



JIMMA UNIVERSITY
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DEPARTMENT OF INFORMATION SCIENCE

**ABCD INTEGRATED LIBRARY SYSTEM LOCALIZATION TO
AMHARIC LANGUAGE FOR ETHIOPIAN LIBRARIES AND
INFORMATION CENTERS**

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June, 2014

Jimma University

Jimma, Ethiopia

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Approval Sheet

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“ ጽድቅና ኩነኔ ቢኖርም ባይኖርም

ከከፋት ደግነት ሳይሻል አይቀርም”

(ከበደ ማካሌል)

ABSTRACT

Ethiopian academic libraries are not handling and managing the Ethiopic script information resources. The primary reason such poor performance is the absence of localized ILS software. To address this critical problem EALs are facing this study aimed to localize ABCD ILS software (it is OSS) to have Amharic language option. To perform this requirement analysis was surveyed by using mixed method research technique was adopted. Interview and questionnaire was conducted to collect the required qualitative and quantitative data respectively. For conduct the research five EALs were sampled by random & purposive sample selection method. Based on the selected sampling method AAU, JU, DDU, MU, & WU were selected as study area. Then, the obtained results were analysed, interpreted and the identified findings were summed. The results were tested by using one-way Anova and t-test tools (SPSS V.16). Based on the findings conclusions are made, the possible recommendations are forwarded as well as future work areas were identified. Finally based on the obtained assessment results the ABCD ILS localization to Amharic language project was done and successfully accomplished more than the 75% task is made ready. The localization project is quite unique in Ethiopian context and it is a grand and Nobel work in the profession too.

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ACRONYMS

ABCD	-	A utomation of li Braries and C enters of D ocumentation
AL	-	Academic Library
ALE	-	Academic Libraries of Ethiopia
ANLoc	-	The African Network for Localization
CEARL	-	Consortium for Ethiopian Academic and Research Libraries
DB	-	Database
eLM	-	electronic Library Management
FDT	-	Field Definition Table
FLOSS	-	Free/Libre and Open System Software
FST	-	Field Selection Table
GUI	-	Graphical User Interface
HEI	-	Higher Education Institute
ILS	-	Integrated Library System
LICs	-	Library and Information Centres
MARC	-	Machine Readable Catalogue
OPAC	-	Online Public Access Catalogue
PEALs	-	Public Ethiopian Academic Libraries
R&D	-	Research and Development
RDBMS	-	Relational Database Management System
SDI	-	Selective Dissemination of Information
TNAS	-	Total numbers of academic staff in the universities
TNS	-	Total numbers of students in the universities
XML	-	eXtensible Markup language

Chapter One

1. General Introductions

1.1. Introduction

In no way Ethiopian academic libraries could be out of the current technological world scenario. As McRobbie noted advances in IT brought evolutionary/ revolutionary change in our daily life in the ways we communicate, learn, and work (Breeding, 2008b; McRobbie, (nd)).

The uses and rapid growth of the emerging technologies has transformed the traditional library into automated, electronic, virtual and digital library. This revolution has moved the library state of affairs i.e. from “feeding to fitting system” (Borgman, 1997). This revolution is the need of the day to be the fittest to make research more productive & to disseminate information among national, continental, as well as international libraries to satisfy the varied information need of the LICs customers. To meet this very aim, libraries have to identify & track users’ need, source of the resources, acquire, organize, disseminate, preserve and so on with the help of modern scientific method as well as technological inputs to play their vital role for the holistic spiritual & material development of humanity (Law, 2009).

The changing information and knowledge delivery setting, the new participatory approaches/community engagement programmes, the need to convert information into knowledge, to contribute to knowledge creation and the support for technological innovation, necessitate that the library remains relevant and contribute towards varied aspects of growth and development in Africa (UNECA, 2011). The recent development is dominated by the innovative and value adding mode of available resources and services delivery, where libraries offer user-centered services, interactive, multilingual supported, localized and participatory information and knowledge services by using appropriate media, tools and services as well as physical services.

Unlike developed & developing countries, Ethiopia is the one disadvantaged from the virtues of ICT for the multifaceted benefits of its society. Language is one of the antecedents. The larger portion of the population of Ethiopia uses and employ their own unique language and scripts. This being the case most ICT hardware and software are originally in English or other Western languages.

In addition to this and other many challenges for countries like Ethiopia is the cost of softwares. Thus, users of these countries who managed to buy hardware can’t really buy the software they need. As a result, the digital divide between the poor and the rich gets wider (Zemene, 2004).

Even so, there are way outs that can help to minimize the gap for these countries - Open-Source Software (OSS) (Coar, 2006; Beal, 2013).

This alternative solution not only for countries like Ethiopia, but also in developed nations is becoming the primary tool as Bergmann (2005) described it as *“OSS is already part of the mainstream information technology. Most medium and large companies in the world are already using it in some way or another. Apart from being cheaper, OSS considered more secure and more flexible than its commercial counterparts are. Corporate customers love the independence from a particular software vendor and the*

possibility to customize the software to the company's needs".

The main objective of this project is to localize ABCD ILS to Amharic language that helps the Ethiopian Library and Information Centers (LICs) to maintain and manage their resources by using local languages.

1.2. Statement of the Problem

Information and communications technologies (ICTs) are transforming societies and fueling the growth of the global economy. Yet despite the broad potential of ICTs, their benefits have not been spread evenly. Indeed, using ICTs effectively to foster social inclusion and economic growth is among the key challenges that many underdeveloped countries facing today. Ethiopia is the one among these countries strongly striving to minimize the poverty level and to be transferred to the medium income countries in the year 2020. (World Bank, 2011)

Information/knowledge society/economy shifted emphasis from manipulating material goods to manipulating information/knowledge (Loh & Britz, 2010). In such a society, extensive networks of and interactions among information sources and research actors ensures a continuous cycle of knowledge generation, acquisition, exchange and use. Innovation and change are spurred in this cycle and become a permanent feature of the society to drive economic growth and competitiveness" (UNECA 2010). By understanding what information; knowledge, creativity and innovations stands institutes and/or professionals needs to play their active role in the overall development visions and goals of its society.

LICs are valuable resources of the society. The awareness and application of knowledge have always been at the centre of librarian and other information professionals' work (Davenport & Prusak, 2000). In the present information/knowledge society, LICs can play a key role by providing access to information and knowledge that is necessary to stimulate innovation and development in Africa. Whereas there is dozen of factors impeding libraries miles away from what is expected from them.

Language is one of the barrier for the innovation, creativity, growth and development of information and communication technology (ICT) in Ethiopia in line with the current trend of world economy. This is because most software systems are developed in English, French, Spanish, etc languages but a small percentage of the population understands these languages. However, by localizing a software product to the country's locales, i.e. languages, cultural norms and standards as well as needs and expectations, for users can interact with the software in the settings that feel natural to them (Zemene, 2004). It eases the way user's document searching, access and retrieval in that it raises community satisfaction. However, in Ethiopia, these languages are widely used by very small elite members of the population (Dawit, 2003). Moreover, the official working languages of the federal as well as regional governments are local languages, which use local scripts different from the Latin alphabets. Therefore, localization of computer software is required in Ethiopia so that the country benefits the most out of ICT potential.

Therefore, in Ethiopian context today having localized ILS in LICs is not luxury or not merely for it is the "day's fashion" but it is becoming a matter of survival in this competitive and dynamic world. To be fit in such competitive world localized OSS ILS will have vital role for Ethiopian LICs due to the reasons of:

- Having the ILS with their mother tongue language options leads LICs staffs to better understanding what they are doing this in turn leads to better management and access of resources
- ICT can be better utilized in LICs for their intended goals
- Becomes better alternative for unaffordable Cost of commercial ILS with full local language capacity
- It helps LICs to acquire, organize, manage, make available etc of local language information resources to their actual as well as potential users effectively
- Free software is a superior solution to the practical problem at hand (Beal, 2013)
- It has the users' essential freedoms: the freedom to run it, to study and change it, and to redistribute copies with or without changes (Tedd & Large, 2005),
- as a means to make ICTs more accessible and improve the IT skills at a relatively lower cost (COMESA, 2009)

There are three options to acquire a software system to manage one's resources and activities. These are a) developing from scratch; b) acquiring proprietary software or c) adopting open source software.

Developing software from scratch is a very time consuming and expensive task. Time and efforts are wasted in re-developing an already existing program. The time, which is wasted, in re-developing the software can be used for improvement of the software if a developer bases his/her work on the existing software. This is possible using open source software too.

Proprietary softwares are products, which have licenses that restrict the user's form copying, distributing, modifying and improving the software. Proprietary softwares are acquired in binary form without source code. Using proprietary software has many problems some of them are:

- Proprietary software may lead to monopolies through lock in and unfair business practices
- None of the users can adapt or fix errors of the program.
- Developers cannot learn from the program, or base their new work on the software.

Open source software appeared in the mid-1980s with the creation of the GNU (or GNU's Not Unix) project, aimed at developing a freely available Unix-like operating system. The GNU website provides the following definition of 'free software', which the philosophy of open source software: "Free software is a matter of liberty, not price. To understand the concept, you should think of 'free' as in 'free speech' not as in 'free beer'. Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software". (<http://www.gnu.org>)

Therefore using open source software has a number of advantages. Some of them are:

- They have no or much lower price
- They can be localized to one's language and culture
- They avoid wasting of effort required for re-developing software that already exists.

Despite, the enormous benefits of using open source software they are not widely used in Ethiopia.

Accordingly, this research will find answers for the following basic questions:

- ✓ Is it possible to localize ABCD OSS ILS to Amharic language?
- ✓ Is there any OSS ILS localized to Amharic language?
- ✓ Does localization adds value to LICs to effectively manage and organize local language information resources and able to be accessed by users?
- ✓ To what extent does ALE were played their role and contributed to the localization of OSS ILS?

1.3. Objective

The general objective of this project is to develop the localized version of ABCD ILS software to Amharic language for Ethiopian LICs.

Specifically the project has the objective to:

- ✓ practically show the possibility of localizing OSS ILS to Amharic language
- ✓ investigate whether there is any localized OSS ILS in Amharic language in Ethiopia or not
- ✓ assess the extent of management and organization of local language information resources and its access and retrieval by users in Ethiopian LICs as well as demonstrate the contribution (value) of having localized OSS ILS in the current Ethiopian context
- ✓ identify the role played, value added and contribution of EALs in addressing the local needs of LICs in getting customized OSS ILS
- ✓ investigate what challenges EALs are facing handling Ethiopic language documents;

1.4. Scope

This project has a scope of localizing/customizing ABCD ILS to Amharic language and assessing the status of EALs in localization effort of OSS ILS and handling Amharic language IRs that the major issues were in getting localization and Ethiopian contexts.

1.5. Limitation

Time, financial support and supporting professional books in local language and distribution channel are the major limiting factor not to put the output on the hands of its actual and potential users.

1.6. Significance of the project

To meet the current diversified user's information need EALs are highly expected to provide available information accurately, timely, adequately, and in a user-friendly manner. Now a day's, LICs are using various technological tools to facilitate and made accessible IRs to users to meet their need.

ILS is one of the technological tools used by LICs that deals with many library processes. These systems automate the routine operations of a library, provide library users information about the library's collection, and serve as a channel for delivering key library services. The term integrated library system, or ILS, describes the software that automates the many different library work categories. This common application tied together with data residing in common databases (as much as possible) that are related

to many different tasks. An ILS automates many library tasks that would otherwise be repetitive, labor intensive, and inefficient.

The current technological innovations lead to library automation, library cooperation, library networking, resource sharing, use of Internet in the libraries, electronic access to scholarly journals, access to other library catalogues through union catalogues etc.

Using OSS ILS in Ethiopian LICs has many advantages such as for localization. So that having localized ILS in Ethiopian LICs will have various significances both in handling as well as service provision activities.

Therefore localizing ABCD OSS ILS to Amharic (script) language that is spoken by more than 21 (CSA, 2007) millions of Ethiopians significantly contributes in creating DBs and to be used for searching the OPAC by users by directly typing Amharic letters. Including this facility in ILS will ease the service provision activities of Ethiopian academic, school, public libraries and other information centers to manage and organize their collections in local languages.

This project will have a great significance to meet the current users access and retrieval local IRs. Based on these assumptions, this study will have the following significance to Ethiopian LICs:

- ✓ It enables to create DBs in Amharic language
- ✓ Enable LICs to organize IRs by using Amharic language
- ✓ It helps to search information by using Amharic scripts form OPAC as well as other links
- ✓ Helps to minimize language limitation to access to local language IRs
- ✓ Helps to increase the efficiency and decrease the cost of handling local IRs.
- ✓ Enables to embrace the efficiencies and opportunities for saving the time & efforts of staffs & users
- ✓ Helps to share experience & opens a door for other Ethiopic languages to localize it
- ✓ Helps to standardization of Amharic language used in the field of librarianship
- ✓ It will have positive contribution for further work and research in the area
- ✓ As a result the major beneficiaries of the project's output will be
 - Academic, Public, School & other libraries, as well as Archive & Documentation Centers, Museums, etc

1.7. Organization of the paper

The coming sections of this localization project report presents the details of the projects tracks in a more compacted way. The researcher is very much sympathetic that you would pay a moment, go through it, and get useful insight about localization. In this introductory chapter, the general overview of the project presented. The major constituents of the chapter are the statement of the problem and the methodology employed to have this project in to reality.

The second constituent of this report deals with the various scholarly outputs in the areas of OSS in general and OSS ILS in particular with special emphasis to localization for Ethiopian context. The narration of this project's practicalities and implementation as well as its output is forwarded in the third section. The recommendations made based on the assessment results found and actual localization experiences gained that lead him to derive on some conclusions and further work areas in the future presented in the final section, i.e. under chapter four. Then major annexes, glossary and references are the exits of this report.

Chapter Two

2. Review of Literature

2.1. Open Source Software

Open source software (OSS) movement has caught the attention of millions of users and thousands of companies in the world. The concept of OSS that promote free use and redistribution of software products and their source code attracts more and more users and developers around the world.

In this section of the document the brief history, definition, advantages and drawbacks, and applications of OSS in Ethiopia are summarized.

2.1. ICT for socio-economic growth and development

The convergence and pervasiveness of ICT have strong role for quality of education as well as sustainable and scalable development of the society is proven to its benefit by great deal of researches (Yusuf, 2005, Al-Ansari, 2006).

Language is another barrier for the growth and development of Information and Communication Technology (ICT) in the country. This is because most software systems are developed in English language but a small percentage of the population understands that language very well. However, by localizing a software product to the country's locales, i.e. languages, cultural norms and standards as well as needs and expectations, the users can interact with the software in the settings that feel natural to them (Zemene, 2004). It eases document searching to get information and raises community satisfaction. Most computer softwares are developed for use by western languages such as English, French and Spanish. However, in Ethiopia, these languages are widely used by very small elite members of the population. Moreover, the official working languages of the federal as well as regional governments are local languages, which use local scripts different from the Latin alphabets. Therefore, localization of computer software is very crucial in the Ethiopia so that the country benefit the most out of Information and Communication Technology (ICT) potential.

It is obvious that librarians themselves are of course convinced of library benefits. In the Alexandria Manifesto, adopted in 2005 in preparation for the World Summit on the Information Society, the International Federation of Library Associations and Institutions (IFLA) sees library benefits in the following fields (IFLA, 2005): democracy, intellectual freedom, information literacy, information equality, reduction of poverty, and cultural diversity.

But how can we prove what we believe? If we take language as barrier it could be resolved by providing alternative language option to search and retrieve according to their likings. Then we can win the hearts of our larger audiences as well as they can benefit the most out of our information resources to meet their very intention. This mode of delivering the service in turn enhances the cumulative efforts of the country's strategic development goal through the use of the potential of ICT.

Localizing mainly brought the capability of "Speaking the Language the Users Do". Having this option is unavoidable to libraries by providing multilingual and multi-script support in interface languages. Users

can interact with the system in any of the languages supported by their system and can change their interface language preference at any time. These robust multi-language capabilities ensure easy and efficient management and discovery of materials in all languages.

With no doubt, much of the literature in this area speculates on the integrated library software and their effective use in libraries. By the same logic one of the factors for effective use of any ILS is having language option.

Currently the newer version of CDS/ISIS family ILS, i.e. ABCD becomes available by BERIME and energized by UNESCO and VLIR/UOS. ABCD is also my interest to add value in it to make available to the needy systems in Ethiopia especially those helpless public and school libraries to exploit its potential by using the localized version in to Amharic language.

Open source software is appropriate technology for Ethiopia. This is because they can be acquired almost free of charge and allow users to redistribute, modify and resell the software. However, they are not widely used in our country, among many there are two major reasons are lack of awareness about open source software and shortage of open source software experts.

2.2. Integrated Library Systems

Library automation has developed in the industrialised world over the last 25-35 years and progress in developing countries cannot be separated from trends worldwide. Open Source has been hailed as a solution to the economic problems but there are still organizational problems to be surmounted. There is also the possibility to develop consortium to share and/or joint acquisition. Internet bandwidth is and was improved in developing countries and open source may prove useful but economics may not improve and power supply problems are likely to remain.

By the end of the decade, true web-based catalogues using the power of hypertext were available. Libraries began to include in their catalogues digital resources internally held and externally held (predominantly external). MARC formats thenceforward incorporated a field 856 used to link to an external resource by means of a URL (the internet address). Users of the catalogue could click on a link and go straight to a digital resource that could be anywhere in the world. Today subscriptions are possible to electronic journals and books but they are often not available in developing countries like Ethiopia or if they were available they aren't shared yet to enable the materials to be accessible.

Digital library software became available and UNESCO encouraged its implementation in developing countries by making Greenstone available free-of-charge, a digital library software package developed at Waikatu in New Zealand. Links could be made from a library catalogue to material in such a digital library. Material available on the internet, which might not be easily accessible in institutions in developing countries with low bandwidth, could be downloaded or sent on CD-ROM to the digital libraries and hosted locally. The Soros Foundation set up eIFL (Electronic Information for Libraries) with the aim of creating national purchasing consortia (Law, 2004). They have since become involved in supporting other activities such as promoting library automation systems, mindful of the fact that without a catalogue of print and digital materials the library user cannot easily find out what is accessible. eIFL supported the European Union funded project to implement NewGenLib, a system under development in India, in Aleppo and Al Baath university libraries in Syria alongside providing them with licenses at a reasonable price to access electronic resources (Johnson, 2009). The International Council of

Scientific Unions (ICSU) set up INASP, the International Network for the Availability of Scientific Publications, in 1992. Aware of the need to establish good catalogues in order to access scientific literature, they have also participated in some library automation projects (Sheehan, 2008). The Andrew W. Mellon Foundation, well known for philanthropic projects in developing countries, is also supporting the development of a new library automation system at Duke University, the Open Library Environment (OLE) (Breeding, 2008b). Although there is no participation from developing countries at this stage it is likely that any open source package developed would be supported with necessary tailoring in line with the needs of developing countries wherever they might be different. Still there is no hint in ALE.

All AL in developing countries have always lacked a wealth of possibilities for library automation. Hardware used to be expensive, and relatively speaking is still expensive for developing countries. Other problems raised by writers on the subject range from the power supply to the problems of training staff. Another issue not often raised is the need for collaboration both within and between institutions to get library automation project off the ground and then maintain it. This is a much more complex activity than a pre-automation situation where there is a library card catalogue maintained by cataloguers and used manually by staff and library patrons.

2.3. Country scenarios

It is of course a fallacy to make assumptions that all developing countries will have approached and will approach library automation in the same way. The wealth of the country the distribution of that wealth and the culture of the residents will make a difference.

It is interestingly noted that designed and developed activity of library software packages began during the mid 1990s in Ethiopia, with the promotion of UNESCO's CDS/ISIS (ancestor of ABCD) by the ECA and UNESCO's documentation center found in MoE compound. By the promotion and facilitating professionals, skill development many of the colleges of teachers training were the ones to get consecutive opportunities but unfortunately none of them were realised it in their system. Making use of this experience, British Council and AAU library begun to use eLM (proprietary system) and Koha (FLOSS) respectively. Then Gondar, Mekele, Jimma, Adama, and Haromaya universities were followed the footsteps of the former ones. However, selections of suitable packages are now problematic due to lack of good and up-to-date comparative studies. So each of these systems are following their own choice even without bringing the issue to the table in order to have the nationally identified such systems as a shortlist be it is via CEARL or MoE or any other concerned body.

2.4. Options for developing countries

Developing countries depend on developments in the industrialised world but they do not necessarily benefit from the same options as the industrialised world can use. Moreover, some of the options may be much more attractive in developing countries or at least may seem to be so.

2.4.1. Developing a library system

One solution for organisations in developing countries which might have problems with paying organisations in foreign currency but which have good local technical staff is to develop their own software system. One interesting example of this is the University of Colombo in Sri Lanka. They had automated in 1991 by using CDS/ISIS and then later upgraded to WinISIS. In 2002 (Dilrukshi, 1999,

Seneviratne & Amaraweera, 2002) also reported in Information Development that in Sri Lanka there was discussion on developing a library automation system to bridge the gap between CDS/ISIS and what commercial software was able to provide, such as Alice for Windows (UK commercial) and LibSys (Indian).

Despite the availability of numerous off-the-shelf systems, developing one's own system is not to be recommended as Eytayo (1989) noted that most libraries in Nigeria that attempted automation have chosen to commission expensive and time-consuming in-house projects, most of which have suffered severe set-backs and in most cases are not adequate for library work and often lack the capability for sharing information and interconnection with other systems (Coar, 2006).

2.4.2. Acquiring commercial software

This is the second option for systems. But in most cases its cost couldn't be affordable by developing countries due to shortage of budget.

In the computer industry, proprietary is considered the opposite of open. A proprietary design or technique is one that is owned by a company. It also implies that the company has not divulged specifications that would allow other companies to duplicate the product. (Beal, 2013):

- High Cost
 - Acquisition
 - Updates/new versions
 - Maintenance
 - Localization
 - training
- Restriction of freedom of manipulation, modification, distribution, etc
- Limited professional support

2.4.3. Using FLOSS

According Wheeler "Open Source Software / Free Software (aka OSS/FS, FLOSS, or FOSS), has risen to great prominence. Briefly, FLOSS programs are programs whose licenses give users the freedom to run the program for any purpose, to study and modify the program, and to redistribute copies of either the original or modified program (without having to pay royalties to previous developers)". (Wheeler, 2014)

The goal of this paper is to convince you to consider using FLOSS when you're looking for software, using quantitative measures. Some literatures provide a few anecdotes on why we should adopt FLOSS ILS.

FLOSS is also an example of the incredible value that can result when users have the freedom to tinker (the freedom to understand, discuss, repair, and modify the technological devices they own). Innovations are often created by combining pre-existing components in novel ways, which generally requires that users be able to modify those components.

Open Source and shareware but the Open Source Movement has been supported from the outset by large foundations such as the Soros Foundation, which founded the Open Society Initiative. In English "Open Source" means freely available source software, which developers can use to advance the software in question. In all these cases, software developed is free though usually developers ask for a

voluntary contribution. They cannot be sold on. Open Source does not necessarily mean free-of-charge but there is an implication that the availability of the source code will enable organisations to acquire and develop it for free.

ABCD is open source other than its predecessor; many of the features of open source and shareware were responsible for the popularity of CDS/ISIS. For example, Open Source has the possibility for users with access to programming skills to make their own developments. Therefore, ABCD has a feature of being able to write program exits, which enable further development. The ABCD's source code was fully made available from the BIREME site in Brazil where further developments have taken place.

Moreover, Open Source software taken as the solution to some of the problems facing the library software industry. Here the major question needs to be answered is that "Is Open Source all it promises to be?" Over the last few years there has been a spate of mergers in the library systems industry led by the equity market resulting in a trend to discontinue the development if not the support of library systems when a company has acquired more than one such package. This severely inconveniences the using institutions, which have to migrate from one system to another. Would open source be a protection against this?

Diop (2008) feels there are clearly economic advantages to adopting an open source software solution but agrees that mastering open source software can take a lot of time and effort because library and information professionals are often isolated. User communities need to be built up to provide mutual help. However it remains to be seen what was the impact of open source on library automation, particularly integrated library systems in the industrialised world. A pessimistic outcome might be that the institutions using such software feel no difference from those supported by the commercial open source support companies than by the current range of commercial companies who promote systems they themselves own.

It is true that creation, use and diffusion of new and emerging knowledge are a key driver in overall development and growth of a society. In line with this FLOSS ILS provides the following benefits:

- the users' essential freedoms: the freedom to run it, to study and change it, and to redistribute copies with or without changes.
- not just for the individual users' sake, but for society as a whole because they promote social solidarity—that is, sharing and cooperation.
- Tens of millions of people around the world now use free software; under the GNU General Public License (GNU GPL) - a license designed specifically to protect freedom for all users of a program.
- Free software is a superior solution to the practical problem at hand. The concept relies on practically testing to find and eliminate bugs in the program code, a process that commercially developed and packaged programs do not employ (Beal, 2013).
- It has the power that extends the community
- protect and promote the freedom to use, study, copy, modify, and redistribute computer software

As a working definition for the purpose of this study; FLOSS is software that can be classified as both free software and open source software (Barr, 1998). That is, according to Free Software Foundation, anyone have *license* to use, copy, study, and change the software in any way, and the source code is openly shared so that people are encouraged to voluntarily improve the design of the software. This is in contrast to proprietary software, where the software is under restrictive copyright and the source code hidden from the users, so that the rights' holders (the software publishers) can sell binary executables.

Not all open source software has been distributed under the same licensing agreement. Some may use a free software license, a *copyleft*, or GPL compatible. The GNU GPL license is a free software license and a *copyleft* license, while a "GNU Lesser General Public License" is a free software license, but not a strong *copyleft* license. There are many different types of licenses for free software, some GNU GPL compatible, some not (Beal, 2013).

Benefits of OSS

- Avoids lock in: OSS prevents users from becoming dependent on specific program and a specific vendor.
- Low selling Price: open source has a much lower price than proprietary software
- Independence: OSS users have more independence from software companies. Even if a software company goes bankrupt, the community still has the source code.
- Customization: users may modify the source code to meet their specific needs. Beyond customization, anyone can make significant changes to open source code without asking or paying the company, which develops the software.
- Security: OSS is more secure than proprietary software.
- Transparent: any programmer can see and inspect the source code of OSS.
- Freedom to control the system: OSS gives users the freedom to control their own computers but with proprietary software the computer does what the software owner wants it to do.

Drawbacks of OSS

OSS can be a long-term viable solution with significant benefits, but there are issues and risks associated with OSS

- Weak GUI: usually, open source software have a relatively weak graphical user interface (GUI) than proprietary software.
- Fragmentation: code base may "fork" (be split) into multiple projects, which could lead to incompatible versions.
- Lack of compatibility: it's difficult to integrate open source & proprietary software
- Dead-end software: open source projects may fail to gain – or retain large numbers of coding volunteers, which could lead to a dead project.

There are many licenses, which qualify the open source/ free software definition and certified by the Open Source Initiative (OSI). Among them, the following are the most commonly use licenses.

- GNU General Public License (GPL): The GPL, created by the Free Software Foundation (FSF), is the most important open source license as many open source software are distributed under its terms.
- The GPL permits unlimited free use, modification, and redistribution of software and its source code, but imposes three key restrictions on every licensee:
 - If the licensee redistributes any code licensed under the GPL, it must guarantee

- availability of the code for the entire work for
- If the licensee redistributes GPL code, it may not charge a licensing fee or royalty, but may charge only for distribution costs.
 - If the licensee includes any GPL code in another program, the entire program becomes subject to the terms of the GPL. This is called “viral” clause.
 - unlimited replication by anyone requesting it
 - GNU Lesser General Public License (LGPL): This license is more or less the same as the GPL except for one important feature: it permits linking with non-free modules. It was originally designed for standard libraries to speed up the adoption of free software since such licensed libraries provide an opportunity for proprietary software to run in a free software system. For this reason, it is, sometimes also called 'GNU Library General Public License'.
 - MIT License: The MIT license does not really restrict the software or its handling. The only condition is to include the copyright and permission notice in all copies.
 - Q Public License (QPL): QPL prohibits development of proprietary software based on the software licensed under the QPL. Anyone can make modifications and redistribute them in the form of patches along with original source code, as modifications must be distinct from the original. Generated binaries are allowed to have the same name as the original, which is important for dynamic libraries and similar components.
 - Additionally, it forces the author of modification to grant the original producer the right to distribute the changes also under any other license, e.g. a proprietary one.
 - BSD License: the University of California at Berkeley developed the license. It is very non-restrictive, it is similar to the GPL, but does not require derivative works to be subject to the same terms as the initial BSD License. Under the BSD Licenses, distribution of source code was permitted but not mandated, for derivative works.

2.5. Localization

Amharic is one of the *Semitic (family of Afro-Asiatic languages spoken in northern Africa and South Asia)* languages of Ethiopia (Bauer, 2007; *Collins English Dictionary*, 2003; *Webster's College Dictionary*, 2010; Oxford University, 2005). In Ethiopia Amharic is a mother tongue for 21,634,396 numbers of population (i.e. 29% of the total population) (CSA, 2010) and it is used as a *lingua franca (Language used for communication between two or more groups that have different native languages)* throughout Ethiopia.

It is the second-most spoken Semitic language in the world, after Arabic, and the official working language of the Federal Democratic Republic of Ethiopia. Thus, it has the official status and has been in use nationwide for years.

Therefore, I will use the listings of translatable terms and translate it to Amharic and converted it to Unicode system to be understood by all modern softwares.

Whatever ICT contributes to development and growth or to what extent the LICs are using it in their system, the cost became less and less it “will not reach and benefit the majority of the population of a country unless it can be easily used by that population. In particular, it is not required for an African who speaks Amharic or Swahili to learn first English before starting to use a computer or Internet. If so, ICTs will be reserved for the elites and will not bring fundamental change in the economy of the African

countries” (Dawit 2003, p.4). As many scholars studied on localization had found it to be ideal solution for language related problems.

What is localization? According to ANLoc it’s a means that empowers the user by supporting the adaptation of ICT to the language and culture where it is used. Anthony Pym, notable scholar in localization, defined it broadly as “a general mode of thought informing cross-cultural text adaptation in the fields of software, product documentation, web technology, and some international news services” (Pym, 2004).

Therefore, localization is the process of creating or adapting or customizing a product to a specific locale, i.e., to the language, cultural context, conventions, etc.

"Cultural localization" (Keniston, 1997) is the process whereby software written in one culture is adapted to the needs and outlooks of another. "Culturally localized" software is indistinguishable from software written by a member of that culture. Cultural localization presupposes linguistic localization, a topic well studied, but may go far beyond it. For software developed in one culture can carry embedded cultural assumptions that may seem alien or even inimical to users in other cultures. At present, cultural localization almost always entails the localization of packaged software originally written in one language to another within the local context.

The study of localization is important for at least three reasons: a) Intellectual, b) Economical, and c) Political.

Software localization, often treated entirely as a technical problem of technology transfer, opens up a series of broader intellectual, economic, and political questions, each of which takes a special form in developing nations where educational and infrastructural resources may be limited.

To sum, localisation refers to adapting a software system (including websites) to a particular locale, so that it presents the image of a locally developed system aimed at that locale. As communication technologies are bringing geographically distant countries closer together, businesses are aiming at global market penetration of their products. This requires products that need to localize to the myriad communities of users across the globe.

At least 29% (CSA, 2007) of Ethiopian population can communicate or understand Amharic; the impact of localizing software’s major systems to this language cannot be overstated. The situation is no different in most developing and underdeveloped nations. This also means that if the benefits of Information and Communication Technologies have to reach below the top-layers of our society, we must adapt these technologies to fit into the ‘world-view’ of people in those sections of the society. The communities differ not only in terms of using different languages but also in a variety of cultural factors, such as the use of colours, meaning of gestures, symbols, analogies, etc. The major task, however, continues to be speaking the user’s language. This involves primarily interfaces, presenting menus, instructions, error messages and the entire product documentation including help pages in the languages relevant to the local communities.

As Dawit noted “...in most African countries, the European languages such as English and French are spoken by a small minority of the population” (2003). So the benefit of ICT didn’t and will not be at the reach of the majority of the population of African countries unless it can be easily used by the population

(Dawit, 2003). Especially those (like all Ethiopians) that are expected to learn European languages first and then use the computer.

To meet the local demand, the researcher was convinced to localize ABCD FLOSS ILS to Amharic language to provide children any users' groups of the society by addressing language problem seen as one of the barriers to exploit the capability and benefits of ICT to bridge the gap of digital divide.

For this research purpose, it is good to discuss some important points about ABCD briefly as follow.

- ABCD proves that UNESCO's policy to focus on developing countries does not reflect a technological weakness, but rather an ambition to provide tools for opening up the information society to everybody (de Smet, 2010).
- According to de Smet (2010) ABCD has a power not only, *“By being fully independent from the bibliographic structures used — but also already offering some widely used standards such as MARC (21 and UNI) or CEPAL (a widely used bibliographic format in Latin America)”* rather it goes further and *“facilitates any structure to be created by the software itself and subsequently being managed (cataloguing, OPAC and circulation)”*. The very logic behind this capacity of ABCD is, as de Smet described, it offers a full ISIS interface in a web environment by using PHP including all typical ISIS definitions, such as 'FDT', 'FST' and Formatting Language (instructions to exactly define how data from the fields in the records are extracted and presented to several software functions such as display, sorting, indexing, exporting, etc.).
- The power of ABCD, however, illustrates an ever further-reaching ambition: not only to automate libraries but also to provide a tool for automating Documentation Centres, archives or museums by keeping their own dedicated information structures. The reach of ABCD is still not limited to in automating these systems, as de Smet further elaborated it, its potential extends to *“...organisations can use ABCD to integrate such related but still different functions into one web-based system”* and it not only *“can offer multi-media capability (important, e.g., for museums), but also full electronic document handling, paving the way for digital libraries”* (2010). Thus, with this underlining capability and potential of ABCD, and also due to the user's limitation to afford to develop such different support mechanisms, it becomes preferably the ideal system of choice. In addition to this, it comes with not only the technological standards to allow for usage by the very specific demands of bibliographic and documentary information systems standards, such as MARC, Z39.50, MODS/METS etc, ABCD comes with its own OAI-HP server allowing harvesting of records by other non-ISIS based web services. (de Smet, 2010)
- To sum, this a multifaceted noble member of ISIS family 'suite' proves that a well established and time-honoured practice and legacy of ISIS developments is lasting without interruption and fully brought to have as an attribute or visible mark in modern database-driven web applications. Here I would like to underline the capacity and potential of ABCD suite deserves to be localized, as my concluding remark to the argument why I have chosen it by noting Dhamdhere's expression *“This software provides flexibility and versatility”* and *“The name itself already expresses the ambition of the software suite to provide not only automation functions for traditional libraries but also other information providers such as documentation centers”* encompassing *“Any bibliographic structure, including all types of digital resources, can be*

managed by this software and created by itself along with non-bibliographic structures.” (Dhamdhare 2011, p. 1-2). Finally I would like to borrow de Smet’s as closing words about ABCD. “Combining the old but proven technological concepts of the historical ISIS with both web technology and integrated library and documentation centers’ automation functions, ABCD brings a hopefully welcome solution and continuation for the many existing ISIS users all over the world. Perhaps even it will attract renewed interest from young, modern librarians who are open to alternatives for the commercial ILS providers who are by (economical) necessity making their globalised users’ market more dependent rather than more self-supporting and self-empowered.” (de Smet, 2010)

Therefore, localization will have, at least, the following benefits

- It provides alternative access to users’ language preference
- ILS will "speak" the customers' language; will have the right look and feel, and fulfilling their expectations.
- it reduces costs, increase security, and help the government take advantage of the latest innovations.
- gives users access to previously inaccessible local products and services, and also increases their confidence in using computers and IT technology in general.
- Benefits to standardization or even preservation of a language. Language is indisputably linked to the issues of national identity and therefore bears great importance, especially for nations that are still ‘young’ or those under the threat of extinction.
- brings the possibility for users who do not speak English to also use the most important software and web services, in a language they understand. (Mehadžić, 2013)
- Enables effectively manage and control the local institution’s resources
- it will open a door for other Ethiopic languages to follow the foot step.
- Creates good opportunity for Public & school libraries to utilize the potential of ICT.

Chapter Three

3. Methodology

3.1. Introduction

The research design is crucial to the success of any empirical research study; therefore, careful attention was paid in selecting a design that would address the stated research objectives best. In order to initiate the research process a literature review was conducted to discuss the major integrated library service that exists.

In conducting the literature review, it became evident that there was a lack of well acceptable integrated information associated with library system and web based automation system as a knowledge sharing technique for Ethiopic languages. Due to this fact, the researcher decided the study area on the localization and EALs status assessment issues and developing a localized ABCD ILS in Amharic language.

3.2. Study site and population

3.2.1. Study site

The study site of this research was Public Ethiopian Academic Libraries (PEALs) based on the generation of time in which they were established. They include universities of Addis Ababa (AAU), Jimma (JU), Diredawa (DDU), Wolkite (WU), & Metu (MU).

3.2.2. Study population

The total population of the five selected sample public universities staffs are 220 (AAU), 200 (JU), 173 (DDU), 75 (MU), & 150 (WU) totally 818 population. Based on a data obtained the sample size of the study is calculated as 48.

3.2.3. The Research Design

To meet the specific objectives of the study, there will be two steps. The first will be investigation of the existing status of selected public ALE by using a combination of quantitative and qualitative research methodologies along with a comprehensive literature review and web analysis will be employed. Structured questionnaire will be prepared and administered to chief librarians and users of the libraries. The purpose of questionnaire targeted to librarians will be to obtain data regarding the demographic information, available services and resources, state-of-the-art digital technology infrastructure and status of library automation in ALE, some public libraries, and school libraries found in the above mentioned selected ALE belonging towns. This questionnaire will be distributed to chief librarians with a covering letter indicating the significance of the study. The purpose of the questionnaire targeted to users will be to assess the preference and impact of technology based information services and resources, and to know to what extent they are satisfied with these technologies based services and resources.

The method of collecting information through interviews will be carried out in a structured way. For the present study, both telephone and face-to-face interviews will be conducted with chief librarians. The purpose of the interviews will be to complement the quantitative information obtained by the questionnaire with more detailed qualitative information.

The universe of this study was the public university libraries of Jimma, Mettu, Wolkite, Diredawa and Addis Ababa Universities. These universities were selected based on the generation of time they were established. A total of 48 questionnaires were distributed to the selected public university libraries and questionnaires will be tabulated within each framework of the major categories. The information from the questionnaire survey will be updated through interviews with librarians and observational visits to the libraries.

In parallel with the survey process the second activity of the study i.e. the ABCD ILS will be translated to Amharic and one session will be set for professionals review. Then after the inclusion of comments and suggestions the final version of the translation will be presented through the report of the study supported by screenshots.

3.2.4. Samples and Sampling Techniques

The major purpose of this study is to assess and develop application for Integrated Web Based Information Resources and Services Sharing in academic libraries of Ethiopia: the case of selected seven public universities. Multistage sampling is used to select these samples. In order to select the sample universities, it sounds wise to categorize them in to specific characteristics. Accordingly, the universities are categorized based on the matrix of their years of establishments and the numbers of students enrolled and number of academic staffs. Hence, one exceptionally the oldest i.e. AAU and two from each category (generation) are included in the sample by using simple random sampling. From each of the sample universities, sample colleges/Institutes, departments/branch libraries and number of respondents will be selected proportionally by simple random sampling. The random sampling techniques will be used on the basis to provide an equal opportunity for each of the participants at all stages of the sampling process and to avoid bias in the selection of participants so as to preserve the generalizability of the findings of the study up on the research area under consideration. The dean of sample colleges/institutes and the heads of the sample departments will also be included in the study by availability sampling technique. Since the colleges and departments will be selected randomly, the deans and the department heads will also believed to represent their respective populations.

All the AVPs and research and publication officers of all the sample universities will also be included in the sample through purposive sampling. The decision as to the inclusion of these participants in the study is made in lights with their relationship with the deans and department heads. Moreover, the use of purposive sampling of the two groups of participants can also be justified for their relatively smaller numbers.

3.2.5. Sample size determination

According to the information obtained from each libraries of the selected five government universities have staffs 220, 200, 173, 75, & 150 totally 818 populations. Based on this data the sample size of the study is calculated as follow.

Sample size:

$$n = \frac{n_0}{1 + \frac{n_0}{N}} \quad \text{Where } n_0 = \frac{Z_{\alpha/2}^2 pq}{d^2}$$

Where:

n = sample size d = margin of error

p = proportion of population α = level of significance

$Q = 1 - P$ Where: $d = 0.05$

$p = 0.5$ $\alpha = 0.05$

N = total number of the population of the selected universities

Considering the population correction factor into account the sample size will be:

Based on these results the total number of sample size for the project will be: 48. Moreover, as shown in the following table the proportion of sample size for each university from each category is calculated so that data will be collected accordingly.

Table 1: Sample universities and sample size from each university

S.N ^o	Universities	TNS	Proportion (sts.)	Total (potential candidates)
1.	Addis Ababa University	340	41.6	19.95
2.	Jimma University	240	29.3	14.08
3.	Diredawa University	173	21.1	10.15
4.	Mettu University	75	9.2	4.40
5.	Wolkite University	150	18.34	8.80
	Total Population	818	119.6	57.38
	Sample Size	48	100	48

3.2.6. Data collection Instruments

Generally as data gathering instruments questionnaire & Interview were employed, along with consulting various primary and secondary literatures.

The structured questionnaire was developed with a focus on whether ILS is used or not, why the ILS was selected, whether it was customized, what problems were encountered, and library demographics (including staff profile). The questionnaire was distributed to library staffs. Semi-structured interview was designed to be conducted with library head and selected technical section/department heads to support quantitative data found from questionnaire. The interview was recorded by using digital &/or analogue voice recorder and it was transcribed by using paper and pen and the result was analysed along with the data obtained via questionnaire. One technical review was conducted with AAU & JU selected librarians about the general perception of ILS with special emphasis on localization. To successful accomplish technical review the necessary literatures was consulted in order to follow well organized and systematic procedures. The key ideas raised during technical review were noted by using at least two moderators and voice recorder necessary.

The questionnaire was employed to collect data from librarian whereas the semi-structured interview was used to collect data from the heads of main, branch libraries and ICT as well technical departments of the sampled universities.

To review the existing status of libraries included under the survey and localization activities the following specific data collection method was applied.

The requirement of the system was identified based on primary and secondary data. Primary data was collected by technical review, observing and analyzing the existing ILS and services (if any) and interviewing different AL officials. Secondary data was assessed by reviewing various scientific literatures written by different scholars. In addition, several open source ILS software was analysed.

Because of the requirements of the system and the benefits of using OSS over proprietary software or developing from scratch, for the implementation of the system, ABCD ILS OSS is selected for translation.

In Ethiopia, little is observed to use open source software. To learn and prepare a paper about open source software different documents was reviewed and technical review was organized on open source software and ILS among selected professionals. The TECHNICAL REVIEW is intended to get attitudes of library & information professionals as well as potential users of ILS software.

3.2.6.1. Questionnaire

Two sets of self-administered questionnaires were developed for the respondents. The questionnaires will comprise such items that are related to issues as general background of the respondents, the use behavior of library and its facilities, the preference and satisfaction level of the services. The questionnaires were designed by integrating different tools which were previously developed by other library and information scholars and through the consultation of literature review in the area of library and information profession. Accordingly, the design of a questionnaire will consist of both open ended and closed ended items. Likert scale was adopted to get the perceptions of the participants.

3.2.6.2. Interview

Cohen, Manion, & Morrison, remarked that “the interview is a flexible tool for data collection, enabling multi-sensory channels to be used: verbal, non-verbal, spoken and heard (2007, p. 349)”. It provides an opportunity to get a detailed data from the relatively smaller numbers of participants. Hence, in this study standardized open ended interview was used. The interview items were designed based on a rigorous search of the literature review. Similar wording and sequence of questions was determined ahead of time. That is, all interviewees were asked the same items in the same arrangement. This will help to compare the responses of the interviewees (Creswell, 2009). The transcription of the tape was made to make the interview data ready for analysis.

3.2.7. Analysis and Interpretation of the Data

Analysis of data means studying the tabulated material in order to determine inherent facts or meanings. In this study mixed approach to data analysis was used. Since the study involves a concurrent embedded strategy of mixed research, approach which nest the qualitative approach to the quantitative one. Hence, initially the quantitative data was analyzed and then followed by the qualitative analysis aiming at supporting the quantitative analysis.

3.2.8. Quantitative data analysis

Both descriptive and inferential statistics was used to analyze the quantitative data. Regarding the descriptive analysis, such statistical tools as frequency tables and percentages was used. The Mean and standard deviations was calculated to measure of central tendency as well as the dispersion of the responses of the respondents respectively. The standard error of the means of each of the groups was also calculated. ANOVA test was carried out to determine whether the means of the two random samples are too different to attribute to sampling error.

3.2.9. System design and development

Based on the obtained information and the gap analysis ILS software ABCD ILS software localization to Amharic language translation was designed and developed as well as the actual translation (localization) process was started in parallel with data collection and analysis process.

Chapter Four

4. Project Works

4.1. Requirement Analysis Document

Data presentation and analysis

In this section, some of the status assessment results found from sampled ALs are presented and discussed. The information presented in three ways. These methods were one, through interviews conducted with these sampled university head librarians and with the department heads (system administrators) who are in charge of ILS issues, and through questionnaire distributed to randomly selected major department heads, technical staffs, and branch libraries (if any). Among these sampled universities, Diredawa and Mettu Universities are not using any kind of ILS, so that only the results obtained from head librarians only are consulted for both interview and questionnaire. Even if Wolkite University Library System is using Koha ILS the researcher could not get any staff other than the head librarian that could satisfactorily respond at least the major questions thus all of questionnaires filled by other staffs became invalid.

Jimma and Addis Ababa University Libraries consulted in detail for all of the three data collection method: interview, questionnaire, and practically testing the localized ABCD ILS.

To sum, formally the interview conducted with five head librarians, two ILS system administrators, two technical services department heads. Second, questionnaire distributed for 45 respondents in 5 universities and only 37 (82%) responses found valid and used for analysis. Therefore, the responses obtained from 5 staffs were found invalid and 3 unreturned (totally 8 questionnaires i.e. 18%) are not used for analysis. The third tool that is used was practically testing the customized ABCD ILS with 4 members of JULS staffs and one information science department staff.

The obtained results, more or less, shows the existing situation of the libraries in terms answering my basic project and study questions of the project: i.e.;

- ✓ Does localization adds value to LICs and creates an better environment for them to manage their resources and to provide effective and efficient services to meet their very aim constituency in their macro system?
- ✓ Is there the need and is it possible to localize ILS to Amharic language?

To get possible answers as briefly as possible, the following selected questions from both the interview and questionnaire were identified to further strengthen this project work. They are summarized into the following main concepts as:

- Background Information:
 - use of ILS, its type, its name and when it was adopted;

- the trend of adopting of OSS ILS, and the level support in Ethiopian libraries;
- The level of dissatisfaction or a gap by using OSS ILS & their major reasons (especially in relation to local language) faced in their system;
- The whether the OSS ILSs currently used supports Ethiopic languages for DB creation or handling, indexing, and searching as well as support for localization or not;
- efforts made or going on by individuals or the library (s) or any other system/professional (be it's at country or consortium) level to address the localization and related problems faced by Ethiopian LICs;
- to get some understanding on the level of their agreement on the effort of localizing ABCD ILS to Amharic; and
- lastly (not the least) what would be their expectations and advantages to be gained by localizing ABCD ILS to Amharic language

The first step in software development process is collecting and identifying the needs of the organization to which the software is developed. In this project the need assessment was done through interview and review of related documents.

The existing manual method of local language document management and exchange system used by the target users of the study has a number of problems. Some of the problems are the following:

- Lack of professional human resources –
- Weak local document handling – currently local language information resources are not went under automation processes.
- Lacks of localization – Most computer software are developed to use by most widely used languages like English and French. However, in Ethiopia the official language of the Federal as well as regional governments is neither English nor other western languages. Therefore, without using local languages it may not be possible to use ITC to facilitate the economic development of the country.
- Slow method of information resources delivery – unlike foreign language information resources currently a all ALs even who are using ILS sampled don't have automated DB handling mechanism for local IRs so that they are treating these resource in manual way
- Difficulty to search information – the way records are stored and the lack of proper reference methods make finding of a particular information resource or record uses traditional card catalogue. This created a time taking activity of manual system still remains there.
- Difficulty in stock verification
- Difficulty in items status verification
- Loan handling
- Reservation
- Not found in OPAC

Generally, the existing method of local language Item management and exchange is cost ineffective,

and time consuming.

Summary of Test results for responses

The following table result shows the output of the respondents that make the researcher's argument for customizing ABCD ILS to Amharic language.

Table 2: Descriptive results obtained

S. No	Selected Items for analysis for the purpose of this project	Samples	N	Mean	Std.aev	Std. error	95% confidence interval for mean	
							Upper	Lower
1.	Whether the library is/was using Integrated Library System (ILS) or Automation software	AAU	20	1.00	.000	.000	1.00	1.00
		JU	14	1.00	.000	.000	1.00	1.00
		DDU	1	3.00	.	.	.	.
		MU	1	3.00	.	.	.	.
		WU	1	1.00	.	.	.	.
		Total	37	1.11	.458	.075	.96	1.26
		2.	The trend of adopting open source integrated library system in Ethiopian libraries	AAU	20	1.40	.995	.222	.93	1.87
JU	14			1.64	1.151	.308	.98	2.31
DDU	1			1.00	.	.	.	.
MU	1			1.00	.	.	.	.
WU	1			1.00	.	.	.	.
Total	37			1.46	1.016	.167	1.12	1.80
3.	Support for adoption of FOSS ILS in Ethiopian libraries			AAU	20	1.25	.444	.099	1.04	1.46
		JU	14	1.43	.514	.137	1.13	1.73
		DDU	1	1.00	.	.	.	.
		MU	1	1.00	.	.	.	.
		WU	1	1.00	.	.	.	.
		Total	37	1.30	.463	.076	1.14	1.45
		4.	Support for localization of FOSS ILS for libraries	AAU	20	1.00	.000	.000	1.00	1.00
JU	14			1.57	.514	.137	1.27	1.87
DDU	1			1.00	.	.	.	.
MU	1			1.00	.	.	.	.
WU	1			1.00	.	.	.	.
Total	37			1.30	.463	.076	1.14	1.45

S. No	Selected Items for analysis for the purpose of this project	Samples	N	Mean	Std.aev	Std. error	95% confidence interval for mean	
							Upper	Lower
		Total	37	1.22	.417	.069	1.08	1.36
5.	Faced dissatisfaction or gap in the ILS using currently	AAU	19	1.53	.697	.160	1.19	1.86
		JU	14	1.14	.535	.143	.83	1.45
		DDU	1	.00	.	.	.	.
		MU	1	.00	.	.	.	.
		WU	1	2.00	.	.	.	.
		Total	36	1.31	.710	.118	1.07	1.55
		6.	The ILS your library is using support creating and/or handling databases in Ethiopic languages or scripts (e.g. Amharic)	AAU	20	1.00	.000	.000	1.00	1.00
JU	14			1.29	.469	.125	1.02	1.56
DDU	1			.00	.	.	.	.
MU	1			.00	.	.	.	.
WU	1			1.00	.	.	.	.
Total	37			1.05	.405	.067	.92	1.19
7.	The ILS your library is using support searching in Ethiopic languages or scripts (e.g. Amharic)	AAU	20	1.00	.000	.000	1.00	1.00
		JU	14	1.29	.469	.125	1.02	1.56
		DDU	1	.00	.	.	.	.
		MU	1	.00	.	.	.	.
		WU	1	1.00	.	.	.	.
		Total	37	1.05	.405	.067	.92	1.19
8.	Any system/professional efforts that has been made or done to resolve the problem (Localization)	AAU	20	1.00	.000	.000	1.00	1.00
		JU	14	1.00	.000	.000	1.00	1.00
		DDU	1	1.00	.	.	.	.
		MU	1	1.00	.	.	.	.
		WU	1	1.00	.	.	.	.
		Total	37	1.00	.000	.000	1.00	1.00
9.	Do you know any FOSS ILS in Ethiopic Language (s) or script	AAU	18	1.00	.000	.000	1.00	1.00
		JU	14	1.00	.000	.000	1.00	1.00
		DDU	1	1.00	.	.	.	.
		MU	1	1.00	.	.	.	.
		WU	1	1.00	.	.	.	.
		Total	35	1.00	.000	.000	1.00	1.00

S. No	Selected Items for analysis for the purpose of this project	Samples	N	Mean	Std.aev	Std. error	95% confidence interval for mean	
							Upper	Lower
							10.	Level of agreement if someone could localize any of the FOSS ILS to Amharic language
		JU	13	7.00	.000	.000	7.00	7.00
		DDU	1	6.00	.	.	.	.
		MU	1	7.00	.	.	.	.
		WU	1	7.00	.	.	.	.
		Total	35	6.97	.169	.029	6.91	7.03

Table 3: Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
1.	The trend of adopting open source integrated library system in Ethiopian libraries	1.275 ^b	1	32	.267
2.	Support for adoption of FOSS ILS in Ethiopian libraries	3.447 ^c	1	32	.073
3.	Support for localization of FOSS ILS for libraries	903.529 ^d	1	32	.000
4.	Faced dissatisfaction or gap in the ILS using currently	3.546 ^e	1	31	.069
5.	The ILS your library is using support creating and/or handling databases in Ethiopic languages or scripts (e.g. Amharic)	83.660 ^f	1	32	.000
6.	The ILS your library is using support searching in Ethiopic languages or scripts (e.g. Amharic)	83.660 ^g	1	32	.000
7.	Any system/professional efforts that has been made or done to resolve the problem (Localization)	0.000	1	.	.
8.	Do you know any FOSS ILS in Ethiopic Language (s) or script	.	1	.	.
9.	Level of agreement if someone could localize any of the FOSS ILS to Amharic language	.	1	.	.

Table 4: ANOVA

			Sum of Squares	df	Mean Square	F	Sig.
The trend of adopting open source integrated library system in Ethiopian libraries	Between Groups	(Combined)	1.175	4	.294	.261	.901
		Linear Term					
		Unweighted	.395	1	.395	.351	.558
		Weighted	.086	1	.086	.076	.784
	Deviation	1.089	3	.363	.323	.809	
Within Groups			36.014	32	1.125		
Total			37.189	36			
Support for adoption of FOSS ILS in Ethiopian libraries	Between Groups	(Combined)	.551	4	.138	.614	.655
		Linear Term					
		Unweighted	.164	1	.164	.729	.400
		Weighted	.024	1	.024	.109	.743
	Deviation	.527	3	.176	.783	.512	
Within Groups			7.179	32	.224		

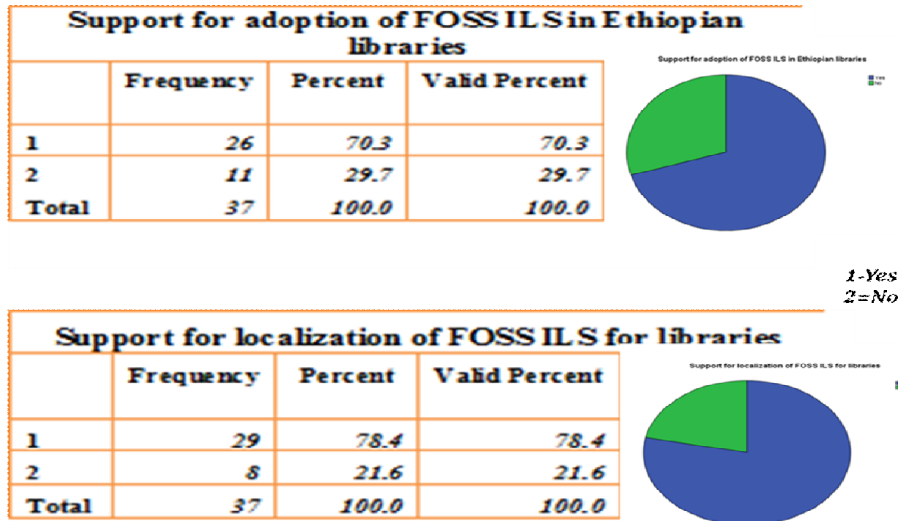
				Sum of Squares	df	Mean Square	F	Sig.
Total				7.730	36			
Support for localization of FOSS ILS for libraries	Between Groups	Linear Term	(Combined)	2.842	4	.710	6.631	.001
			Unweighted	.062	1	.062	.578	.453
			Weighted	.319	1	.319	2.980	.094
			Deviation	2.522	3	.841	7.848	.000
	Within Groups			3.429	32	.107		
Total				6.270	36			
Faced dissatisfaction or gap in the ILS using currently	Between Groups	Linear Term	(Combined)	5.188	4	1.297	3.229	.025
			Unweighted	.007	1	.007	.018	.894
			Weighted	1.284	1	1.284	3.196	.084
			Deviation	3.904	3	1.301	3.240	.035
	Within Groups			12.451	31	.402		
Total				17.639	35			
The ILS your library is using support creating and/or handling databases in Ethiopic languages or scripts (e.g. Amharic)	Between Groups	Linear Term	(Combined)	3.035	4	.759	8.497	.000
			Unweighted	.314	1	.314	3.512	.070
			Weighted	.175	1	.175	1.964	.171
			Deviation	2.859	3	.953	10.675	.000
	Within Groups			2.857	32	.089		
Total				5.892	36			
The ILS your library is using support searching in Ethiopic languages or scripts (e.g. Amharic)	Between Groups	Linear Term	(Combined)	3.035	4	.759	8.497	.000
			Unweighted	.314	1	.314	3.512	.070
			Weighted	.175	1	.175	1.964	.171
			Deviation	2.859	3	.953	10.675	.000
	Within Groups			2.857	32	.089		
Total				5.892	36			
Any system/professional efforts that has been made or done to resolve the problem (Localization)	Between Groups	Linear Term	(Combined)	.000	4	.000	.	.
			Unweighted	.000	1	.000	.	.
			Weighted	.000	1	.000	.	.
			Deviation	.000	3	.000	.	.
	Within Groups			.000	32	.000		
Total				.000	36			
Do you know any FOSS ILS in Ethiopic Language (s) or script	Between Groups	Linear Term	(Combined)	.000	4	.000	.	.
			Unweighted	.000	1	.000	.	.
			Weighted	.000	1	.000	.	.
			Deviation	.000	3	.000	.	.
	Within Groups			.000	30	.000		
Total				.000	34			
Level of agreement if someone could localize any of the FOSS ILS to Amharic language	Between Groups	Linear Term	(Combined)	.971	4	.243	.	.
			Unweighted	.000	1	.000	.	.
			Weighted	.067	1	.067	.	.
			Deviation	.905	3	.302	.	.
	Within Groups			.000	30	.000		
Total				.971	34			

The result of this table shows:

- Less trend of using ILS
- Agreement for support of ELICs to use ILS;
- Support for localization;

- There is dissatisfaction by the ILS they are using in the areas of
 - support creating and/or handling databases in Ethiopic languages or scripts
 - support searching in Ethiopic languages or scripts
- there was any efforts that has been made or done to resolve the problem (Localization)
- their agreement if someone could localize any of the FOSS ILS to Amharic language

Therefore, the result leads the researcher to customize ABCD ILS. In addition to this, the other findings from the response also support the projects rationale as clearly shown in the following picture and table.



Here the researcher believed that the above info is satisfactorily shows the need for localization and would like to proceed to the next section.

Interview & Open ended Questions summary

This section presents the summaries of interviews conducted in addition to open-ended questions. The basic questions in this section summed into three as shown below.

What is the best thing about adopting & localizing FOSS?

- Helps to support paraprofessional staffs to easily familiarize themselves with system they are working with;
- The software will be used easily;
- It addresses the limitation of language widely observed as barrier;
- Highly downsize training costs;
- Enables to handle local (Ethiopic) language/script information resources;
- Highly motivates other similar professionals to further work on the area;
- Contributes to something to the knowledge of the world;
- Will be an ice breaking effort in the field for Ethiopia

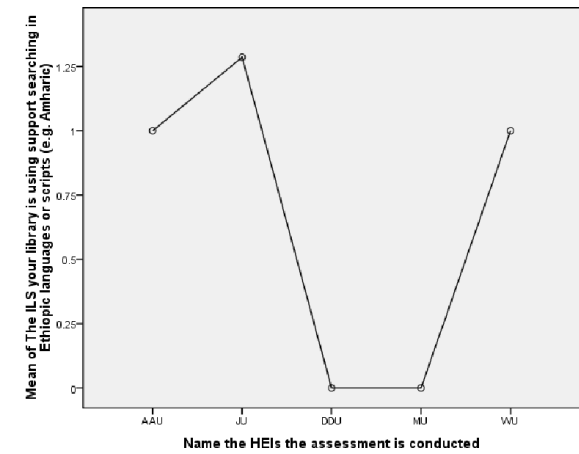
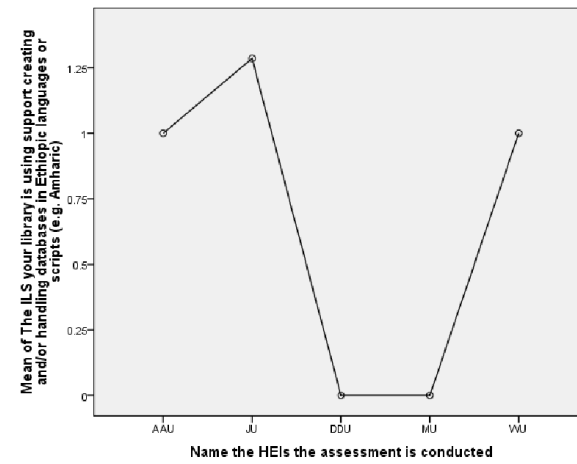
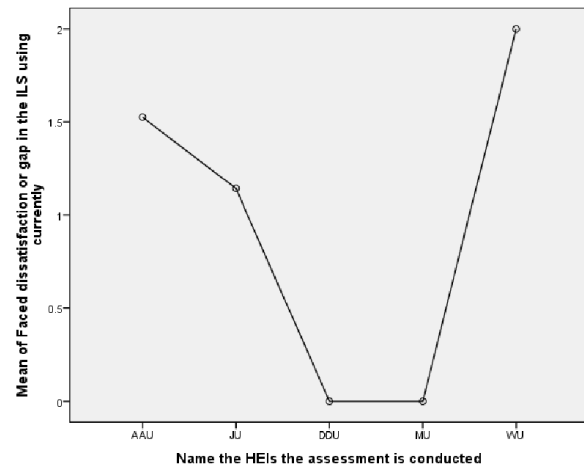
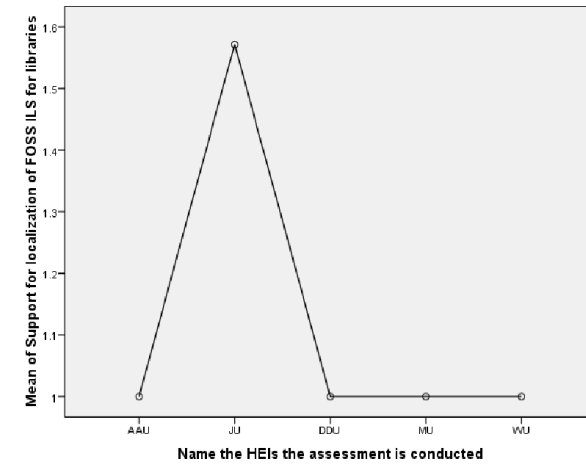
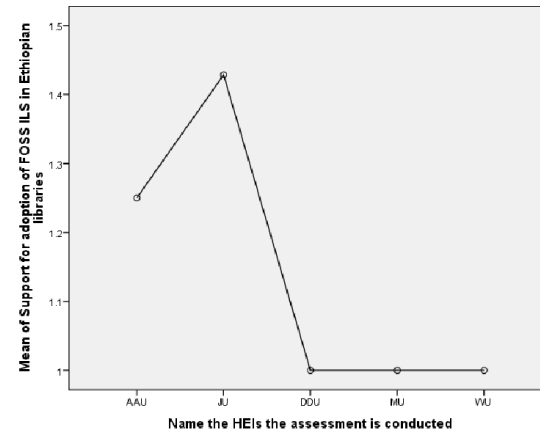
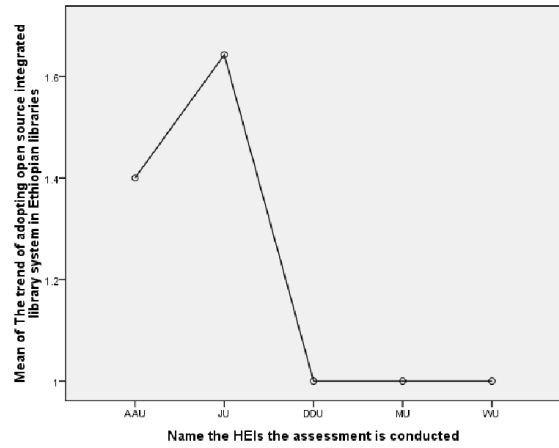
What is the fear about adopting & localizing FOSS?

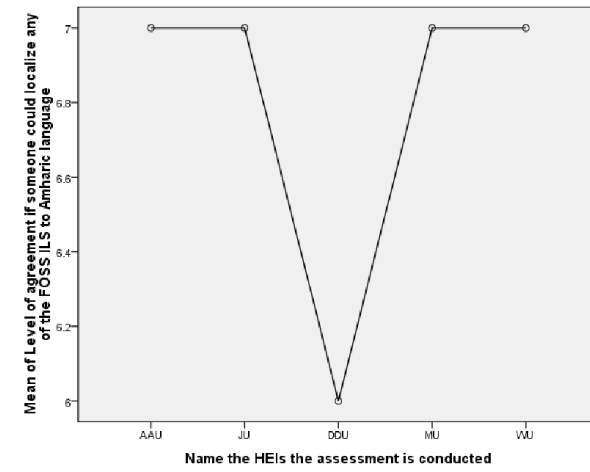
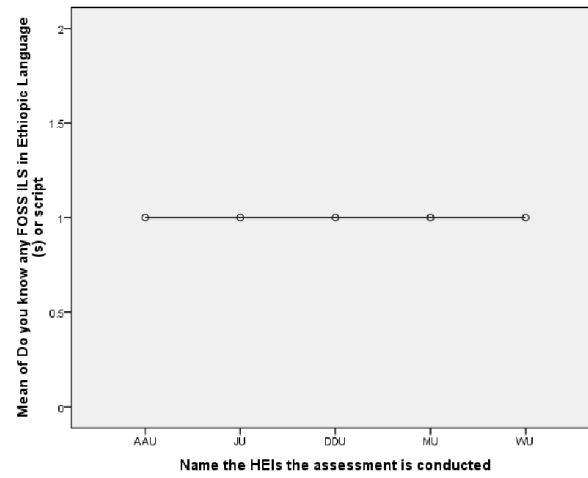
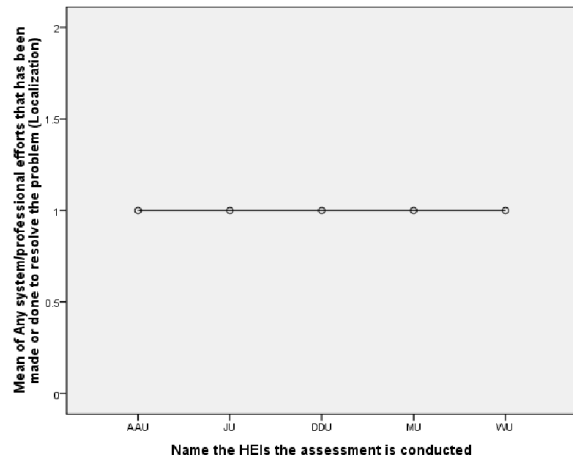
- The possibility to be handled by one person;
- There might be some problems with regard to database related issue;
- ABCD has some problems of vulnerability for security in relation with hacking;
- Sustainability (maintenance) for it is an individual's effort;
- The question of realizing it - who will make real?

Suggestions or opinion to adopting & localizing of ABCD ILS software to Ethiopic language

- ABCD has less professional/community support in Ethiopia;
- Currently ABCD is a less promoted suite in Ethiopia compared its predecessors';
- Enhances high utilization Ethiopian documents;
- Brings the attention shift of Ethiopian professionals in the field;
- It will be a best solution in filling the gap of professional's shortage in the country;
- Newly established academic, public and school libraries will be great beneficiaries

Table 5: Means Plots





The test results of the New ABCD ILS (Amharic embedded) version

This is the third option performed after pilot translation process. The new system designed to solve the problems of the existing local language DB handling; cataloging & classification, check-in/check-out (loan), OPAC search and the like automated process became possible. The system implemented by customizing and localizing ABCD ILS satisfies the following functional requirements:

- Document management activities: The system enables authorized users to view, remove, copy, move, browse, search, retrieve, send and receive IRs electronically using Amharic language and scripts.
- stock control: The system supports items control, which allows users to add new items
- OPAC: The system enables users to upload local language items in 50 the transaction for circulation, status verification etc
- Check out/check in: The system provides check in and checkout facility to a user
- Facilitate searching by using Amharic scripts - The system provides search engine support, this includes:
 - Public information: The system provides common and up-to-date information to the general public using websites.
 - Managing workflow: statistical Report - The new version enables the users to generate, edit and control workflow and reports of an item.
 - Reservation Facility: The system provides reserving for the item facility, which invokes custom action periodically or after a specific time.
 - Auditing: The system maintains history of items (auditing). Items history includes who performed an action, its date and time and the nature of the action itself.
 - Browsing Documents: The system enables to browse all available items, or browse items by Software Application

Peer-review was used to verify the completeness of the requirement analysis document. AAUL and JULS staffs as well as Professor Egbert deSmet were involved during the review.

Findings of Requirement Analysis

- there is very less contribution as well as effort to value adding and contribution of LIS professionals in the development activities in the profession
- the trend of using ILS is less there for professionals believe there should be more utilization of ILS
- for, the systems are not handling DB, Indexing, Searching of items, etc therefore localization is a solution
- since localization is seen to be possible & realized it contributes for betterment of ELICs in their day-to-day activity and service provision mode.

Furthermore, the findings are also observed

- Lack of professional human resources
- Weak local document handling
- Difficulty to search information
- Weak mode of information resources delivery (transaction)
- Difficulty in stock verification

4.2. Translations

For my translation I selected ABCD ILS based on the facts as shown that was obtained from requirement analysis result

Table 6: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Support for adoption of FOSS ILS in Ethiopian libraries	.423	1	17	.524
Support for localization of FOSS ILS for libraries	29.526	1	17	.000
Managing Electronic Resources	1.383	1	17	.256
Language option	10.810	1	17	.004
Supports storing and retrieval of records in local /other Ethiopian scripts	10.848	1	17	.004
Supports indexing and searching of records in local /other Ethiopian scripts	10.848	1	17	.004
Allows creating interface in Multilanguage	28.091	1	17	.000
Able to display text in more than one script	16.008	1	17	.001
Has Ethiopic language option	.050	1	17	.825
Allows localization to any of Ethiopic language	28.091	1	17	.000

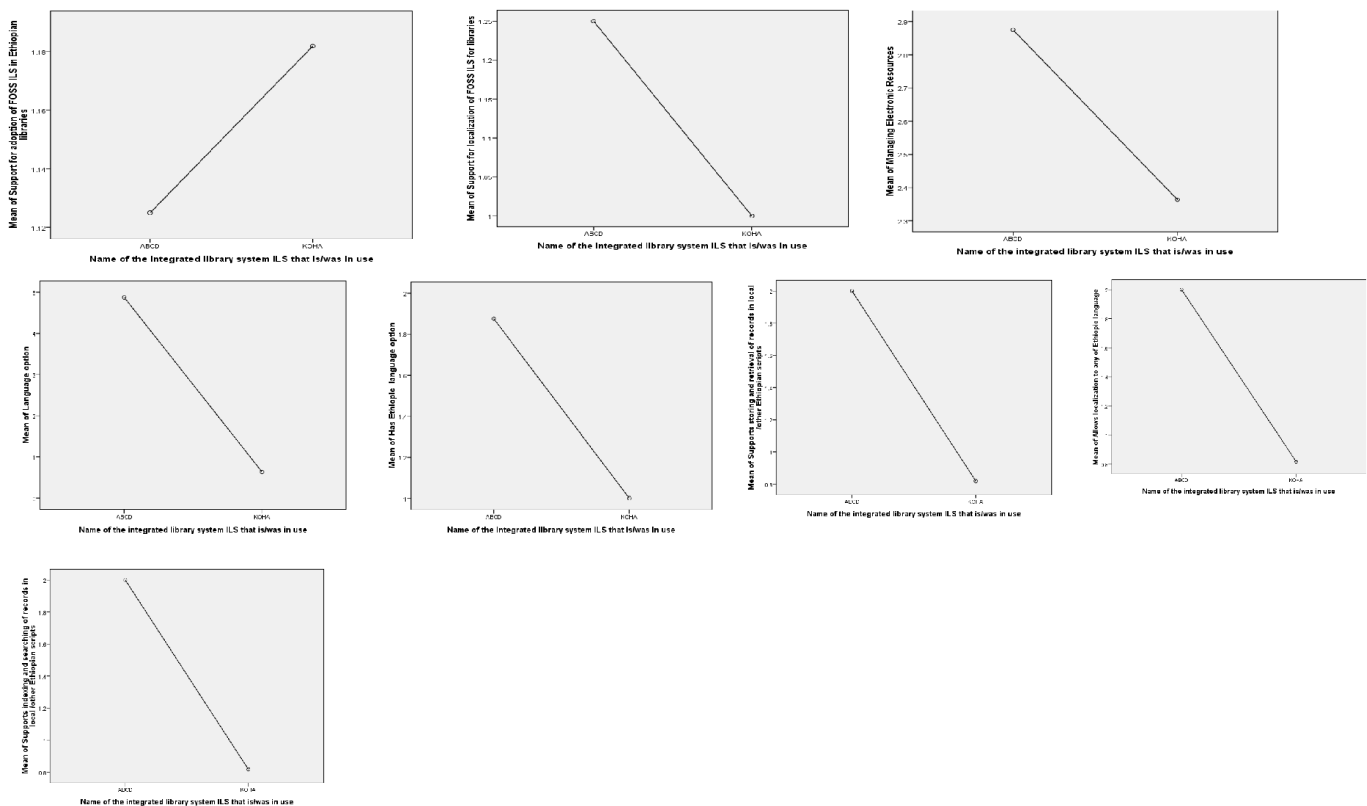
Table 7: Anova test results

			Sum of Squares	df	Mean Square	F	Sig.	
Support for adoption of FOSS ILS in Ethiopian libraries	Between Groups	(Combined)	.015	1	.015	.101	.754	
		Linear Term	Unweighted	.015	1	.015	.101	.754
			Weighted	.015	1	.015	.101	.754
	Within Groups		2.511	17	.148			
	Total		2.526	18				
Support for localization of FOSS ILS for libraries	Between Groups	(Combined)	.289	1	.289	3.281	.088	
		Linear Term	Unweighted	.289	1	.289	3.281	.088
			Weighted	.289	1	.289	3.281	.088
	Within Groups		1.500	17	.088			

				Sum of Squares	df	Mean Square	F	Sig.
Total				1.789	18			
Managing Electronic Resources	Between Groups	(Combined)		1.211	1	1.211	.453	.510
		Linear	Unweighted	1.211	1	1.211	.453	.510
			Term	Weighted	1.211	1	1.211	.453	.510
	Within Groups		45.420	17	2.672			
	Total		46.632	18				
Language option	Between Groups	(Combined)		83.211	1	83.211	39.937	.000
		Linear	Unweighted	83.211	1	83.211	39.937	.000
			Term	Weighted	83.211	1	83.211	39.937	.000
	Within Groups		35.420	17	2.084			
	Total		118.632	18				
Supports storing and retrieval of records in local /other Ethiopian scripts	Between Groups	(Combined)		6.469	1	6.469	30.242	.000
		Linear	Unweighted	6.469	1	6.469	30.242	.000
			Term	Weighted	6.469	1	6.469	30.242	.000
	Within Groups		3.636	17	.214			
	Total		10.105	18				
Supports indexing and searching of records in local /other Ethiopian scripts	Between Groups	(Combined)		6.469	1	6.469	30.242	.000
		Linear	Unweighted	6.469	1	6.469	30.242	.000
			Term	Weighted	6.469	1	6.469	30.242	.000
	Within Groups		3.636	17	.214			
	Total		10.105	18				
Allows creating interface in Multilanguage	Between Groups	(Combined)		6.469	1	6.469	14.401	.001
		Linear	Unweighted	6.469	1	6.469	14.401	.001
			Term	Weighted	6.469	1	6.469	14.401	.001
	Within Groups		7.636	17	.449			
	Total		14.105	18				
Able to display text in more than one script	Between Groups	(Combined)		6.469	1	6.469	19.511	.000
		Linear	Unweighted	6.469	1	6.469	19.511	.000
			Term	Weighted	6.469	1	6.469	19.511	.000
	Within Groups		5.636	17	.332			
	Total		12.105	18				

			Sum of Squares	df	Mean Square	F	Sig.
Has Ethiopic language option	Between Groups	(Combined)	3.546	1	3.546	20.968	.000
		Linear	3.546	1	3.546	20.968	.000
		Term	3.546	1	3.546	20.968	.000
	Within Groups		2.875	17	.169		
	Total		6.421	18			
Allows localization to any of Ethiopic language	Between Groups	(Combined)	6.469	1	6.469	14.401	.001
		Linear	6.469	1	6.469	14.401	.001
		Term	6.469	1	6.469	14.401	.001
	Within Groups		7.636	17	.449		
	Total		14.105	18			

Means Plots



Basic Approaches for localization/translation are either L10n (localization) or L18n (internationalization). Both of these approaches mostly uses TM &/or MT tools.

The translation & localization can be performed by using *Translation Memory* (TM) in one hand. A translation memory, or TM, is a database that stores "segments", which can be sentences, paragraphs or sentence-like units (headings, titles or elements in a list) that have previously been translated, in

order to aid human translators. The translation memory stores the source text and its corresponding translation in language pairs called “translation units”. Individual words are handled by terminology bases and are not within the domain of TM. Software programs that use translation memories are sometimes known as translation memory managers (TMM). Translation memories are typically used in conjunction with a dedicated computer assisted translation (CAT) tool, word processing program, terminology management systems, multilingual dictionary, or even raw machine translation output. Research indicates that many companies producing multilingual documentation are using translation memory systems. In a survey of language professionals in 2006, 82.5% out of 874 replies confirmed the use of a TM (Lagoudaki, 2006).

Machine translation (not to be confused with computer-aided translation, machine-aided human translation (MAHT) or interactive translation) is a sub-field of computational linguistics that investigates the use of software to translate text or speech from one natural language to another. On a basic level, MT performs simple substitution of words in one natural language for words in another, but that alone usually cannot produce a good translation of a text because recognition of whole phrases and their closest counterparts in the target language is needed. Solving this problem with corpus and statistical techniques is a rapidly growing field that is leading to better translations, handling differences in linguistic typology, translation of idioms, and the isolation of anomalies (Albat, 2012).

Unlike these the researcher used neither of them. The major reason not to use these systems is mainly there were no previously translated Amharic terminologies. Therefore he preferred to use pure human translation approach.

Translation Procedures Used

- Getting information for translatable terms in ABCD package – this method was facilitated by Prof. Egbert deSmet.
- Can be started from ABCD page - is only limited to main modules first pages only

Both these mechanisms were used throughout the project

During actual work the researcher went into Unicode system understanding, Understanding the coding system of ABCD, Thoroughly investigating all DB & Site folders, Creating “am” folders & files in main ABCD & Empweb, Getting Ethiopian ICT terminologies Ato Yohannes Mulugeta (the former AAUL ICT department Head), etc.

The second step was starting the translation by using two or more and tedious but possible mechanisms. Such as,

- Translating by using “*Translate messages and help pages*” link on ABCD page;
- Using copy and pasting for each language related files in each newly created “am” folders in ABCD folders;
- Introducing Amharic language in some important files that are not found but important files that serves to all language packages too, by introducing “am” equivalence; and so on.

- Examples:
 - “\ABCD\www\htdocs\site\admin\fnow\xml\text.xml” file
 - “am.js” file in the folder “\ABCD\www\htdocs\site\bvs-mod\HTMLArea\lang”
 - To declare for Secs-web for Amharic version – in the folder - \ABCD\www\htdocs\secs-web\lang\am

Translation Approaches

The researcher wants to acknowledge the producers of “Ethiopian ICT terms glossary” for he used it as one of his major terminologies resource. In the meantime, he did not used some of the terms as it is. For example;

Table 8: Examples of some modified terms

S.No	ICT Glossary		The researcher's option	S.No	ICT Glossary		The researcher's option
	English	Amharic	Amharic		English	Amharic	Amharic
1.	abandon	ተው	ይተው	2.	allocate	መድብ	ይመድቡ
3.	abort	አጨንግፍ	ያ[አ]ጨንግፋ	4.	allow	ፍቀድ	ይፍቀዱ
5.	access	ድረስ	ይድረሱ	6.	Analyze	ተንትን	ይተንትኑ
7.	Add	አክል	ያክሉ	8.	chat	ተወያይ	ይወያዩ
9.	Adjust to	ወደ... አስተካክል	ወደ ያ[አ]ስተካክሉ	10.	check	አመልክት	ያመለክቱ
11.	Advance	አልቅ	ያልቁ	12.	check	አረጋግጥ	ያረጋግጡ
13.	Align	አሰልፍ	ያሰልፉ	14.	Update	አዘምን	ያዘምኑ
15.	Delete	አጥፋ	ያጥፋ	16.	upgrade	አልቅ	ያልቁ
17.	Character	ቁምሬ	ሆኔ	18.	Cancel	ሰርዝ	ይተው
19.	File	ፋይል	ማሀደር	20.	Record	ፎልደር	መዝገብ
21.	Report	ሪፖርት	ዘገባ	22.	Business	ንግድ	ሥራ

The terms shown in this table can be categorized in two. First i.e. from S.No 1-16 are message for dialogue. When we translate the directly, from nature of Amharic language they are not polite and their representation is for masculine (gender biased). Therefore I preferred to use them in a way they

- can be polite ordering,
- shows respect for elder users
- avoids the issue of gender sensitivity,

- for ILS is meant also for LICs users it helps us to provide respect for those we are providing service in a “**the customer is a king**” fashion.

On the other hand for the terms from S.No 17-22 I preferred to use totally different terms (but) they might be synonyms or they are found to be not suitable for use or quite unfamiliar for Amharic speakers and as well they can be expressed by other Ethiopic language term (e.g. ‘character’ is better to be represented by Ge’ez term ‘ሆኔ’ as used by ‘Tigrigna’). Similarly words such as file, record, report, business etc have well expressing equivalent terms like ‘ማህደር፣ ዘገባ፣ መዝገብ፣ ሥራ’ ወዘተ.

To sum, one of the major works of the project is to localize ABCD ILS to Amharic language. ABCD ILS has multi-lingual support, which enables developers to translate the workplace as well as the on-line help system of the software. To fully localize ABCD ILS workplace time, finance was found to be the primary limitations. Anyhow more than 3000+ different words, phrases and sentences are managed to translate.

On the next drawing the steps followed were presented for better understanding of the processes performed.

In this project the workplace of ABCD ILS is fully translated to Amharic. Among 3000+ different words, phrases and sentences of ABCD ILS workplace, I initially translated 1000 of them. The translations were edited and verified repeatedly and commented by Abinet Sime (Lecturer at Mekelle University, PhD candidate at AAU at the department of Linguistics and author of 3 books) and Adeda Mehari (Lecturer at Mekelle University, PhD candidate at AAU at the department of Language).

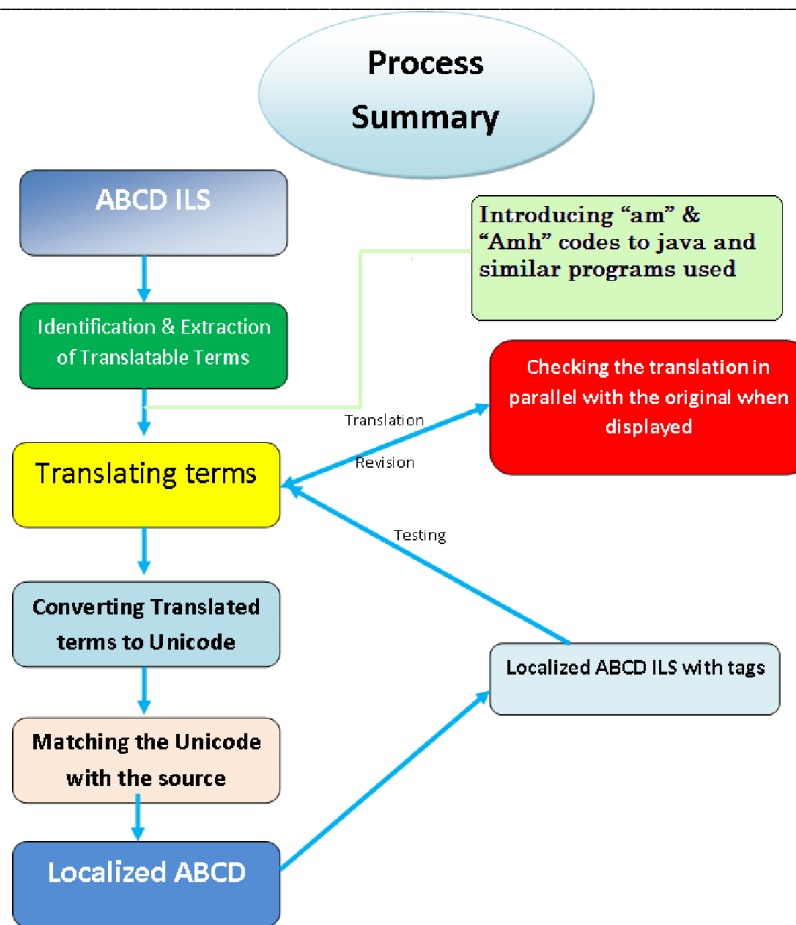


Figure 1: Translation Process

The major modules included in the project are the major DBs such as acquisition, cataloging, circulation, Statistics, ConfigureZ39.50 client, User Administration, Profile, Configure the database in IAH, Empweb pages etc

4.3. Testing of ABCD ILS

The system has been implemented using ABCD ILS which is one of the most widely used open source content management software in Mekelle University, Kenya, Tanzania, Philippines, Latin America and UN (UNESCO, FAO) etc. The ABCD ILS Amharic version was tested to check whether it satisfies the requirements of the system or not.

The following features of ABCD ILS were verified.

Localization: ABCD ILS supports localization which enables developers to adapt the software to a specific locale i.e. language, standards and cultural norms. ABCD ILS fully supports Unicode (UTF-8) as a setup option and thus can natively handle contents in international character sets, e.g. Amharic language.

- *Acquisition*

- *Cataloging*
- *Check in/checkout*
- *Tracking*
- *Browser-enabled work environment:* The ABCD ILS work environment is fully browser based
- *Search engine support:* Using the ABCD ILS documents can be searched using their names or contents.

Sample screenshots – taken from the translated ABCD ILS



Figure 2: Main Login Page

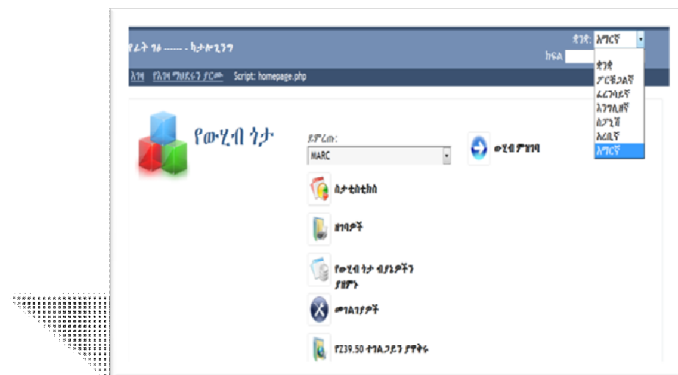


Figure 3: Main System Administration Page



Figure 4: Acquisition Page



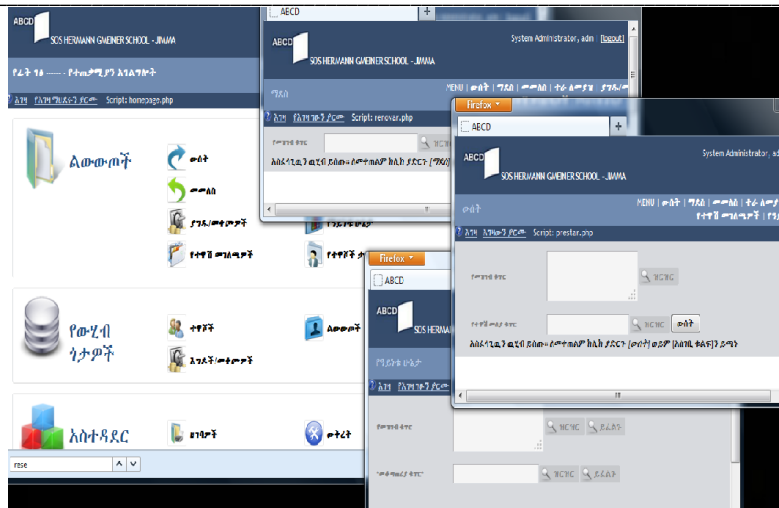


Figure 5: Cataloguing Page

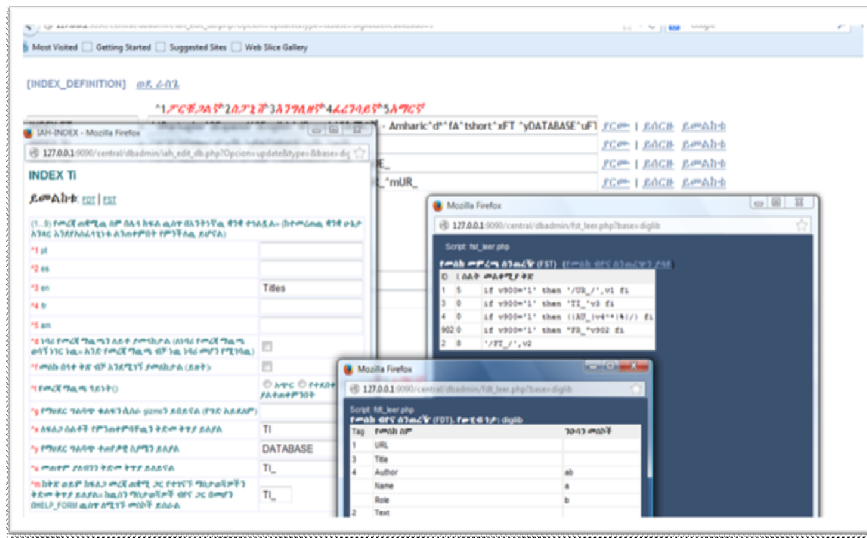


Figure 6: circulation Page

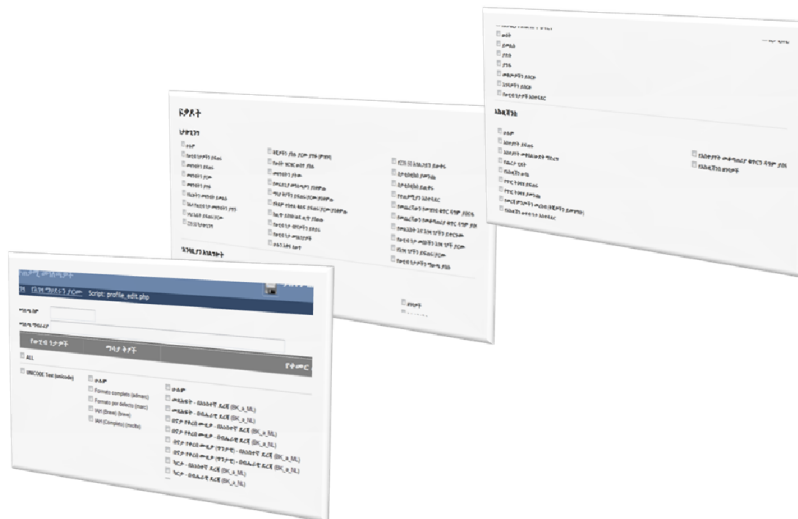


Figure 7: User's Administration Page

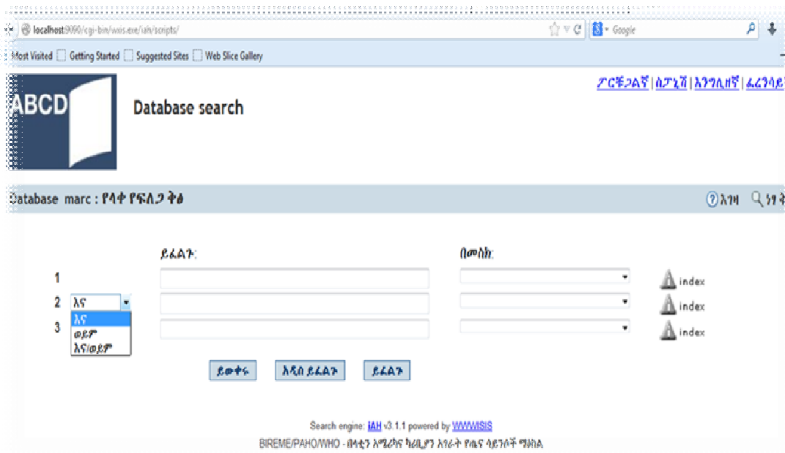


Figure 8: Index Definition Page

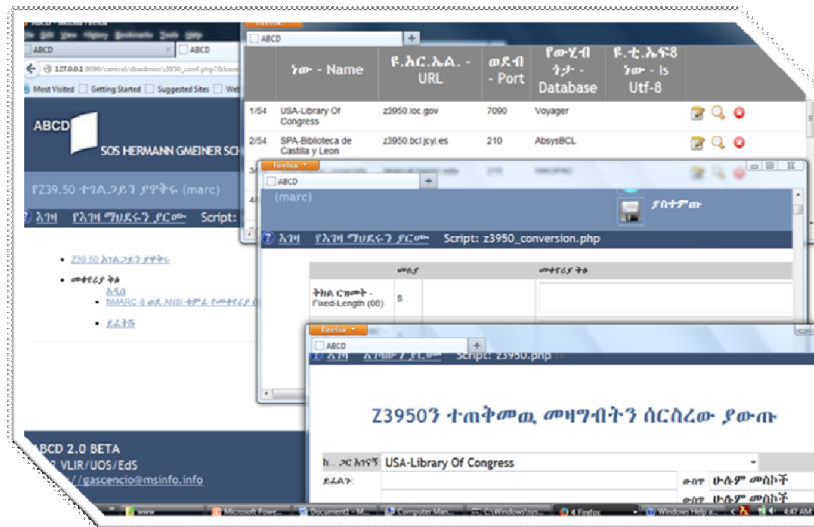


Figure 9: Z39.50 Page



Figure 10: Site Administration page

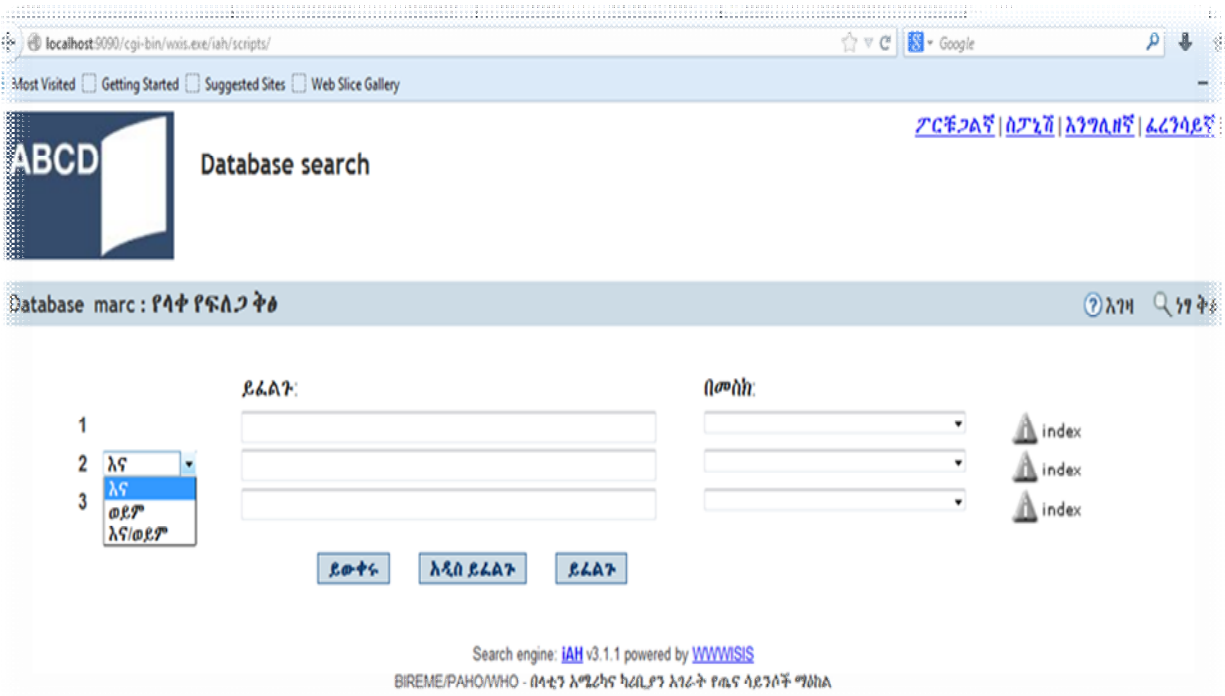


Figure 11:DB search page

Chapter Five

5. Conclusion Recommendations

5.1. Conclusion

Managing and exchanging items electronically are vital for all ALs, public, school etc in Ethiopia. It simplifies searching of items, saves the time wasted to exchange items.

Localizing software products is very important for the growth and development of Information and Communication Technology (ICT) for Ethiopia. This is because the country has its own unique languages and cultures but most software products are developed originally in English language and based on western cultures.

Because of the high price of proprietary software compared to the average individual income of developing countries like Ethiopia, the majority of populations can't really afford to buy the software they need. Therefore, they will be excluded from the digital world. However, there are open source software which can be acquired free of charge and allow users to adapt the software. Hence, open source software are the best opportunity for Ethiopia.

5.2. Recommendation

- There is visible gap even among HEIs libraries
 - The professionals should concentrate on real problem solving topics
 - EALs should have strong national &/or regional consortia to share the available resources

5.3. Further Work

- In this project the workplace of ABCD ILS is translated to Amharic language. But the on-line help of ABCD ILS is not translated. Subsequent developers can translate the on-line help to Amharic.
- In Ethiopia there are more than 80 languages. Similarly other interested professionals can follow the same track to other language.
- There are also some problems such as the way warnings are displayed with the Unicode characters as they appear at sources pages. So this problem needs close look on the coding system or any problem that will be identified.
- Preparing the detailed manual of ABCD ILS.
- If this effort is appreciated, it should be refined and distributed to its potential users via some well established institute to make it accessible the needy.

Appendix I : Questionnaire

Jimma University

College of Natural Sciences

Department of Information Science

Questionnaire for Librarians

This survey is undertaken as part of research work on 'LOCALIZING ABCD INTEGRATED LIBRARY SYSTEM SOFTWARE TO AMHARIC LANGUAGE ' by Teklemariam Haile, Jimma University for the partial fulfillment of the requirements for the Degree of Master of Science in Information Science: Information and Knowledge Management specialty, under the guidance of Dr. Solomon Teferra. The questionnaire is intended to understand the status of Ethiopian Academic Libraries in the use and adoption of Open Source Integrated Library System and to localize ABCD ILS to Amharic Language. The results of the study is expected to help librarians and decision makers on choosing Integrated Library System (ILS) which can contribute to improving quality of information support to higher education and research.

The questionnaire is specifically meant to be taken by Librarians, and students found at all levels of the sample Universities. The information provided in the questionnaire will be kept confidential and identity of respondents will not be revealed to any one and the data provided will not be used for any purpose other than this specific research work. Partaking in this research is wholly voluntary.

Please respond to the questionnaire and help the researcher in arriving at realistic status/conclusions and evolving useful recommendations.

This 20 – 30 minute questionnaire contains three parts. PART - I: Common Questions for (Socio Demographics, Computer knowledge, & Technical Questions) Libraries. PART - II is to get information on the use of FOSS ILS and PART – III is to acquire necessary data & recommendation for Ethiopian context

PART – I: COMMON QUESTIONS FOR LIBRARIES

I. Socio Demographics

1. Designation _____ (please include the department/section you are working)
2. Gender
 - a. Male
 - b. Female
3. Work experience in the LICs : _____
4. Educational Qualification _____
 - a. College Diploma (please specify the field): _____
 - b. BA/BSC/BLIS/MD/LLB
 - c. MA/MSC/MBLIS/MLL
 - d. PhD
 - e. Other (please specify)
5. Age Please indicate your age : _____
6. Name of the Library: _____
7. URL Address of Your Library Webpage (if available): _____
8. Type of Library _____
9. Collection Size _____
10. [Only to be filled by head librarian] Please indicate the staffing pattern of your library including the total number of staff working with your library with or without library science degree

	1-10	11-20	21-30	31-40	50 and Above	Nil
Professionals						
Para Professionals/Semi Professionals						
Non-Professionals/Supporting Staff						

I. Computer knowledge

11. How extensively have you been using web browsers and web application?

Never Sometimes Always
 Rarely Frequently

12. Computer literacy is important to use & work with the current environment of academic library.

Strongly Agree Agree Neither agree nor disagree
 Disagree Strongly Disagree

II. Technical Questions

13. Does your library is/was using Integrated Library System (ILS) or Automation software?

- Yes (proceed to the rest of the questions, except for Q#17 & 18)
- Yes, we were using but not now (Go to Q#17)
- No (Go to Q#18)

14. If your answer for Q#13 is "Yes", please indicate the type of the software you are using currently as ILS/Automation software

- Commercial/Proprietary
- Open Source
- In-House made
- Developed on demand by others

15. Name the integrated library system (ILS)/library automation software currently being used in your library with its version: _____

16. Year in which the library adopted the existing ILS _____

17. If your answer for Q#13 is "Yes, we were using but not now" which ILS you were using? (please mention its type, name, & version) _____

17.1. What was the reason to drop it? Please list down as much detailed as possible: _____

17.2. Do you have any plan to reinitiate using ILS?

- Yes
- No
- Can't say now

17.3. If "Yes", what type of ILS you are going to adopt?

- Commercial
- Free and open source
- Developed on demand by others
- In-house developed

Any other option (if any) _____

17.4. If your response is "No", for Q#17.2. Why? _____

(Here you need to skip to PART-III and express your recommendation).

18. If your answer for Q#13 is "No", what was/is your reason not to use ILS in your library? (Please list down as much detailed as possible). _____

18.1. Do you have any plan to use ILS in the near future?

- Yes
- No
- Can't say now

18.2. If "Yes", what type of ILS you are going to adopt?

- Commercial
- Free and open source
- Developed on demand by others
- In-house developed
- Any other option (if any) _____

18.3. If your response is "No", for Q#18.1. Why? _____

(Here you need to skip to PART-III and express your recommendation).**NOTE: If your library is not user of open ILS, please skip PART – II and go to PART – III directly.**

PART – II: QUESTIONS FOR LIBRARIES USING ANY OPEN SOURCE INTEGRATED LIBRARY SYSTEM (FOSS)

19. How do you rate the adoption of open source integrated library system in Ethiopian libraries?

- Very high
- High
- Moderate
- Less
- Very Less

20. Do you support adoption of open source integrated library system in Ethiopian libraries

- Yes
- No
- Neither support nor demote

21. If your answer for Q#19 is "Less" or "Very Less", in your opinion what are the major issue (s) associated with the adoption trend of FOSS ILS in Ethiopian Libraries (please put a tick (✓) in the provided box for all of your possible choices)

- Lack of awareness
- Lack of promotional activities
- Organizational policies
- Shortage of skilled staff to use FOSS ILS
- Lack of community support
- Less cost commercial software availability
- Issues of software security
- Lack of professionals in the area LIS¹
- Lack of professionals commitment

- Issues of data security
- Lack of technical knowledge required to install and maintain
- Lack of major functional features and modules
- Lack of technical support
- Lack of vendor support
- Issue of reliability/longevity
- Lack of simplicity, detailed, & quality documentation
- Less attention of national policy directions
- Lack of strong professionals associations

22. Do you support localization of open source integrated library system in libraries
 a. Yes b. No c. Neither support nor demote

23. Specify the major reason (s) which made you decide to choose open source ILS for your Library? (More than one answer is possible. Please put a tick (√) in the provided box for all of your possible choices)

<input type="checkbox"/> To cut short the costs	<input type="checkbox"/> To become part of the consortium
<input type="checkbox"/> Its ability to customize	<input type="checkbox"/> Its wider support from online community
<input type="checkbox"/> Availability of source code	<input type="checkbox"/> Easy to install, maintain and modify
<input type="checkbox"/> Fee free for maintenance and licensing	<input type="checkbox"/> Freedom from vendor Lock-in
<input type="checkbox"/> Concerns about the suppliers of proprietary ILS	<input type="checkbox"/> Availability of quality documentations
<input type="checkbox"/> Availability of Unicode language option	<input type="checkbox"/> Uncertainty due to merges and outside ownership of proprietary software

24. How would you rate your experience with the applicability of functional modules of your FOSS ILS being used currently (please put a tick (√) in the provided box for all of your possible choices)

	<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>	<i>Very Poor</i>	<i>Never Experienced</i>
<i>Acquisition</i>							
<i>Cataloguing</i>							
<i>Circulation</i>							
<i>Serials Management</i>							
<i>Statistical Reports</i>							
<i>Patrons Details</i>							
<i>OPAC</i>							
<i>System Administration</i>							
<i>Stock Verification</i>							
<i>Local language support</i>							
<i>Adaptability</i>							

25. Please rate your level of satisfaction with the efficiency of your current FOSS on the following activities (please put a tick (√) in the provided box for all of your possible choices)

	<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>	<i>Very Poor</i>	<i>Never Experienced</i>
<i>Installation</i>							
<i>Database Maintenance and Backups</i>							

¹ LIS – Library and Information Science

	Excellent	Very Good	Good	Fair	Poor	Very Poor	Never Experienced
Technical/Community Support							
Documentation							
User's Response							
Upgrades and Enhancements							
Managing Electronic Resources							
Language option							

26. Do you or your library arrange any of the activities to promote the use of FOSS in Libraries (please put a tick (√) in the provided box for all of your possible choices)

- | | |
|-----------------------------------------------------|----------------------------------------------------------------|
| <input type="checkbox"/> Conference/Seminar | <input type="checkbox"/> Training Programs |
| <input type="checkbox"/> Workshop | <input type="checkbox"/> Added as the part Curriculum/Syllabus |
| <input type="checkbox"/> Created User Groups/Forums | <input type="checkbox"/> Lectures |

Other: _____

27. Please indicate your views on the following statements on FOSS currently being used in your library (please put a tick (√) in the provided box for all of your possible choices)

	Yes	No	Can't Say
Supports all library services			
Supports display format customization depending on the requirement			
Supports storing and retrieval of records in local /other Ethiopian scripts			
Supports indexing and searching of records in local /other Ethiopian scripts			
Allows the end user to build queries in more than one script			
Allows creating interface in Multilanguage			
Is Able to display text in more than one script			
Has Ethiopic language option			
Allows localization to any of Ethiopic language			

28. Do you have any dissatisfaction or a gap in the ILS your system is using currently?

- a. Yes b. No c. Can't say

29. If "Yes", what are the major reason (s) of dissatisfaction with the ILS currently being used (please put a tick (√) in the provided box for all of your possible choices)

- | | |
|--------------------------------------------------------------------------------|------------------------------------------------------------------|
| <input type="checkbox"/> Not found more compatible to our current needs | <input type="checkbox"/> No current development activities |
| <input type="checkbox"/> Lack of technical support | <input type="checkbox"/> Difficulty in maintenance and upgrading |
| <input type="checkbox"/> Concerns about the existence of the software | <input type="checkbox"/> Doesn't support localization |
| <input type="checkbox"/> Doesn't support Ethiopic languages for DB & searching | <input type="checkbox"/> Lack of professionals in the area |

Other: _____

30. If you have encountered and fixed any significant bugs or limitations of the software currently being used? Please Explain _____

31. Please rate your level of agreement with the following statements in the Ethiopian context (please put a tick (√) in the provided box for all of your possible choices)

Items	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
-------	-------------------	----------	-------------------	---------	----------------	-------	----------------

Items	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
More libraries in Ethiopia are using FOSS ILS							
Application of FOSS should be part of the academic curriculum							
Support on FOSS has increased from both library professional organizations and government							
Library should involve in conducting training programs and workshop							
Library professionals should have more opportunity to attend free awareness and training programs on FOSS							
High quality documentation on FOSS should be available on the public domain							
FOSS provide significant economical and technological benefits							
Application of FOSS in libraries leads to greater innovations and collaboration among the communities							
Application of FOSS in libraries increases completion among service offerings							
Application of FOSS in libraries facilitate efficient use of resources across the country							
FOSS are better choice for libraries to adopt							
FOSS enhances the technical and technological expertise of library professionals and develop new skills							
Adoption of FOSS helps sharing of knowledge and skills							
FOSS are flexible and adaptable for all types of libraries							
FOSS gives more control over the data and software							
FOSS are more suitable for long term services compared to proprietary systems							
Ethiopian libraries should consider consortia model for wider adoption of FOSS							
Ethiopian libraries should have customized versions of single FOSS for any type of library							
Ethiopian libraries should have FOSS to support various Ethiopian scripts							

PART – III RECOMMENDATION FOR ETHIOPIAN SCENARIO

(Please answer the following three questions (i.e. Q#31, 32, & 33) by considering the capability, suitability, and adaptability of the softwares).

32. Does the ILS that is currently used in your library support creating and handling databases in Ethiopic languages or scripts (e.g. Amharic)?
 - a. Yes
 - b. No
33. Does the ILS that is currently used in your library support searching in Local languages (e.g. Amharic)?
 - a. Yes
 - b. No

34. If your answer is “No”, for the above two questions or either of the two, do you tried &/or know any efforts made by you or your library or any other system/professional that has been done to resolve the problem?
 a. Yes b. No c. Can’t Say
35. Which FOSS ILS you do you think or found or suggest best suitable for the Ethiopian scenario? (Please put a tick (√) in the provided cell for your possible choice)

	Very Good	Good	Neither Good Nor Bad	Poor	Very Poor	IDK²
<i>ABCD</i>						
<i>Evergreen</i>						
<i>Koha</i>						
<i>NewGenLib</i>						
<i>OpenBiblio</i>						
Other (please specify): _____						

36. Do you know any FOSS ILS in any of Ethiopic Language (s) or script?
 a. Yes b. No
37. What is your level of agreement in if someone could localize any of the FOSS ILS to Amharic language?

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

38. Please identify your agreement with the following statements (in line with localization & application) in the Ethiopian context (please put a tick (√) in the provided box for all of your possible choices)

Items	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
<i>Localization positively contributes to overcome language barrier for workers in information resources organization</i>							
<i>Localization contributes to overcome language barrier for users in information resources retrieval effectiveness</i>							
<i>Localization ILS has been well researched and implemented in Ethiopia</i>							
<i>Localization has greater significance for Ethiopian EALs to handle Ethiopic language docs</i>							
<i>Localization has no significance for Ethiopian LICs in any way</i>							
<i>Localization provide significant economical and technological benefits EALs</i>							
<i>Application of localized ILS in EALs to contributes in creating information literate society</i>							
<i>Application of localized ILS in Ethiopian libraries facilitate efficient use of resources across the country</i>							
<i>FOSS ILS in Ethiopia are better choice for libraries to adopt in terms of cost compared commercial ILS acquisition, maintenance, update, etc</i>							
<i>FOSS ILS in Ethiopia enhances the technical and technological expertise of library professionals and develop</i>							

² IDK – I don’t Know

<i>Items</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>new skills (knowledge & skill transfer)</i>							
<i>FOSS ILS in Ethiopia helps sharing of knowledge and skills among LICs</i>							
<i>FOSS ILS in Ethiopia will have great contribution to bridge the gap (shortage & quality) of professionals in the area</i>							
<i>ILS in Ethiopic language have great contribution to community who are attending their school in their mother tongue to access info easily (at elementary & secondary schools)</i>							
<i>FOSS ILS in Ethiopic language greatly contributes to public library users & workers to access & provide info efficiently</i>							

39. What is the best thing about adopting & localizing FOSS _____
40. What is the worst thing about adopting & localizing FOSS _____
41. Please indicate any suggestions or opinion to adopting & localizing of ABCD ILS software to Ethiopic language specifically to Amharic. Please elaborate your requirement of localization to Amharic or any other suggestions to improve the quality of the ABCD ILS software to fit to Ethiopian context.

Thank you for your time and cooperation!

Appendix II - Glossary

Acquisitions: Selecting, ordering and receiving new materials and maintaining accurate records.

Bibliographic database: A collection of bibliographic records that is stored in a database for easy retrieval.

Bibliographic record: An entry representing a specific item in a library catalogue.

Cataloguing: The process of creating a bibliographic description, including subject headings and classification numbers, for resources being added to the library collection. Details of resources are recorded as catalogue records on the library's Integrated Library System (ILS) providing access for all users.

Circulation: The systems used to issue and return items from the library's collection.

Database: Collection of records systematically stored on a computer.

Federated searching: Simultaneous searching of a variety of resources (databases, OPACs, the Web) from a single interface.

Field: A location of fixed or variable length to describe a resource. A catalogue record consists of several fields, e.g. author, title, series, publisher.

File: When an item, which was created in an application such as Word or Excel, is saved, it is commonly referred to as a file.

Global changes: To make a change which applies across the entire database, e.g. to combine two or more separate headings into one.

Integrated Library System (ILS): ILS is one of the technological tools used by LICs which deals with many library processes. These systems automate the routine operations of a library, provide library users information about the library's collection, and serve as a channel for delivering key library services. The term integrated library system, or ILS, describes the software that automates the many different library work categories. This common application is tied together with data residing in common databases (as much as possible) that are related to many different tasks. An ILS automates many library tasks that would otherwise be repetitive, labor intensive, and inefficient.

ISBN (International Standard Book Number): A multi-digit numerical code, which uniquely identifies a book.

ISMN (International Standard Music Number): The ISMN identifies editions of published music.

ISSN (International Standard Serial Number): The ISSN identifies serial publications.

MARC (Machine Readable Cataloguing): A standard structure for computer catalogue records, comprising a set of tags and indicators to identify parts of the record.

Metadata: Metadata or Metacontent is used to describe digital data using metadata standards. Metadata is data about data. Online Library catalogue records are a form of metadata.

Modules: Software segments that perform specific functions, such as circulation and cataloguing. Vendors may sell modules separately, bundled together, and/or with add-on modules as required.

OPAC: Online Public Access Catalogue (OPAC). The user interface of an Integrated Library System (ILS). Borrowers search the library catalogue to locate books and other material.

Password: A code used to gain access (login) to a secure system.

Platform: The type of computer or operating system on which a software application runs. Some common platforms are PC and Macintosh.

Security: Prevention of or protection against access to information by unauthorized personnel.

Status: The conditions under which a specific item in a library collection is available for use. An item may be on order, on reserve, missing, available for issue etc.

Tag: A tag is a keyword or term assigned to describe online content. Tagging is associated with websites and Web 2.0 where the use of tag terms allows the content to be grouped and found again by browsing or searching. Tags are generally chosen informally by the item's creator or by its viewer, depending on the system. Use of an online thesaurus such as ScOT assists creators on online content to use tags consistently.

Uniform Resource Locator (URL): known as Universal Resource Locator.

Z39.50: Z39.50 information retrieval standard allows for the searching and retrieving of information from remote computer databases that have also implemented Z39.50.

Appendix III - *Sample of translated terms*

S.N ^o	MODULE
1.	Cataloging (<i>dbadmin.tab</i>)
2.	Loan (<i>prestamo.tab</i>)
3.	IAH (<i>iah_conf.tab</i>)
4.	DB Administration (<i>admin.tab</i>)
5.	Statistics (<i>statistics.tab</i>)
6.	Profile (<i>profile.tab</i>)

S.N ^o	MODULE
7.	Utilities(<i>soporte.tab</i>)
8.	Acquisition (<i>acquisitions.tab</i>)
9.	Empweb – display.properties
10.	Empweb - gui_am.properties
11.	Empweb - engine_am.properties
	Total

Comparison of translations

Module	Code	English	Amharic
admin.tab			
1.	inicio	Home	የፊት ገፅ
2.	startas	Role	ሚና
3.	adm	System administrator	የስርዓተ-ቱ አስተዳዳሪ
4.	dbadm	Database administrator	የውሂብ ጎታ አስተዳዳሪ
5.	dboper	Database operator	የውሂብ ጎታ ከዋኝ
6.	loanadm	Loans administrator	የውሳኔ አስተዳዳሪ
7.	acqadm	Acquisitions administrator	የአኩዚሽን አስተዳዳሪ
8.	newoper	New user	አዲስ ተጠቃሚ
9.	lang	Language	ቋንቋ
10.	flang	The list of languages is missing	የቋንቋዎች ዝርዝር አልተካተተም
11.	dataentry	Data entry	ውሂብ ምዝገባ
12.	mantenimiento	Utilities	መገልገያዎች
13.	consulta	Search engine module	የፍለጋ ፍርግም ክፍል
14.	busqueda	Search	ይፈልጉ
15.	busquedalibre	Enter one or more keywords	አንድ ወይም ከዚያ በላይ ቁልፍ ቃላት ያስገቡ
16.	subc_asist	Creation and editing of subfields	ንዑሳን መስኮችን መፍጠሪያና ማረጋገጫ
17.	cancelar	Cancel	ይተው
18.	aceptar	Accept	ተቀበል
19.	maxmfn	Last MFN	የመጨረሻው አብይ ማህደር ቁጥር
prestamo.tab			
20.	local	Currency, working days and working hours	ምንዛሪ፣ የስራ ቀናት እና የስራ ሰዓታት
21.	currency	Local currency	የአካባቢ ምንዛሪ
22.	dateformat	Date format	የቀን አገገፍ
23.	workingdays	Working days	የስራ ቀናት
24.	dia	day	ቀን
25.	mes	month	ወር
26.	ano	year	ዓ.ም.
27.	mon	Monday	ሰኞ
28.	tue	Tuesday	ማክሰኞ
29.	wed	Wednesday	ረቡዕ

Module	Code	English	Amharic
30.	users	Borrowers	ተዋሾች
31.	reservas	Reservation	ተራ ማስያዝ
32.	loan	Lend	ይዋሱ
33.	return	Return	ይመልሱ
34.	renew	Renew	ያድሱ
35.	reserve	Reserve	ተራ ያስይዙ
36.	suspend	Suspend	ያግዱ
37.	suspen	Suspensions	እግዶች
38.	multas	Fines	ቅጣቶች
39.	statment	Borrower statement	የተዋሽ ቃል
40.	configure	Configuration	ውቅረት
41.	m1	January	ጥር
42.	m2	February	የካቲት
43.	m3	March	መጋቢት
44.	m4	April	ሚያዚያ
45.	m5	May	ግንቦት
46.	m6	June	ሰኔ
47.	m7	July	ሐምሌ
48.	m8	August	ነሀሴ
49.	m9	September	መስከረም
50.	m10	October	ጥቅምት
51.	m11	November	ህዳር
52.	m12	December	ታህሳስ
iah_conf.tab			
53.	top	Top	ወደ ራስሌ
54.	edit_txt	Edit in txt format	በፅሁፍ መልክ ያርሙ
55.	free	Free	ነፃ
56.	basic	Basic	መሰረታዊ
57.	advanced	Advanced	የላቀ
58.	dpp	Documents per page	የሰነዶች ብዛት በገፅ
59.	features	Features	ባህርያት
60.	newfile	New file	አዲስ ማህደር
61.	short	Short	አጭር
62.	g	Defines the gizmo for execution in the keys of the inverted file (Optional)	የማህደር ግልባጭ ቁልፍን ሲሰራ gizmoን ይበይናል (የግድ አይደለም)
63.	x	Identifies the prefix which will be used in search strategies	ለፍለጋ ስልቶች የምንጠቀምባቸውን ቅድመ ቅጥያ ይለያል
64.	y	Identifies the logical name of the inverted file	የማህደር ግልባጭ ተጠያቂ ስያሜን ይለያል
65.	u	Identifies the prefix to use	መጠቀም ያለብንን ቅድመ ቅጥያ ይለይናል
dbadmin.tab			
66.	borrartodo	All the records, files and folders of the database will be deleted	ሁሉም የውሂብ ጎታው መዛግብት ማህደሮች እና አቃፊዎች ሊሰረዙ ነው
67.	bdexiste	Database already exists	በዚህ ስም የተሰየመ የውሂብ ጎታ ቀደም ሲል ገብቷል

Module	Code	English	Amharic
68.	init	Initialized	ተነሰቷል
69.	continuar	Continue	ይቀጥሉ
70.	close	Close	ይዘገቡ
71.	updateop	Update ABCD users	ተጠቃሚዎችን ያዘገቡ
72.	addrowbef	Add row before selected one	ከተመረጠው ረድፍ በላይ ሌላ አንድ ረድፍ ያስገቡ
73.	remselrow	Remove Selected Row	የተመረጠውን ረድፍ ያስወግዱ
74.	code	Code	ኮድ
75.	cols	cols	አምዶች
76.	config	Configuration	ውቅረት
77.	newdb	New database	አዲስ የውሂብ ጎታ
78.	credfmt	Create/edit data entry worksheet (FMT)	የውሂብ ምዝገባ ቀመረ ለህ ይፍጠሩ/ያርሙ
79.	credpft	Create/edit display format (PFT)	የማሳያ ቅፅ ይፍጠሩ/ያርሙ (PFT)
80.	credfst	Create/edit field selection table (FST)	የመስክ መምረጫ ሰንጠረዥ ይፍጠሩ/ያርሙ (FST)
81.	fmtcreated	Data entry worksheet created	የውሂብ ምዝገባ ቀመረ ለህ ተፈጥሯል
82.	seguro	Are you sure?	እርግጠኛ ነዎት?
83.	registros	records	መዝግብት
84.	fmt	Data entry Worksheet (FMT)	የውሂብ ምዝገባ ቀመረ ለህ (FMT)
85.	menu	Menu	ምናሌ
statistics.tab			
86.	stats	Statistics	ስታቲስቲክስ
87.	stats_conf	Statistics configuration	የስታቲስቲክስ ውቅረት
88.	var_list	List of variables	የተለዋዋጮች ዝርዝር
89.	tab_list	List of tables	የሰንጠረዦች ዝርዝር
90.	var	Variable	ተለዋዋጭ
91.	pft_ext	Extraction format (PFT)	ለቅሞ ማውጫ ቅፅ (PFT)
92.	prefix	Prefix	ቅድመ ቅጥያ
93.	mis_statscfg	The configuration file stats.cfg is missing	የውቅረት ማህደር stats.cfg ይገለጻል
94.	add	Add	ያክሉ
95.	edit	Edit	ያርሙ
96.	delete	Delete	ይሰርዙ
97.	title	Title	ርዕስ
98.	rows		ረድፍ
99.	doc	Document	ሰነድ
100.	sendto	Send to	ወደ...ይላኩ
101.	prn	Printer	ማተሚያ
102.	test	Test	ይፈትሹ
103.	updated	Updated	ዘምኗል
104.	ag	Animated graphic (requires flash)	በእንቅስቃሴ የማስመሰል ንድፍ (የፍላሽ ሶፍትዌር መጠቀም ያስፈልጋል)
105.	nag	Nonanimated graphic	ያለ እንቅስቃሴ የማስመሰል ንድፍ
106.	mustselectfield	You must select a field	መስክ መምረጥ ይኖርብዎታል
107.	misspft	The PFT for extracting the field is missing	መስኩን ለይቶ ለማውጣት PFT ይገለጻል
108.	chartype	Chart type	የገበታ ዓይነት

Module	Code	English	Amharic
109.	save	Save	ያስቀምጡ
profile.tab			
110.	PROFILES	User profiles	የተጠቃሚ መግለጫዎች
111.	PROFILENAME	Profile name	የመግለጫ ስም
112.	PROFILEDESC	Profile description	የመግለጫ ማብራሪያ
113.	MISSPROFNAME	Missing profile name	የመግለጫ ስም አልተካተተም
114.	MISSPROFDESC	Missing profile description	የመግለጫ ማብራሪያ አልተካተተም
115.	ADD COP	Add, edit, delete copies (record number)	ቅጂዎችን ያክሉ ያርሙ ያጥፉ (ምዝገባ)
116.	ADD LO	Add to items (loans database)	የውሳኔ ዝርዝር ውስጥ ያክሉ
117.	PREC	Print records	መዛግብትን ያትሙ
118.	SAVE EXP	Save search expressions	የመፈለጊያ መግለጫዎን ያስቀምጡ
119.	EDP FT	Create/edit/save display formats	ማሳያ ቅጾችን ይፍጠሩ/ያርሙ/ያስቀምጡ
120.	ED SORT	Create/edit/save sort keys	የቅደም ተከተል ቁልፍ ይፍጠሩ/ያርሙ/ያስቀምጡ
121.	GLOB C	Global changes	ሁሉን አቀፍ ለውጥ
122.	IMP EXP	Import/export	ከውጭ ይስገቡ/ወደ ውጭ ያስወጡ
123.	MODIFY DEF	Modify database definitions	የውሂብ ጎታ ብዩኖችን ይቀይሩ
124.	DB UTILS	Database utilities	የውሂብ ጎታ መገልገያዎች
125.	Z3950 CONF	Configure Z39.50 client	የZ39.50 አገልጋይን ይውቀሩ
126.	STAT GEN	Generate statistics	ስታቲስቲክስ ያመንጩ
127.	STAT CONF	Configure statistics	ስታቲስቲክስ ይወቀሩ
128.	USR ADM	User administration	የተጠቃሚያን አስተዳደር
soporte.tab			
129.	cnv_deltab	Do you want to delete the file	ማህደሩን ማጥፋት ይፈልጋሉ?
130.	cnv_falta	Term or Definition fields missing	የቃል/ሃረግ ወይም የብዩኖ መስኮች አልተካተቱም
131.	cnv_inicior	Labels must start with \$\$	የመለያዎቹ መጀመሪያ በ“\$\$” ምልክት መጀመር ይኖርበታል
132.	cnv_finr	Labels must end with :	የመለያዎቹ መጨረሻ በ“:” ምልክት መዘጋት ይኖርበታል
133.	cnv_aelim	Delete conversion table	የልወጣ ሰንጠረዥን ይሰርዙ
134.	cnv_rotulo	Label in TXT file	የጽሁፍ ማህደር ላይ መለያዎ
135.	cnv_ntab	Table name	የሰንጠረዥ ስም
136.	cnv_sep	Record separator	መዝገብ ከ4.4.ይ
137.	cnv_tab	Conversion Table	መቀየሪያ ሰንጠረዥ
138.	cnv_ftab	You must select a conversion table	የመቀየሪያ ሰንጠረዥ መምረጥ ይኖርብዎታል
139.	cnv_carga	Load TXT file	የጽሁፍ ማህደሩን ይጫኑ
140.	cnv_paste	Paste in the window the labelled text with the data to be converted into the database	ወደ የውሂብ ጎታነት እንዲቀየር የተሰየመውን ጽሁፍ ከነውሂቡ መስኮቱ ላይ ይለጥፉ
141.	cnv_ver	Display labels defined	የማሳያ መለያዎች ተበይነዋል
acquisitions.tab			
142.	sugg_status		ሁኔታ
143.	new		አዲስ
144.	search		ይፈልጉ
145.	approve		ማረጋገጫ
146.	approved		ተረጋግጧል

Module	Code	English	Amharic
147.	reject		ውድቅ ማድረግ
148.	rejected		ውድቅ የተደረገ
149.	inbidding		ጨረታ ላይ
150.	missing		የተዘለለ
151.	status_1		የጨረታ ሂደት
152.	approved_rec		ተቀባይነት ያገኙ ጥቆማዎች
153.	sorted		በ...የተደረደረ
154.	recomby		በ...የቀረበ ጥቆማ
Empweb – display.properties			
155.	transaction_id	Transaction Id	የልውውጥ መለያ ቁጥር
156.	user_id	User Id	የተጠቃሚ መለያ ቁጥር
157.	user_db	User Db	የተጠቃሚያን የውሂብ ጎታ
158.	copy_id	Copy Id	የቅጂ መለያ ቁጥር
159.	volume_id	Volume Id	የቅጹ መለያ ቁጥር
160.	record_id	Record Id	የመዝገብ መለያ ቁጥር
161.	object_db	Object Db	የነገሩ የውሂብ ጎታ
162.	date	Date	ቀን
163.	start_date	Start date	አገልግሎት የጀመረበት ቀን
164.	end_date	End date	አገልግሎቱ የሚያበቃበት ቀን
165.	obs	Obs	ነገሩ
166.	name	Name	ስም
167.	profile	Profile	መገለጫ
168.	title	Title	ርዕስ
169.	operator_id	Operator	ከዋኝ
170.	loan_info	Loan Information	መረጃ - ስለውሰት
171.	reservation_id	Reservation Id	መለያ ቁጥር - ተራ ለተያዘለት
172.	fine_info	Fine Information	የቅጣት መረጃ
173.	fine_issued	Issued fine	የተገለፀ/የተነገረ መቀጫ
174.	fine_cancellation	Fine cancellation	የቅጣት ሰረዛ
175.	loan_date	Loan date	የወሰት ቀን
176.	return_date	Return date	መመለሻ ቀን
177.	days_overdue	Days overdue	ሳይመለስ የዘገየበት ቀን ብዛት
Empweb - gui_am.properties			
178.	required_field	* required field	* ተፈላጊ መስክ
179.	wrong_value	* wrong value	* የተሳሳተ ግቢት
180.	this_library_status_figures	{0} library figures	{0} የዚህ ቤተ-መጻሕፍት ወቅታዊ ሁኔታ
181.	account_enabled	Account Enabled	መለያዎ አገልግሎት ጀምሯል
182.	active_suspensions	Active suspensions	አሁን እግድ ላይ ያሉ
183.	address	Address	አድራሻ
184.	copy_profile_are_you_sure	Are you sure you want to copy this profile?	ይህን መገለጫ ለመቅዳት መፈለግዎን እርግጠኛ ነዎት?
185.	new_calendar_are_you_sure	Are you sure you want to create this calendar?	ይህን አጀንዳ ለመፍጠር መፈለግዎን እርግጠኛ ነዎት?

Module	Code	English	Amharic
	u_sure		
Empweb - engine_am.properties			
186.	ewengine_Exception	{0} at {1}. Please look at the Jetty log for more information.	- {0} በ {1}. ለተጨማሪ መረጃ እባክዎ የJetty መዝገብን ይመልከቱ
187.	no_object_found	No object of type "{0}" and id "{1}" was found!	- ምንም የነገሩ "{0}" ዓይነት እና መለያ "{1}" አልተገኘም
188.	ewengine_error_in_engineconf_line	Error in engineconf.xml (line: {0})	- engineconf.xml (መስመር: {0}) ውስጥ ስህተት አለ
189.	ewengine_dbdecl_without_name_attr_in_engineconf	Engine config: Database declaration without name attribute.	- የፍርግም ውቅረት: ያለ ስም ባህሪ ገለጻ የቀረበ የውሂብ ጎታ
190.	ewengine_dbalias_already_defined	Engine config: Database alias "{0}" already defined.	- የፍርግም ውቅረት: የውሂብ ጎታው ተለዋጭ ስም "{0}" ቀደም ብሎ ተበይኗል
191.	ewengine_dbdecl_without_uri	Engine config: Database declaration "{0}" without uri declaration.	- የፍርግም ውቅረት: የውሂብ ጎታው ገለጻ "{0}" ያለ URI ገለጻ ነው
192.	ewengine_conf_no_users_db	Engine config: At least one base of type="users" is needed.	- የፍርግም ውቅረት: ቢንስ አንድ መሰረታዊ የሆነ ="users" ያስፈልገዋል

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