deviated corresponding to the confidence level i.e. 1.96 at α = 5%

d = margin of error 10%= 0.1 (It is common to use in the range of 0.01-0.1)

p = the population proportion; 0.5 in which the variance is maximized. (This yields the maximum possible sample size as a penalty for unknown population proportion. So, it is sure that no miss of any information about population because of unknown P)

$$q = 1 - p = 1 - 0.5 = 0.5$$

From the formula

$$n_0 = \frac{z^2 p q}{d^2}, \quad n_0 = \frac{(1.96)^2 (0.5 \times 0.5)}{(0.1)^2} = 96.04 \quad \text{and} \quad n = \frac{n_0}{1 + \frac{n_0}{N}}$$

Since n_0/N greater than an adjustment n we need adjustment of sample size

$$n = \frac{96.04}{1 + \frac{96.04}{1355}} \approx 90$$

Proportional allocation

Proportional allocation was used to allocate the sample size to different colleges of the university

With proportional allocation, substitute:-

$$n_h = \frac{n N_h}{N} \quad N = \text{total number of academic staff}$$

n_h = sample size from the h- college

N_h = Total number of staff in the h-college

$$CPHMS = \frac{90 * 390}{1355} = 25.904 \approx 26$$

$$SSL = \frac{90 * 226}{1355} = 15.011 \approx 15$$

$$JIT = \frac{90 * 237}{1355} = 15.741 \approx 16$$

$$CBE = \frac{90 * 91}{1355} = 6.044 \approx 6$$

$$CAVM = \frac{90 * 168}{1355} = 11.158 \approx 11$$

$$PDI = \frac{90 * 17}{1355} = 1.129 \approx 1$$

$$CNS = \frac{90 * 226}{1355} = 15.011 \approx 15$$

Based on this, from 1,335 academic staff, 90 (ninety) of them were taken, 10 (ten) from the library staff and 2 (two) from the management staff as a sample. The academic staffs were selected based on stratified sampling technique, where as librarians and the management were selected based on purposive sampling method respectively.

3.5. METHODS OF DATA COLLECTION

For the study, primary data was collected. In order to collect the primary data the researcher used interview, questionnaire and observation. The questionnaire was distributed to the academic staff where as the interview was applied to the librarians and the concerned administrative staff in order to get valuable information on the area. A five point Likert scale was used for specific questions like status, challenges and effectiveness in order to choose for the respondents' agreement or disagreement with the statements on the questionnaire.

The questionnaire was tested/ validated by employees of the university to know the understandability of the items included in the research questionnaire. A few questions were modified on the recommendation of experts' before the instruments were distributed to the respondents for the data collection purpose. Since the respondents are familiar with the English language, the questionnaire was prepared in English language, and this helps the researcher the confidentiality of avoiding the language barriers that leads to misunderstanding and wrong conclusions of the results.

3.6. DATA ANALYSIS

After intensive collection of raw data by using questionnaire, interview, and observation; the data was organized, processed and analyzed. Then, the questionnaire data was encoded into SPSS software (version 16) for analysis. Based on this, the following methods were used in order to analyze the data: frequency, percentage, central tendency and other descriptive statistics. For qualitative data i.e., data collected through interview was analyzed and interpreted by narrations to give more insight for the study. According to Gojeh et al. (2013) and Ezema I. J. (2013), the questionnaire were measured based on a five-point Likert scale; based on these, the researcher given 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree. In order to effectively analyze responses, the researcher decides on the cut of points were made based on equal interval of 0.80. Therefore a mean score of (4.20 - 5.00) was considered as strongly agree, (3.40 - 4.20) was taken as agree, the range (2.60 - 3.40) was considered as neutral, from (1.80 - 2.60) was taken as disagree and from (1.00 - 1.80) was as strongly disagree.

3.7. THE RESEARCH ETHICS

There was an official letter which has been distributed to the study area /respondents' organization to assure the reliability of the research for the respondents in which the data collected from them will be done in honest, carefulness and openness. The information gathered from the questionnaire was kept in strict confidence, and analyzed only in summative form. In addition to this, the information which was collected from the respondents was used only for the research purposes.

CHAPTER FOUR

4. 0. DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1. DATA ANALYSIS

The total number of distributed questionnaires was 90, out of which 86 were filled and returned. These numbers shows that 95 % of the questionnaires were filled and returned. The entire 86 questionnaires were filled properly and found appropriate for the analysis of this particular research study.

4.1.1. DEMOGRAPHIC OF THE STUDY PARTICIPANTS

The academic staffs of the five colleges and the two institutes who filled the questionnaire were 65.7 % from the colleges and 11.7% from the institutes. Other personal/demographic information of the respondents is graphically depicted bellow.

Respondents Age	18-24	25-36	37-45	46 and above	
	15.12%	63.95%	17.44%	3.49%	
Respondents Gender		Frequency	Percentage %		
	Male	80	93%		
	Female	6	7%		
Respondents Academic Rank	BA/BSc	MA/MSc	MD	PHD	Others
	23	55	2	4	2
Respondents Academic Status	Teacher	Researcher	Both		
	82.56%	1.16%	16.26%		
Respondents Work Experience	Year	Frequency	Percent%		
	1-3	32	37.2%		
	4-6	30	34.9%		
	7 and above	24	27.9%		

Table 4.1: Classification of respondent's age, gender, academic status, rank and experiences.

According to the data obtained as depicted in Table 4.1 above, the age range of the study participants was 15.1 % for 18 – 24 , 64 % for 25-36, 17.4% for 37-45 and 3.5 % for above 46 years.

As presented in Table 4.1., 93 % (80) of the respondents are males while 7 % (6) of them are females. This shows that most of the staff members of the university are males.

According to Table 4.1, shows that the majority 64% (55) of the respondents have MA/MSc degrees, followed by BA/BSc degrees holders, 26.7% (23). The rest have PhD and MD.

As depicted in Table 4.1, above, the majority 82.5% (71) of the respondents were instructors, followed by both (*i.e.* lecturing and doing research at the same time) 16.3 % (14) and researchers 1.6% (1).

As presented in Table 4.1 above, the majority 37.2% (32) of the respondents have a work experience of 1-3 years followed by 34.9% (30) worked for 4-6 years and the rest of them worked 27.9% (24).

4.1.2. QUANTITATIVE STUDY RESULTS

Research Question 1: The status of institutional repository activities in the institution

Table 4.2: The status of institutional repository in Jimma University

No		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	X	SD	Decision column
1	There is no IR at all in the university	3(3.5%)	6(7%)	6(7%)	15(17.4%)	56(65.1%)	4.34	1.10	SA
2	There is no dev. IR policy	5(5.8%)	22(25.6%)	6(7%)	3(3.5%)	50(58.1%)	3.83	1.48	A
3	There is staff training for self archiving	66(76.7%)	3(3.5%)	4(4.7%)	2(2.3%)	11(12.8%)	1.71	1.41	SD
4	There is a delivery of self archiving	62(72.1%)	6(7%)	3(3.5%)	7(8.1%)	8(9.3%)	1.76	1.37	SD
5	IR is already plays a major role in the institution	58(67.4%)	10(11.6%)	3(3.5%)	2(2.3%)	13(15.1%)	1.86	1.47	SD
6	IR has reached at the highest stage	58(67.4%)	5(5.8%)	6(7%)	13(15.1%)	4(4.7%)	1.84	1.32	SD
7	There is a developed IR policy	54(62.8%)	14(16.3%)	4(4.7%)	4(4.7%)	10(11.6%)	1.86	1.38	SD
8	IR is found at an infant stage in the Uni.	48(55.8%)	17(19.8%)	16(18.6%)	3(3.5%)	2(2.3%)	1.77	1.02	SD

Table 4.2 shows, the descriptive statistics on the status of institutional repository in the university. The researcher asked the respondents to rate the questions on the base of the five Likert scale. To analyze the results the researcher considered the percentage corresponding to the mean (X) and the standard deviation (SD) of the scale for analysis respectively. For example the respondents strongly agree and agree that there is no institutional repository and policy in the university constitutes (65.1%, 17.4%) and (58.1%, 3.5%) respectively. Also respondents strongly disagree and disagree on the staff training and existence of delivery of self archiving (76.7%, 3.5%) and (72.1%, 7%) respectively. In addition to these, respondents strongly disagree and disagree on, IR has reached at highest stage (58%, 5.5%) and also strongly disagrees and disagrees on, there is a developed IR policy (62.8%, 16.3%) respectively.

Research Question 2: Challenges of the implementation of institutional repository in the institution

Table 4.3: Institutional repository challenges

Challenges of IR	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	X	SD	Decision Column
Lack of training	3(3.5%)	4(4.7%)	1(1.2%)	18(20.9%)	60(69.8%)	4.49	.991	SA
Lack of administrative support	4(4.7%)	7(8.1%)	4(4.7%)	16(18.6%)	55(64%)	4.29	1.16	SA
Lack of awareness	4(4.7%)	5(5.8%)	3(3.5%)	29(33.7%)	45(52.3%)	4.23	1.08	SA
Lack of skilled librarian	7(8.1%)	5(5.8%)	1(1.2%)	25(29.1%)	48(55.8%)	4.19	1.23	SA
Problem of selecting resources	16(18.6%)	6(7%)	1(1.2%)	17(19.8%)	46(53.5%)	3.83	1.58	A
Attitude and motivation towards ICTs	52(60.5%)	22(25.6%)	2(2.3%)	4(4.7%)	6(7%)	1.72	1.17	SD
Lack of ICT implementation	57(66.3%)	4(4.7%)	2(2.3%)	5(5.8%)	18(20.9%)	2.10	1.68	D
Technological Challenges	17(19.8%)	8(9.3%)	3(3.5%)	22(25.6%)	36(41.9%)	3.60	1.57	A
Scarcity of ICT infrastructure	37(43%)	32(37.2%)	1(1.2%)	6(7%)	10(11.6%)	2.07	1.33	N
Inadequate funds	16(18.6%)	10(11.6%)	3(3.5%)	22(25.6%)	35(40.7%)	3.58	1.56	D
Lack of ownership	20(23.3%)	20(23.3%)	3(3.5%)	17(19.8%)	26(30.2%)	3.10	1.60	N
Problems with Internet connectivity	44(51.2%)	24(27.9%)	2(2.3%)	4(4.7%)	12(14%)	2.02	1.41	D
Unwillingness to change	16(18.6%)	5(5.8%)	3(3.5%)	38(44.2%)	24(27.9%)	3.57	1.43	A
Legal issues	15(17.4%)	4(4.7%)	2(2.3%)	26(30.2%)	39(45.3%)	3.81	1.49	A
Copyright problem	15(17.4%)	7(8.1%)	3(3.5%)	25(29.1%)	36(41.9%)	3.70	1.51	A
Fear of plagiarism	15(17.4%)	20(23.3%)	1(1.2%)	18(20.9%)	32(37.2%)	3.37	1.58	N
Lack of confidence using computers	48(55.8%)	24(27.9%)	4(4.7%)	6(7%)	4(4.7%)	1.77	1.12	SD

Table 4.3 shows, the descriptive statistics on the challenges of the implementation of effective institutional repository in the university. To analyze the results the researcher considered the percentage corresponding to the mean and the standard deviation of the scale for analysis respectively. Based on this, the majority of the respondents strongly agree and agree (69.8%, 20.9%), (64%, 18.6%), (52.3%, 33.7%) and (55.8%, 29.1%) respectively for lack of training, lack of administrative support, lack of awareness and lack of skilled librarians as the challenges of implementing institutional repositories in the university. But the respondents mentioned that lack of ICT implementation, attitude and motivation towards ICTs and lack of confidence using computers (66.3%, 4.7%), (60.5%, 25.6%), (55.8%, 27.9%) have not a negative impact on IR implementation as shown from the percentage, the mean and standard deviation.

Research Question 3: Frequently used content types in the institution local resources.

Table 4.4: Most frequently used content types

No	Document type	Frequency/Quantity	Percent (%)
1	Books and book chapters	11	37.9
2	Audio-visual materials and multimedia	5	17.2
3	CBTP documents	3	10.3
4	Learning objects	2	6.9
5	Software	2	6.9
6	Theses and Dissertations	1	3.4
7	Administrative documents	1	3.4
8	Others	4	13.7
	Total	29	100%

According to Table 4.4, from the 86 respondents 29 of them have responded the items, however the 29 has taken as the total respondents. So, based on the respondents' answered that the most

frequently accessible content types in the institution are books and audiovisual materials 37.9% (11) and 17.2% (5) respectively.

Research Question 4: Repository management system in the institution (i.e. Software for depositing local resources in order to share resources).

Table 4.5: Description of the type of softwares used for the repository in the institution

No	Software description	Frequency/ Quantity	Percent (%)
1	No	70	81.4
2	I don't know	12	14.0
3	E-print	2	2.3
4	D-space	1	1.2
5	Fedora	1	1.2
	Total	86	100%

Based on Table 4.5 above, the majority of the respondents 81.4 % (70) said that the university do not have a repository management system (software) at all and 14% (12) of the respondents don't know about it. A few of them said E-print 2(2.3%), D-space 1 (1.2%) and Fedora 1(1.2%).

Research Question 5: Factors that make institutional repositories more effective

Table 4.6: Factors that make institutional repository more effective

No		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	X	SD	Decision column
1	Availability of up-to-date hardware's and softwares	4 (4.7%)	2(2.3%)	4(4.7%)	15(17.4%)	61(70.9%)	4.48	1.02	SA
2	Faster Internet connectivity	3(3.5%)	4(4.7%)	5(5.8%)	11(12.8%)	63(73.3%)	4.48	1.03	SA
3	Awareness raising	2(2.3%)	5(5.8%)	4(4.7%)	16(18.6%)	59(68.6%)	4.45	.990	SA
4	Improved training for teachers	3(3.5%)	2(2.3%)	8(9.3%)	13(15.1%)	60(69.8%)	4.45	1.00	SA
5	Appropriate policies	3(3.5%)	4(4.7%)	4(4.7%)	24(27.9%)	51(59.3%)	4.35	1.01	SA
6	Availability of reliable electricity	3(3.5%)	4(4.7%)	4(4.7%)	22(25.6%)	53(61.6%)	4.37	1.01	SA
7	Provision of technical support	4(4.7%)	5(5.8%)	6(7%)	15(17.4%)	56(65.1%)	4.33	1.13	SA
8	System backup/maintenance	4(4.7%)	4(4.7%)	6(7%)	13(15.1%)	59(68.6%)	4.38	1.10	SA
9	Improved software's	3(3.5%)	5(5.8%)	8(9.3%)	15(17.4%)	55(64%)	4.33	1.08	SA
10	Using of open source software	2(2.3%)	2(2.3%)	6(7%)	25(29.1%)	51(59.3%)	4.41	.899	SA
11	Appropriate content	4(4.7%)	3(3.5%)	5(5.8%)	30(34.9%)	44(51.2%)	4.24	1.04	SA

In Table 4.6 above, descriptive statistics on the creation of effective institutional repository in Jimma University is presented. To analyze the results the researcher considered the percentage corresponding to the mean and the standard deviation of the scale for analysis respectively. Based on this, the majority of staff strongly agree and (70.9%, 17.4%), (73.3%, 12.8%), (68.6%, 18.6%) and (69.8%, 15.1%) for the factors; availability of up-to-date hardware's and software's, faster Internet connectivity, awareness raising and training of staff as the most effective ways of implementing institutional repositories in the university respectively. The remaining options have also positive effects; which means both are effective methods of implementing IR even though their degree of percentage is different.

Research Question 6: Experiences of submitting documents/resources to the institution

Table 4.7: Experiences of submitting documents to the institution

No		Frequency/Quantity	Percent (%)
1	No	62	72.1
2	Yes	19	22.1
3	I don't know	5	5.8
	Total	86	100%

Table 4.7 shows that the majority of the respondents i.e., 72.1% (62) did not deposit their work to the institutes, whereas 22.1% (19) submitted and the rest have no information at all.

On the other hand the researcher asked the respondents whether they have used other institutional repository inside and outside of the country, so that most of the respondents expressed that 54.7% (47) did not use any other repository and 44.2% (38) have accessed repositories from AAU, ECA, UK universities, Harvard university, Colombia university, UNISA and some e-resource sites like Hinary, IEEE, PUBMED and MEDLINE.

There was a big difference among the study participants on the usage of institutional repository whereby 79.1% (68) do not have experience or knowledge about the usage of institutional repository. On the other hand 9.3% (8) of them have the knowledge of the usage of institutional repository like for the retrieval of research outputs/materials (both graduate and undergraduate) and 7% (6) for accessing teaching materials like handouts, manuals, presentations etc.

According to the finding of this study some of the respondents have practical knowledge about where they can find institutional repositories. Some respondents 22.1 % (19) have gotten the institutional repository information from the web, 11.6% (10) from the newsletter and journals, 9.3% (8) from their colleagues or friends and the rest do not have information at all. Those who have

experience of accessing resources from institutional repository 16.3% (14) use it every day, 14% (12) every week and few times through the year 31.4% (27).

There were different reasons for setting up a repository in any institution. According to the respondents, 87.2% (75) do not have idea why institutional repository is set up, while the remaining respondents 2.3% (2) said for the purpose of preserving digital resources centrally to be accessed by the community and the rest 4.7% (4) for the promotion of data sharing among individuals inside the institution.

On the encouragement of the university for the instructors and students for the scholarly communication according to the respondents 73.3% (63) and 57% (49) said that the university doesn't encourage instructors and students for scholarly communication respectively.

4.1.3. QUALITATIVE RESULTS

Based on the purposive sampling methods; librarians and management officials in the institutional repository area were selected and interviewed for this research accordingly, except one person all (11) of them were available and interviewed.

On the status of institutional repository activities and policies, most of the interviewees in different sections of the university, the status of the institutional repository in the campus were under discussion. The university research and publication office in collaboration with ICT and the library is on the way to finalize the policy, budget, human resources and other infrastructures in order to implement IR in the near future. For the time being the resources are found everywhere in the concerned individual office shelves in print and on CD formats. Even though the university has planned to implement institutional repository in the near future, the library has already started collection of documents using DSpace software for the time being, but this does not mean that institutional repository has settled and implemented. This means that the library initiative did not available for the community, no awareness on the area, no any policy or draft policy in case claims happen and to collect resources from concerned stakeholders, no enough human resources, no ICT infrastructure and budget. Generally, there is no used or implemented institutional repository in the campus, so the status of the university institutional repository could be said inexistent though the

policy was being at a draft stage. Institutional repository policies are policies which are developed within the institution which defines who can submit and collect it the contents, what that content shall be and who can access it and so on.

On the challenges, assumed in implementing institutional repository in the university, the interviewees listed number of challenges that hinder the implementation of institutional repositories. The majority of the respondents emphasized that the main challenges of implementing institutional repository in the institution were lack of training, lack of awareness, lack of trained librarians, misunderstanding among the concerned bodies where the institutional repository should be placed and collecting/organizing documents from the department due to lack of policy on the issues. Some interviewees said that, due to the late establishment of the masters and PhD programs in some fields in the university, the establishment of IR lagged behind due to the absence of scholarly communication documents such as graduate documents in the university. On the other hand, some of the interviewees emphasized that even though the resources and the software were ready to do so, there was shortage of skilled librarians on the area in the campuses, the library doesn't employ professional on time and the university management also didn't consider the repository as their primary duty and also mentioned about the shortage of budget.

With respect to the frequently used content types, there are a number of resources produced by the staff, researchers, and students. Such documents are like staff research papers, students' research papers, instructors' documents and different colleges and department documents in the university. Even though institutional repository contains a number of resources, the interviewees mentioned that the main resources found in the university are books, audiovisual materials and CBTP documents. Moreover, institutional repository contains documents like research papers produced by the staff members or students both graduate and under graduate, conference papers, teaching materials like notes and modules produced by the instructors, papers produced by committees, computer software's produced locally, art works, photographs and videos taken during different events in the university. These resources are not the only ones in the university, depending on the establishment, the size, the type, and the institution and the culture of the community may vary.

On the availability of institutional repository, there is no institutional repository in the university but there is D-Space software running in the university library system with a collection of not more than 3,000 documents. Even though the university library system has started the repository system using D-Space, the system has not yet grown to be called an institutional repository. Firstly it doesn't have an institutional repository policy if some claims will happen or arise. Secondly, due to lack of information literacy and policy no one knows neither how to submit from his/her own desk nor access the available resources.

On creating effective IR, according to the interviewees; the availability of ICT infrastructure, data center, agreement of the top management and the departments to collect resources to the data center, skilled librarians/professionals, budget and the presence of the institutional repository policy were the issues mentioned most prominently in order to implement institutional repository. Some of them also mentioned that training the appropriate staffs, especially the librarians was vital in order to create effective and competitive institutional repositories for the development of the community and the nations.

On the availability of institutional repository management system, the majority of the interviewees agreed that there is no institutional repository management system in the university, i.e. the institution do not have any software for managing the repository. However, some of the interviewees mentioned that there is a draft policy for implementing institutional repository in the university. This draft policy contains issues about the budget, human resource, software, copy right and legal issues, submission criteria from the authors and other related topics for the future implementation of institutional repository in the university. On the other hand, some interviewees said that there is repository software used, namely D-space for storing and accessing institutional repository in the university. This means that the university library system has already started collecting resources using D-Space software. Even though the library has already started organizing research outputs on this software in the library with a few collections, there is no as such practical policy on how to collect, organize and disseminate local resources from the researchers, students and other university community members.

As to the appropriate place to run institutional repository, majority of the interviewees identified that the university library was their preferred unit for managing institutional repository. Most of the respondents have agreed that the library was the appropriate place to manage the institutional repository in each and every institution because of the following reasons. Firstly, the library has librarians who can manage the library based on their qualification scientifically. Secondly, without the metadata arrangements, it is difficult to differentiate one resource from the other and the issues of metadata are mostly handled by librarians. In addition to that, it is known that in any university in the globe, a university library is a resource center for collecting, organizing and disseminating of information in hard and softcopy formats for its patrons.

With respect to submitting documents to the university, majority of the respondents do not have the experience of submitting the resources to the university. There were a number of reasons why they were not willing to submit their documents. The first reason was that, there was no policy in the university to force them to submit and archiving the resources themselves. The second reason, there was no even institutional repository itself. The third reason is that this could be due to lack of awareness, lack of training; the university was in the process of establishing its institutional repositories, fear of plagiarism, and lack of incentives from the university etc.

4.2. RESULT AND DISCUSSION

4.2.1. CURRENT STATUS OF INSTITUTIONAL REPOSITORY IN JIMMA UNIVERSITY

The finding of the present study on the current status of institutional repository in the university revealed that it is not yet implemented. Even though a few institutional documents were collected in the library, it is difficult to count this as an institutional repository because of absence of institutional repository policy, insufficient of repository management system, absence of self archiving and metadata, budget, lack of professionals and so on.

But the university research and publication office in collaboration with ICT and library staffs have prepared draft policy in order to start institutional repository in the near future. This shows that institutional repository in the university is none at all or found to be at an infant stage. However, the university library system has taken the initiatives assuming that this repository is their duties and

responsibilities. So far they have tried their best in collecting resources using D-Space software with a collection of more than 3,000 documents in it.

Alemu (2009) reported that Ethiopian universities suffer from an acute shortage of access to scholarly research. According to this author, Ethiopian universities and research institutions especially those run by the government have lagged behind in terms of having an organized collection of their research results and publishing their research works. Ethiopia never had a single institutional repository until January 2009 when Addis Ababa University (AAU) has started publishing its electronic theses and dissertation on D-Space software.

Lack of IR in JU means the research outputs of this institution is not shared to its community or to the outside world, like many other African countries. The research report by Arunachalam (2003) confirmed that, African country researchers are producing less knowledge and what they produce is not shared globally. Africans' lacks access of knowledge of contents produced inside and outside the region. Some people call this famine of scientific information. Moreover, Christian (2003) reported that there are different reasons that Africa become slow in IR which includes lack of knowledge or awareness of open access institutional repository, poor state of information and communication technology, inadequate advocacy for open access repositories, poor or inadequate funding, and copyright and intellectual property rights.

In Africa as Chisenga (2003) acknowledged the fact that, several of the research output from the region exists in the form of grey literature, i.e. unpublished information and knowledge resources such as research reports, thesis and dissertations, seminar and conference papers. He also concluded that, 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 the visibility of these research outputs. The creation and use of institutional repositories in academic and research institutions in Africa are a serious developmental issue that requires urgent attention in this networked environment.

Africa has tremendous local resources but the problem is lack of visibility due to lack of awareness, ICT infrastructure and others. Due to this resources are buried in her home land. Based on this, her

scholars are depending on retrieving resources from developing countries like Europe and America. Jimma University is not an exceptional and should have a well developed and effective institutional repository to fully satisfy its own researchers, students and the community.

As Chisenga (2003) rightly observed, institutional repository are valuable for research and development because they can offer instant access to information and knowledge resources being generated on the continent. The universities and research institutions in Africa are the major centers of research and consequently the major generators of research based data, information and knowledge. Generally African countries are behind the world in institutional repositories when it compared to other developed countries but there are tremendous progresses on the establishment in most of the universities. Currently it is said that Africa accounts for less than 2% of the research output of the world. Although institutional repositories are a relatively new phenomenon, from the 1,000 institutional repositories in the world; of those, 20 are in Africa, and most of these are in South Africa.

As Bozimo (2008) point out that in Nigeria, and many other developing countries, the building of institutional repositories is still at its infancy stage due to lack of awareness and lack of required skills in the use of the repositories. Based on this, the author recommended that universities and research libraries has to organize their scholarly output into open access institutional repositories in order to make their research works available to both local and international scholarly community.

The finding of this research is thus in line with other African countries that, the development of institutional repositories is still found in an infant stage because of lack of awareness of institutional repositories for the researchers and academicians, lack of skilled librarians, lack of training and inadequate funding for the researchers or self archivists etc, but in developed countries like Europe the development of institutional repositories has sky rocketed this is due to the advancement of technology like ICT, awareness, training on the area etc. In spite of these, there is a big gap between Jimma University with other developed world like Europe and America. So, based on the international standard, Jimma University will stand in order to set up the institutional repository with its policy for the sake of collecting, managing and distributing its local contents to be freely available to the community and to the nation. In addition to that resources will not be disorganized, torn out, become dusty and deteriorated.

4.2.2. CHALLENGES FOR THE IMPLEMENTATION OF INSTITUTIONAL REPOSITORY

The finding of the study revealed that the challenges of the implementation of institutional repository in Jimma University among others include: lack of training, lack of administrative support, lack of awareness and lack of skilled librarians.

Concerning the training issues, there is absence of giving training opportunity to the concerned individuals on implementation of institutional repository in the university. As mentioned by the interviewees as well as the respondents there is no training on institutional repository, how the staff, the students and authors can submit the documents and archive their documents to the central database. Providing appropriate training is very vital to implement institutional repository. This problem is in line with Chiware (2007) expressed that most of the librarians who are working in the library are in need of training in this digital era i.e. librarians lack essential skills in the digitization of library resources.

The second challenge of implementing institutional repository was found to be lack of awareness. Due to this most of the staff members were not willing to submit their research outputs. So, awareness and policy should be the priority area for the implementation of institutional repository in the university. Even some of them do not have clear idea on what institutional repository means and its advantages. For some of them institutional repository was just a collection of research works in printed format while for the few of them was a digital archive. For example Christian (2008) emphasized that lack of awareness is a major problem of implementing in some Nigerian universities. So, the university has to create awareness to the stakeholders in the university system, particularly the administrators such as library heads, librarians, ICT officers, students and the university council members. Creation of this awareness should be in the form of conferences, workshops, and symposium and resource persons should be experts in the area like librarians.

In addition to that the librarians, department of information science, and ICT should have to take initiative to create motivation on the area because their job is more related to that. Especially in Ethiopia, there is no association /consortium of information professionals in order to share ideas together so as to create awareness.

The third challenge for the implementation of institutional repository according to the study participants was lack of implementation of ICT infrastructure in the library. This means that there was no centralized data center for the implementation of institutional repository in the university library system. According to the respondents even there was no specified place in order to run institutional repository and setup the ICT infrastructure for it in the institution, even if the library was an appropriate place to run the system, which was also backed by the respondents. This finding was in agreement to Pelizzari (2003) who indicated that over 70% of the respondents in his study expressed that, the library as the structure to be given the mandate of managing an institutional archive. Even in AAU the IR is running in the university library system (personal communication, Solomon Mekonnen, 2013), this is due the fact that librarians are ears and eyes of the library and they are also knowledge managers and subject specialists. It is the librarians' duty for the management of the resources than any other offices.

As Crow (2002) mentioned that, organizing and maintaining IR as well as supporting faculty as information contributors and end users should remain the responsibility of the library. Libraries are best-suited to provide much of the document preparation expertise to help authors contribute their research to the institution's repository. Similarly, libraries can most effectively provide much of the expertise in terms of metadata tagging, authority controls, and the other content management requirements that increase access to, and the usability of the data itself.

The fourth challenge to implement institutional repository in the institution was lack of administrative support. According to the interviewees and respondents there was no enough support and attention given from the management side to implement institutional repository. This is due to lack of awareness on the advantage of IR for the staff as well as for the university. This finding of the present study is in line with the support of Namaganda, A. (n.d) a research done in Uganda University. On his research he emphasized that, there were challenges for the establishment of IR in the institutions, among them was, lack of awareness by institutional management. The university managements are the one who have the mandate given permission and budget for the implementation of the IR. If the top management did not give permission including the staff, budget, policy and infrastructure, the establishment of IR will be questionable. Jabbour (2012) also stated that in order to start the institutional work, it requires approval from the management.

According to Westell (2006), the concept of archiving the scholarly output of the university and making it available in the context of the institution is one that scholars and administrators are still coming to terms with. This is because without the management decision and its signed policy, it will be difficult to begin the process.

The fifth challenge for the implementation of institutional repository in the institution was found to be lack of skilled librarians. As mentioned by the respondents there are librarians in the university with different skills but have less skill in implementing institutional repository in the institution. This is due to lack of training on institutional repository software's and lack of awareness about institutional repository usage worldwide. Moreover, recruitment of the skilled librarians by the university/ library was difficult and the university management did not give attention on IR implementation as a primary academic issues. This research is in line with Chiware (2007) who reported that; problem of creating institutional repositories in Africa is lack of trained librarians in this digital era. Most librarians in Africa have inadequate skills in the development of the digital collection. The study found out that librarians lack some essential skills in the digitization of library materials.

Selecting the appropriate resources and organizing was the other challenge of the implementation of institutional repository in the institution. Due to lack of awareness and lack of the system no one knows how to submit documents online. In addition to these there was no organized team to select the appropriate resources at college and department level even if it is in the form of hardcopy. In general appropriate content and doing so timely is very crucial when one thinks about the establishment of institutional repositories.

According to McCord (2003) the major barriers of the development of institutional repositories are lack of training, lack of administrative support and lack of skilled librarians. The finding of this study is in line with the study by McCord (2003) who explains that administrative attention span i.e. the commitment of faculties to preserve resources, the development of metadata during conversion, the absence of IT infrastructure, media capture technologies-how best digitize non-digital resources, diversity of media types, long term preservation and migration issues i.e. problem of obsolesce, copyright issues, absence of a well defined institutional policy, lack of institutional expertise,

insufficient funds, lengthy deposition procedure, lack of literacy program for the depositors and users, and publishers rigid attitude towards copyright policy are the basic barriers or challenges in order to develop institutional repository in the university.

Moreover, Durrant (2004) expressed in his research that in most of the universities, there are different challenges for the implementation of institutional repositories like low funding, low staff morale due to salary, brain drain, overburdening of researchers, low of ICT and the serial crisis. ICT distribution in Africa is low and it has also slow bandwidth. On the other hand the serials crisis is everywhere in the world where subscription cost increases in many scholarly journals and other documents. The prices of these important documents subscriptions have been rising much faster than the users need. On the other hand the funds available to the libraries have declined, and as a result academic and research libraries have regularly canceled serial subscriptions.

When we are looking the African countries status in the development of institutional repository, there are different challenges such as lack of knowledge, awareness, poor state of ICT infrastructure, inadequate information literacy, poor funding, and poor intellectual property rights/copyright (Christian 2008), which is also in agreement with the finding of the present study. According to Christian (2008) academic and research institutions in many developing countries are still battling to overcome many challenging issues in an attempt to make their research outputs openly accessible by means of Internet technologies like institutional repositories. Such challenges are like lack of awareness of institutional repositories for the researchers and academicians, lack of training and inadequate funding for the researchers or self archivists. The present study also revealed that the same issues happening in Jimma University with respect to IR implementation.

Due to the above challenges, most of the university community uses journals published from abroad like, Hinary, EBSCO, Emerald, AJOL, and many resources which have been given from INASP (PERI) UK. In addition to this, people use face book to communicate and share resources easily. If any staff wants to access the local resources he/she has to communicate the concerned bodies in which the document is found in the form of hard copy.

The challenges of the development of institutional repositories in Jimma University are in line with other universities mentioned above. Still there are tremendous challenges in the university that hinder its development like lack of training, lack of skilled librarians, lack of budget and lack of awareness.

4.2.3. CONTENTS OF INSTITUTIONAL REPOSITORY

It is obvious that the present of quality data or content in the institutional repository will have so many users. If the institutional repositories do not have quality contents, no one will use it and it will be simply garbage of WebPages/databases.

The present study showed that the major content types found in Jimma University were books and audiovisual materials. Hirwade (2006) explains that there are a number of local contents available to be posted in the academic institutional repositories which contains a variety of materials produced by researchers of the institution where the study was conducted, like research papers produced by the staff members or students both graduate and undergraduate, conference papers, teaching materials like notes and modules produced by instructors, papers produced by the committee, computer software's produced locally, artworks, photographs and videos taken during the university work. The limited content types in the case of Jimma University compared to the study by Hirwade (2006) shows that little attention has given to collections and thus a lot has to be done.

McDowell (2007) reported that most of the institutional repositories as subject based repositories, so that content types are categorized in to ETD, e-prints, working papers, proceedings and presentations, e-journals and e-books, learning objects, multimedia files, datasets, pictures, institutional records, undergraduate and postgraduate works, etc. Similarly, Uzuegbu (2012) reported the types of contents in African repositories are primarily journal articles, thesis and dissertations.

Even though the contents of the Jimma University system are in line with other universities mentioned above, still there is no as such full collection of documents which will be expected to be presented in any institutional repository database. The possible reasons are, firstly there is no institutional repository and policy at all, so that collections of such documents did not given due attention. Secondly, so far there is no many documents produced by the researchers and students like

that of other countries due to shortage of funds, incentives or motivation. Thirdly there is no experience of submitting self documents to the IR this is because of absence of IR, absence of IR policy, lack of training and awareness for the scholars including students. By these obstacles the university community accesses the local resources in physical format by going to their placement, or he/she has to communicate the librarians physically, because some of the local resources are found in the library manually than digitally.

4.2.4. REPOSITORY MANAGEMENT SYSTEM

To date there is no repository management system in Jimma University, except the library system, which has taken the initiatives to run institutional repository. In the university, there is no repository management system. On the draft policy proposed by the concerned sections of the university like library, ICT and research and publication office, D-Space was chosen as appropriate software in order to manage the system. This is due to the fact that, D-Space has many supporting staff worldwide, run in different countries in the world, open source, easy to customize and has different login accounts for the system administrator/s, for the metadata librarians/catalogers and has a self archiving account for the authors in order to deposit from his/her own desk to the central database/server.

Thus, the proposed software to be used to develop IR in Jimma University is very appropriate. The major repository management systems or software's which are much known in the world and in the developed countries in order to develop institutional repositories are many. This software is divided in to two; open sources and proprietary software's available in the market for institutional repository development. Selecting among the two is depending on the organization economy status and choice. Using the open source software, D-Space by JU is a wise one as customizing is possible and it reduces the cost of institutional repository development. It is also avoids dependency on companies producing proprietary software to upgrade when they come up with other versions. OpenDOAR (2007) reported that open access institutional repository software's are used highly when compared with their share of percentage with those protected by copyright.

Jimma University did not have software used to manage the resources. The possible reasons not having either open access or proprietary software's is that, one thing no institutional repository at all

in the university, further more there is lack of awareness and training on the subject areas. On the other hand the library, ICT and the university research and publication office professionals were preparing draft policy and procedure manuals in order to start the IR. Among the proposed thing was the software, called D-Space which has been already chosen as an appropriate software to run IR in Jimma University, this is because of the reasons mentioned above.

4.2.5. FACTORS THAT HELP INSTITUTIONAL REPOSITORY TO BE MORE EFFECTIVE

According to the finding of this study, there were different factors that help in order to implement effective institutional repository in the institution. Accordingly, the most important factors for implementing institutional repositories in the institution includes availability of ICT infrastructures including Internet connectivity, appropriate policy, training, reliable electricity, technical support, awareness on the issues from the concerned bodies, and appropriate content.

Due to the shifting of libraries from old paradigms to the new one, ICT infrastructure is a very essential component in order to give service for the whole community at a time. It decreases and limited time and distance variation for the patrons. Since institutional repository has multimedia documents, good Internet connection (band width) is a very important element for the effectiveness of the institutional repository. The other important thing for the effectiveness of the institutional repository mentioned by the respondents was the policy. It is difficult to collect and organize scholarly outputs without a policy. Awareness creation in each and every department of the university community about the advantages of institutional repository is a must. Collected documents in the institution can be accessed by everybody at any time, place and also it increases the university collaboration. In addition to that, other universities also can access it; it saves time, energy and so on.

According to the result of this study, it was found that the major factors to be considered for the development of an effective institutional repository are the commitment of top management, the present of ICT infrastructure, hardware and software, training of researchers on how to self archive their publication themselves, the presence of good policy, good content, allocation of enough budget etc. This finding is the same to that of Jabbour (2012) who reported that before implementing institutional repositories different steps are required in order to do a better and quality service and

the first thing is securing approval from the management. This is because without the management decision it will be difficult to begin the process. The second step is the assembling of the project committee. This committee should be from different stakeholders like from the library, ICT, research and publication office etc. The third and other steps to implement an institutional repository are like creation of schedule and time line, conducting need assessment, developing a service definition (purpose and benefit), drafting policies and procedures, choosing and implementing software, staffing and training, depositing existing collections, marketing the product and finally running the service.

Drake (2004) also emphasized the same way as; there are different key issues in order to establish an effective institutional repository. Policies, systems architecture, and other elements will depend on institutional context and the scope and purposes of the repository. Policies drafted for the one institution may not work for another institution or organization. Therefore there is a need to consider the key issues when developing institutional repositories, such as the institutional culture, the scope of the repository, content, access levels, legal aspects, standards, sustainability and funding. Based on these, in order to build an effective institutional repositories; collaboration, caring, commitment, creativity and know-how are very vital issues.

This research is in line with the researches done by the above authors in which the availability of such infrastructures is very essential in order to create an effective institutional repository in the university. But factors that used to implement institutional repositories like availability of ICT infrastructures including Internet connectivity, appropriate policy, reliable electricity, technical support, awareness on the issues from the concerned bodies, and appropriate content are not fully utilized in Jimma University. Even though Internet connection and electricity is relatively good in the university, there is no as such good practice of policy, awareness and incentives or motivations. So the university's higher officials should give due attention for the implementation of effective IR in the campus.

4.2.6. APPROPRIATE PLACE/SETUP TO RUN INSTITUTIONAL REPOSITORY

The majority of the interviewees identified that the university library was their preferred appropriate unit for managing institutional repository. This finding was in agreement to Pelizzari (2003) who indicated that over 70% of the respondents in his study singled out the library as the structure to be

given the mandate of managing an institutional archive. Most of the interviewees have agreed that the library was the appropriate place to manage the institutional repository in each and every institution because of the following reasons. The first one was that the library has librarians in order to manage the library based on their qualification scientifically. The second reason was that without the metadata arrangements it is difficult to differentiate one resource from the other, this was the issues of metadata, and creation of metadata is mostly done by librarians. In addition to that the value of librarians in the open access movement has been recognized by, describing them as the main designers, promoters, subject specialists, ears and eyes of the library and maintainers of IRs.

Moreover, Xia and Sun (2007) studied on the nine important institutional repositories worldwide and reported that archiving of the articles is mainly done by librarians or administrative team, the self-archiving rate of authors is rather small. This shows that the role or the duty of librarians in the preservation and dissemination of institutional repository is vital in any institution. Generally, the placement of IR is in line with the ideas of Pelizzari (2003), Xia and Sun (2007) in which library is the appropriate place to develop and manage the institutional repository.

CHAPTER FIVE

5. 0. CONCLUSIONS AND RECOMMENDATIONS

5.1. CONCLUSIONS

The goal of this study was focused on to assess the status and challenges of the development of institutional repository in Jimma University. Using descriptive statistics the researcher tried to address the status, challenges, and factors that help to implement IR. According to the research analysis, there is no institutional repository including policy on IR in the university. Despite its status there are also challenges that hinder the implementation of institutional repositories like lack of training, lack of administrative support, lack of skilled librarians and lack of awareness. On the other hand some respondents suggested that the most appropriate things in order to do an effective institutional repository in the university are like faster Internet connectivity, availability of up to date hardware and software's, training of the researchers about scholarly communication and mechanism to submit from their own desk to the central repository and so on. But regardless the library started the endeavor to put up IR using D-Space software without any policy. On top of the library attempt, the University's Research and Publication Office has also started an independent activity on IR, which reflect existence of confusion on the issue regarding the organizational mandate and responsibility. Thus there is a need to understand that it is a collaborative work of all internal stakeholders to bring all required resources together, especially library, ICT, Research and Publication Office. Therefore, as the finding points out that there is a big variation or gap in the awareness of IR in the community, resources are scattered everywhere than to be organized in a centralized manner. Due to this, no one can access any local documents from his/her own desk/office via Internet or Intranet. This work will lay a foundation for the development of institutional repository in Jimma University and helps the development of sharing local and national heritage resources and it opens up several avenues for future work in scientific communication. In conclusion, IR will bring all local resources together for efficient and effective use that would ultimately increases the university prestige, collaboration and its visibility in Ethiopia, Africa and the entire globe. This research may also impact resource organization in all Ethiopian academic institutions, especially when these institutions had to share digital collections among their communities.

5.2. RECOMMENDATIONS

Based on the findings of this study , the researcher strongly recommends the following measures to be taken to implement the institutional repository system in the institution so that the university community can access the local resources produced within the university without any barriers at any time.

➤ One of the criteria for the good image of any university is the presence of institutional repository. Absence of institutional repository implies deficiency of scholarly communication in the campus or else the scholarly outputs will be shelved or scattered everywhere forever. So, establishing an institutional repository is an obligatory practice in order to access easily and create collaboration with the other universities, create prestige to the university, increase staff revenue and increase citation analysis for the authors. But due to the absence of IR, Jimma University resources lack community, national and global visibility. Since the way of information exchange has changed from traditional to modern or from print to digital and the use of resources has changed to networked environment with network computer, establishing institutional repository is crucial.

➤ Institutional Repository Policy shall be approved and implemented. So, to collect scholarly communication from the students, staff, departments or colleges; institutional policy is vital. This policy should be prepared mainly by the library in consultation with the university community. After that it has to be discussed, commented, approved and signed by the senate for execution.

➤ The growth or development of IR after establishment is highly depending on continuous addition of publications into the repository by the authors/researchers. Thus, there is a need to set up a system that would enable to submit documents online. So, it is advisable to give training for the community especially the academic staff and the students how to submit resources online from their own desk. So, organizing conferences, meetings, workshops, experience sharing in and outside of the country to train staffs and the concerned stakeholders is vital.

➤ It is advisable for the top management officials to believe that it is library's responsibility, provide necessary encouragement and sustainable support in terms of resource provision, infrastructure and training. One thing the library is a place where information is collected and disseminated to the

public. The second reason is that it is the professional librarian's duty to create metadata to each and every document to be uploaded after collected/self achieved from the researchers and students. If there is no metadata for each document it is very difficult to access documents. In addition to these the concept of OAI-PMH will be meaningless if there is no metadata standard for each and every institutional repository documents. Since the library is the most suitable place to organize institutional repository in Jimma University, the concerned bodies should give priorities to this section than other sections regarding IR.

- The university shall revise its institutional incentive policy towards knowledge creation and dissemination.
- It is advisable to run IR in the library. There are a number of reasons to have institutional repository in the library. Librarians are subject specialties, eyes and ears of the library, they are trainers, they know how to help when the user asks them information etc.
- University libraries shall follow national digitization standard during IR implementation; so as to maintain interoperability and open data harvest.
- The existing professional association shall be strengthened to support activities like IR.
- National Consortium among Ethiopian Universities shall be established, so that each university can share resources from another university. Each university by now has found to be in different statuses in infrastructure; some of them might have enough resources and the other do not have at all. So, by doing the National Consortium they can share resources equitably and also help to reduce cost, time and energy.
- Further and detail country wide research shall be conducted.

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APPENDICES

APPENDIX A: RESEARCH QUESTIONNAIRE

JIMMA UNIVERSITY

COLLEGE OF NATURAL SCIENCES

DEPARTMENT OF INFORMATION SCIENCE

Institutional repository is a set of services that a university offers to the member of its staff for the management and dissemination of digital materials created by the university staff members through digital resource management system. It is an online way/method for collecting, preserving, and disseminating digital format of the intellectual output of an institution, particularly a research institution.

Such documents are like teaching materials, student projects, Doctoral/Master's Thesis and Dissertations, CBTP, and DTTP documents, data sets resulting from research projects, committee papers, computer software's, and works of art, photographs and video recordings, conference papers, pre-prints of articles or research reports submitted for publication, the text of journal articles accepted for publication, revised text of published work with comments from academic readers, etc.

Dear respondents:

My name is Tadele Mulat, a post-graduate student at the department of Information Science in Jimma University. Currently I am doing a Master's Thesis entitled as:

“Assessing the status and challenges of the developments of institutional repository: the case of Jimma University”

The objective of this self administered questionnaire is to collect data from academic staff in order to investigate the status, challenges of institutional repository development in Jimma University. Please give appropriate answer(s) to enhance the usage of institutional repositories in Jimma University, and finally will come up with an appropriate recommendation for effective implementation of institutional repositories in the institution.

I would like to make clear that, the information gathered from the questionnaire will be kept in strict confidence, and analyzed only in summative forms. Moreover, the information that you will provide is quite useful to achieve the objective of the study.

The researcher would like to thank you in advance for spending your precious time in answering the questions. Please answer all of the questions given. First read the questions and choose the appropriate answer/s by circling from the given alternatives. If you have any question please contact me: Tell. No: 0913139712 or e-mail: tadele.66@gmail.com

SECTION I.

PERSONAL INFORMATION

1. Gender of respondent
 Male Female
2. Age of respondent
 18 – 24 years 25 - 36 years 37 - 45 years 46 and above
3. Academic rank/level of education
 BA/BSc MA/MSc MD DVM PHD other (specify) _____
4. Which categories of academic status do you belongs?
 Teacher Researcher Both
5. What is the name of your college/institute?
 Public Health and Medical Sciences Institute of Technology
 College of Natural Sciences College of Business and Economics
 College of Social Science and Law Institute of Education and
Professional Development Studies
 College of Agriculture and Veterinary Medicine
6. What is the name of your department? _____
7. How long is your working experience at Jimma University?
 1-3 years 4-6 years 7 years and above

SECTION II.

THE CURRENT STATUS, AWARENESS AND ATTITUDE CONSIDERATION OF THE INSTITUTE REGARDING INSTITUTIONAL REPOSITORY.

1. To what extent do you agree with this statement; my institution encourages instructors for scholarly communication (Scholarly communication is the process of academics, scholars and researchers of creating, sharing, publishing and preservation of knowledge of their research findings so that they are available to the wider academic community such as to the university academics and beyond)

- Strongly disagree
- Somewhat disagree
- Neither agrees nor disagrees

Somewhat agree

Strongly agree

2. To what extent do you agree with this statement; my institution encourages instructors and students in order to submit their research outputs and proceedings to the repository?

Strongly disagree

somewhat agree

Somewhat disagree

strongly agree

Neither agrees nor disagrees

3. Please indicate the status of institutional repository activities at your institution/university. (Please choose by putting ✓ mark),

Description: 1. Strongly disagree 2. Somewhat disagree 3. Neither agree nor disagree 4. Agree to Some extent 5. Strongly Agree	1	2	3	4	5
1. Institutional repository already plays a major role at my institution					
2. There is a delivery of self archiving to the repository					
3. There is a developed institutional repository policy in the university					
4. There is no a developed institutional repository policy in the university					
5. Institutional repository is found at its infant stage in the university					
6. Institutional repository is reached at the highest stage in the university					
7. There is staff training for self archiving					
8. No institutional repository at all in the university					

4. 4. Do you think that institutional repositories will support capacity development activities at your institution in the future?

Description: 1. Strongly disagree 2. Somewhat disagree 3. Neither agree nor disagree 4. Agree to Some extent 5. Strongly Agree	1	2	3	4	5
1. Sharing resources inside the institution					
2. Providing internal capacity building					
3. Improved flexibility of delivery of resources/contents					
4. Quality enhancement for the researchers					
5. Giving opportunities to share resources with other institutions and universities					
6. Widening access to resources and training materials in order to build capacity development					
7. Increase prestige and stewardship for the university					
8. Increase collaboration					

SECTION III:

LEVEL OF ADOPTION OF INSTITUTIONAL REPOSITORY AND FACTORS THAT MAKE INSTITUTIONAL REPOSITORY MORE EFFECTIVE AT THE INSTITUTE. (PLEASE CHOOSE BY PUTTING ✓MARK)

1. Does your institution use a repository management system (i.e. software for depositing local resources in order to share resources)?

- Yes No

If your answer for question number 1 is yes, what kind of repository management system uses?

- D-Space Fedora
 E-print Greenstone
 I don't know

Other, specify _____

2. What are the most frequently used content types in your local resources? [You can choose whatever you like]

- | | |
|---|--|
| <input type="radio"/> Books and book chapters | <input type="radio"/> Conference proceedings |
| <input type="radio"/> Learning objects | <input type="radio"/> Post-prints |
| <input type="radio"/> Pre prints | <input type="radio"/> Datasets and databases |
| <input type="radio"/> References/bibliographies | <input type="radio"/> Thesis and Dissertations |
| <input type="radio"/> Patents | <input type="radio"/> Reports |
| <input type="radio"/> Images, maps, diagrams | <input type="radio"/> Administrative documents |
| <input type="radio"/> Working papers | <input type="radio"/> Workshop papers/conference proceedings |
| <input type="radio"/> Software | <input type="radio"/> Audio-visual materials and multimedia |
| <input type="radio"/> CBTP documents | <input type="radio"/> DTTP documents |
| <input type="radio"/> Others | |

4. Do you have the experiences of submitting documents/resources to the university to enhance the teaching learning process i.e. scholarly communication?

- Yes No I don't know

If your answer to question 4 above is yes, how many resources you have submitted to the university?

- 1-5 6-10 11-15 16-20 >20

5. Local digital resources found within your repository are used:

- Frequently
- Occasionally
- Rarely
- Never
- I don't know
- Depends on the type of material (please comment) _____

6. According to your best estimate, in what ways the institution communities have access to the local resources?

Description: 1. None at all 2. I don't Know 3. No 4. Yes	1	2	3	4
1. From the institutional repository database				
2. From international publishers website				
3. From the university website				
4. From the university library system				
5. From the departments				
6. From the community based education office				
7. From the office of research and publication				

7. How to make institutional repository more effective in your institution?

Description: 1. Strongly disagree 2. Somewhat disagree 3. Neither agree nor disagree 4. Agree to Some extent 5. Strongly Agree	1	2	3	4	5
1. Availability of up-to-date hardware's and softwares					
2. Faster internet connectivity or improved bandwidth					
3. Improved software's					
4. Using of open source software					
5. Appropriate policies favoring institutional repository (institutional repository policy and guidelines)					
6. Provision of technical support for institutional repository					
7. Availability of reliable electricity					
8. Appropriate content in appropriate languages					
9. Awareness raising about the value of institutional repository					
10. Improved training for teachers in institutional repository for self archive at all levels					
11. System controlling like backup/maintenance					

SECTION IV:

THE CHALLENGES OF THE INSTITUTIONAL REPOSITORY ADOPTION IN THE INSTITUTION AND RESPONDENTS COMMENT OR SUGGESTIONS (CHOOSE BY PUTTING ✓/MARK)

1) What are the challenges you assume in implementing institutional repository in the institution?

Description: 1. Strongly disagree 2. Somewhat disagree 3. Neither agree nor disagree 4. Agree to Some extent 5. Strongly Agree	1	2	3	4	5
1. Scarcity of ICT resources and infrastructure					
2. Problems in Internet connectivity and bandwidth issues					
3. Lack of confidence in using computers					
4. Lack of awareness					
5. Unwillingness to change learning environment					
6. Lack of systematic approach to ICT implementation					
7. Attitude and motivation towards ICTs and institutional repositories					
8. Lack of administrative or management support and technical support					
9. Lack of training facilities on self archiving					
10. Lack of ownership					
11. Inadequate funds					
12. Problem of selecting resources and software					
13. Technological challenges					
14. Fear of plagiarism					
15. Copyright problem					
16. Legal issues from publishers and organizations					
17. Lack of skilled librarians on institutional repository					

SECTION V:

REPOSITORY EXPERIENCES IN ANY OTHER REPOSITORIES

1. Have you used any other type of institutional repository (in and outside the country)?

Yes No

If your answer to question 1 above is yes, please specify the name(s) of the repositories that you have used _____

2. If you have ever used another institutional repositories, for what purpose did you used for? [You may select more than one option below?]

- To retrieve research materials for references
- To retrieve teaching materials like modules
- To contribute or deposit material into the repository for others to use
- To look the photos and videos about the university history
- Posting my research work

3. How did you first learn about the existence of other institutional repositories?

- Through a journal/news letter announcement
- Through an advertisement on a flyer or pamphlet, or by email
- At a trade show/conference
- Through a Web search engine query
- From a colleague/ friend
- Information literacy program
- Other (Specify): _____

Section VI:

REPOSITORY FUNCTION AND USE

1. Repositories are set up for a variety of reasons. Please rate the relevance of the following statements in relation to your repository objectives [you can choose more than one]

1. Preservation of digital resources

2. Promote data sharing
3. Aid institutional information management
4. Encourage new forms of peer review
5. Promote new modes of publication
6. Enhance access to resources
7. I don't know

2. Do you have any additional views or concerns about the institutional repository? Your remarks would be really appreciated, so please feel free to expand. _____

APPENDIX B: RESEARCH INTERVIEW

Your name (optional): _____

Faculty/department/section _____

Your role in your office: _____

1. Does your institution have an institutional repository (a central storage or database of the institution's own research results)?
2. How does your organization capture, use and disseminate its teaching, learning research and service information?
3. What problems/challenges do you face regarding accessing research works undertaken by staff researchers and students?
4. What is your understanding of institutional repository? How did you learn about it?
5. Is there any plan or suggested plan regarding the institutional repository?
6. Is there institutional repository policy in the university? Does this policy or your draft policy specify anything regarding legal issues? Are all concerned parties involved in the drafting and preparation of the policy?
 - 6.1. Does your organization support the culture of self archiving? Is submission of documents mandatory?
 - 6.2. Who decides on which type of digital local resources can be deposited in the repository?
 - 6.3. What user group(s) is authorized to deposit materials in the repository?
 - 6.4. Who is going to run or in charge of the institutional repository among the different offices in the institutions?
 - 6.5. Is the repository covered by the university insurance policy against claim? Like a claim by a publishers for infringement/violations of copyright?
7. To what extent and for what purpose is an institutional repository being used in your institution right now and in the near future?
8. Have you ever used institutional repositories to access digital resources?
9. What institutional repository initiatives are there in your institution?
10. Does the university ICT support the development of institutional repository in the university?

11. What are the challenges of implementing institutional repository?
12. Which institutional section has to deal with the issue?
13. Which open access repository software is most suitable for your institution and why?

-- End --