

JIMMA UNIVERSITY

**COLLEGE OF NATURAL SCIENCES
DEPARTMENT OF INFORMATION SCIENCE**

**USABILITY STUDY ON HIGHER LEARNING INSTITUTIONS'
WEBSITE: THE CASE OF ACADEMIC STAFF IN SELECTED
ETHIOPIAN PUBLIC UNIVERSITIES**

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Jimma Ethiopia,

June, 2017

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UNIVERSITIES

A Thesis Submitted in Partial Fulfillment of the Requirements for
Degree of Masters of Science in Information Science (Information and
Knowledge Management)

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DEDICATION

This work is dedicated to my beloved Mother Gete Lemessa.

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ACKNOWLEDGMENT

First of all, I would like to gratitude almighty God for giving me strength and wisdom to complete this thesis work. Next to God, I would like to take this opportunity to express my profound gratitude and deep regard to my adviser, Dr. Tibebe Besha for all their efforts in providing me fervent support, intelligent guidance and invaluable suggestions throughout the duration the research and also my co-advisor Dr. Natrajan M.

I would also like to express my warm thanks to Bulehora University for sponsoring my Msc. study at the Department of Information science, specialization in information knowledge management in Jimma University, my families and all my friends who provided me with moral support and encouragements throughout my study.

Finally, I would also like to give my sincere gratitude for those who are not mentioned in name but who encourage, support, challenging comments without those this research would be incomplete.

LIST OF ABBREVIATIONS AND ACRONYMS

DU	Dilla University
EPHLI	Ethiopian Public Higher Learning Institution
HLI	Higher Learning Institution
HLIW	Higher Learning Institution's Website
ISO	International Standard Organization
JU	Jimma University
MOHE	Minister of Higher Education
QUIM	Quality in Use Integrated Measurement
SPSS	Statistical Package for Social Sciences
SNNP	South Nation and Nationality of People
URL	Universal Resource Locator

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ABSTRACT

Web sites are rising as a key component of an organization's and institution's survival in our ever globalizing competitive world. Usability of a website has assumed a great deal of importance in terms of satisfying website users' needs and expectations. Usability is one of the major factors that determine the successfulness of a website. It is important therefore to have certain measurement methods to assess and evaluate the usability of websites. This measurement issued to help website designers make their websites more usable. Most higher learning institutions' websites in Ethiopia do not have appropriate design which means inappropriate use of font, color, image and other usability features. The lack of adequate researches on the area also contributes its share for this problem. The main objective of the study is to determine usability of higher learning institutions website: based on some selected Ethiopian public Universities, from academic's staff's perspective.

A usability model was adopted from QIUM (2006) and designed based on open and closed ended questioners and observation results the sample size of 345 academic staffs was chosen from population of 3097 academic staffs from two selected universities by using proportional sampling technique then followed by simple random sampling and data was collected through questionnaires and observation. The methodology employed to conduct this study was survey research design and the respondents, drawn from two Ethiopian public higher learning institution (PHLI) of academic staffs used to answer the research questions that come out through the review of existing literature as well as the study statistically analyzes in SPSS by using descriptive and inferential statistics as well observation was interpreted and discussed.

The findings of this study revealed the usability factors identified from the analysis of the results: reliability, efficiency, understandability, content, interactivity and multiple language support, ease of use and communication and design layout. This research suggests that the developers of higher learning institution websites should consider the above issues and other most common usability problems identified in this research in order to improve usability of the universities' websites.

Key word: website usability, higher learning institution website and usability model

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Currently, website is used widely all over the world as the medium of communication for information or services. An organization uses website to market their products and services user will always use the website if the website can achieve their task or goal for searching the information or using its services more quickly, easily, effectively and easy to navigate and understand (Lee &Kozar 2012).

According to Manzoor & Hussain (2012)usage of websites is increasing rapidly due to advancement in technology. Usability is important factors to be considered in websites and play a significant role in accessing the websites. According to Mentés & Turan (2012) Web sites are becoming key factors of an organization's success in the global market. The website symbolizes an organization, interacting an organization's principles, mission, vision and perspective. The website serves as a mechanism for delivery of services that assist in various projects a stakeholder needs to accomplish. The website also serves as a means of communication whereby an organization and any institution can communicate with its stakeholders cited in (Jabar *et al.*, 2013).

Higher learning institution website is a means of communication with lecturers, students, faculties, graduates and guests. Higher learning institution website (HLIW) is not only an affordable and appropriate technique to connect with various stakeholders; it is also a means for an institution to shape its image. Moreover, HLI need to indulge within their strength to keep positive images with their various constituents, and the way to do this is to take full advantage of the opportunities the website provides (Caglar & Mentés, 2012). Almost all higher learning institution (HLI) takes full advantage of their websites as a key public relation and marketing tool to reach potential students (Gordon &Berhow, 2009). Potential students may be more likely to apply to the academic institutions that provide useful and clear information on its website.

Usability is one of the most important characteristics of any user interface; it measures how easy the interface is to use (Nielsen, 2003). Usability has been defined as the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency,

and satisfaction in a specified context of use (ISO 9241-11, 2010). According to Nam (2012) usability of the website plays a central role in establishing a healthy communication between the university and its stakeholders. The healthy communication between the university management and the stakeholders can certainly contribute to well governance of the university in many ways. First, a well-managed website with high usability can stimulate a healthy dialogue between the university and its stakeholders. Dialogue lies at the hearth of communication and plays a central role in communication.

Considering the essentiality of the site, only few studies are done in other countries to formulate descriptive model to guide the designing of usable and accessible HLIW. This research, aims to investigate the usability of the higher learning institutions' websites via the usability analysis and measurement inventories from the literature and to design usability model to enhance those important features. The study is important because the results are expected to provide model for developing better and more usable web sites not only for selected Ethiopian public universities but for other higher learning institutions website as well.

1.2 Statement of the problem

According to Mentés & Turan (2012), Website design is often determined by technology, organizational institutional structure or business Objectives, rather than by users' needs. Usability of a website has understood a great deal of importance in terms of satisfying website users' needs and expectations (Yusuf, 2010).The objective of every educational websites is to provide valuable educational information to its users without any difficulty or complexity. However, there is concern as to whether or not these websites are usable and meet the expectations of their intended users (Bautista, 2010).

The number of studies on usability and accessibility of higher learning institution web sites is very limited. The study on usability of university websites is conducted by Caglar and Mentés (2012): the study reveals displeasure and other usability problems of a European University of Lefke which is located at Northern Cyprus. Dominic and Jati (2010) conducted a study on usability of Malaysian universities websites exhibit that most of Malaysian universities are neglecting performance and quality criteria. Bautista *et.al*, (2010) conducted at four different

universities document to complete the tasks in three areas, namely content challenges encountered by users during their attempt presentation, information structure, and navigation.

Though few literatures of other countries are available addressing the issue of website usability, they were all focused on the same group of users, the students. Most of the researchers on the literature opted to be too specific by evaluating only a single feature of a given website (Astani and Elhindi 2008; Bairamzadeh & Bolhari 2010; Osborne and Rinalducci 2002). They also used heuristic approach (guide line) to conduct their research.

Being in higher learning institutions encounter usability problems of ineffective search function, lacks of navigation support, inconsistent problems (responsive), language problems, inappropriate page design, and difficulty in information finding, outdated information, interface attractiveness, incomplete information and inappropriate design menus (Hasan, 2014). However, to the researcher knowledge there is no empirical study in Ethiopia on the area.

For this reason, the main intent of this study is to identify the factors that affect usability of HLI websites, the frequency, and purpose and overall usability level in Ethiopia from perspective of academic staffs and design a usability descriptive model for the websites. According to Jabar *et al.*, (2013), a study of usability on the University website from the perspective of 364 university students and investigated whether area of specialization has significant impacts on these usability factors and recommended future work that can be extended to other educational websites and to other learning institution website users like the lecturers or academic and administrative staff.

Accordingly this research focuses on investigating usability study on higher education institution's websites from academic staff perspective. This is mainly because, majority of the websites functionalities like, institutional repository or electronic resources, department program, calendars, news, events about the institution, vacancy, to contact faculty and staffs, and course registration system are meant for academic staffs. Studying from academic staff perspective will help to improve the design of the website in such a way that it satisfies one major category of users.

In addition it's also worth mentioning that from students and academics staffs' perspective, skill and needs are different as well as from any other outside users. Generally, adequate assessment of website usability is required to design a better website and customized a usability approaches

so, that it meets user needs and the site is ease for use. That provides usable and accessible website for such kinds of websites from academic staff's perspectives of these sites.

1.3 Research Questions

To achieve the objectives of this research the following research questions were formulated.

- What are the factors that affect instructors on the usability of website in higher learning institution?
- How effective is the higher learning institution website in satisfying the information needs of its academics staff?
- How best the model for usability of website in higher institution be designed?

1.4 Objectives of the study

1.4.1 General objective

The main objective of this study is to determine usability level of higher learning institutions website: based on selected Ethiopian public Universities, from academic's staff's perspective.

1.4.2 Specific objectives

The specific objectives of the study were as follow:

- To identify the factors that affect instructors on the usability of websites in higher learning institution
- To identify the effectiveness and satisfaction level of some higher learning institution website
- To design website usability model from academics staffs perspective

1.5 Scope of the study

The scope of this study is to determine usability study on higher learning institution website in selected universities from academic staff's perspective. The researcher selects Jimma and Dilla Universities based on their generation and the assumption that science they are convenient for the researcher. However, a few countries have their own national ranking systems and web popularity for evaluating their universities and higher education institutions e.g. ranking systems in India, Iran, Japan, Pakistan, Philippines, Southern Korea, France, Germany, Italy, (Khosrowjerdi, 2013). However, in our context (Ethiopia) there is no website popularity ranks as any other countries mentioned above to select the universities.

1.6 Limitation of the study

This research has limitations, the first one this research did not studied empirically. Generalization is another limitation. The study was restricted to the two selected universities context, which may enhance generalization for those websites but may not be generalized to the broader universities, because of the differences in environment, characteristics and context. So, generalization is possible to universities with similar

1.7 Significance of the study

This study is conducted on usability study on HLI website: the case of public Ethiopian universities. Assessing or evaluating usability of websites is significant to the success of higher learning institution website. HLI websites often contain important information about academic resources, relevant information, about universities or college events, and administrative rule and regulation. These sites also provide information on institution services such as the institution library, campus bookstore, electronic resources, calendars, news, events, vacancy and course registration system. As university websites take on significant and increasingly important roles, it is crucial these sites be user-friendly and it is expected that the beneficiaries of this study are the university itself, all academic staffs, students, administrative staffs and totally all the community of higher learning institution.

The outcomes and results of this study have potential value to higher learning institutions as well as other firms to understand the evaluation of website related with adoption of usability and accessibility of the system and its advantages in providing ease of use and access. In addition, this study expected to help other researchers who have interested to conduct further study regarding the issue under investigated by providing use full information.

The researcher of this study believe that the study provide valuable suggestions and recommendations for website developer for further planning to fill the gaps concerning to usability and accessibility of website's as well as for any users of the site.

1.8 Operational definition of terms

Websites: -A Web site is an interactive software system. It interacts with at least two different kinds of users: end users trying to achieve some goal and developers/maintainers determined to keep the system working and improving it (Parajuli, 2007).

Usability: -The term usability refers to the ability to learn, interact with and use a product or service to achieve the purpose it is meant to facilitate. The International Organization for Standardization (ISO) 9241 -11 defines usability as “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in the specified context of use” (Abran *et al.*, 2003).

Website usability: -Web usability is an approach to assess if websites are easy to use for end-users without requiring important quantity of training, guiding or learning. Usability has a set of goals, such as presenting the information to users clearly and in an understandable way, clearing information uncertainty, and putting the right information in the right time and place.

Higher learning institution: - The HLI can be defined as a university level education. It offers a number of qualifications ranging from Higher National Diplomas and Foundation Degrees to Honors Degrees and as a further step, Postgraduate programs such as Masters Degrees and Doctorates (Asiimwe, & Lim, 2010).

Selected universities: - includes Jimma and Dilla public higher learning institution in Ethiopia.

Academic staff :- Full-time universities lecturers of Jimma and Dilla universities who are mainly responsible for teaching, researching and undertaking academic service (advising

students and performing professional duties) as well as researchers who work in specific research centers. They can be Professors, Associate Professors, Assistant Professors, lecturers and assistant graduates.

CHAPTER TWO: LITERATURE REVIEW

This section presents several concepts of website, existing usability models, guideline and standards website usability criteria and sub criteria, as the base for proposing an appropriate model for website usability model. The appropriate models, criteria's are present in the literature standard, and acceptable model included such as Eason, Shackel, Nielson, ISO 9241 – 11, and ISO9126 and QUIM Models are existing usability models.

2.1 Overview of Website

Web is becoming more vital each day for conducting trade, sharing information and for communication. Every passing day the number of institution, organizations and individuals publishing their websites is increasing (Liu, *et al.*, 2002). Considering all the information available on the web every individual should want to find and access useful information. For example any organizations want to learn what their competitors do and what products and they present using the web. By the help of this information institution may learn from their rivals and improve their own websites to increase their competitiveness.

Parajuli (2007) defined that website is a virtual location of the associated organization with a unique Uniform Resource Locator (URL) and is the information resource in the World Wide Web. It attempts to provide the need of all the proposed users through a wide variety of contents such as text, image, audio, and video incorporated in associated Web pages of the site. Since a Web site is the practical gateway of the organization, considerable effort and resources are spent on it to increase appointment and outreach. Users' participation in the Web is dictated by their cognition, skill, literacy, and disabling features, (Shneiderman, *et al.*, 2000a) and only satisfied users are likely to revisit the site and recommend it to others (Zhang & von Dran, 2000).

Website is playing a major role in various application domains such as business, education, industry activity. Therefore there are increasing concerns about the ways in which websites are developed and the degree of quality delivered. Designing a website should be passed through several design guidelines to make sure that the website can achieve the purposes and goals intended to be accomplished. Additionally, an organization's website is a gateway to its

information, products and services. Unfortunately, website design is often driven by technology, organizational or institutional structure or business objectives, rather than by user's needs (Mustafa, 2008).

According to Panneerselvam (2015), also stated website of any institution plays a vital role in today's environment; it is not only providing essential information but also to recognize the nature of institution. After the revolution of ICT, internet has become inevitable in today's life. To meet up the current requirements of this user society, the higher learning institutions need to have informative website by which they can contact about themselves, vision & mission, their strength, nature of business.

2.2 Definition and perception of usability

Usability is defined in varied terms by numerous researchers. Shackel (2009) describes usability as "technology's capability to be used easily and effectively by the specified variety of users, given particular guidance and user support, to fulfill the specified range of tasks, within the specified range of environmental scenarios".

Usability also considered in which a site can be educated and used, its safety, effectiveness and efficiency and the attitude of its users towards it. Zaphiris and Darin (2001), also define web usability as anyone using any kind of web browsing technology must be able to visit any site and get a complete understanding of the information, as well as have the full and complete ability to relate with the site if that is required. Usability refers to terms such as ease of use and ease of learning that implied providing users with systems requiring minimum cognitive and physical attempt to achieve users' needs and expectations (Sindhuja & Surajith, 2009).

Powell (2000) also argues the web site usability as the degree to which a website can be used by specified group of users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use. In other words, the web site usability is an examination and assessment on the success fullness of web site's user in doing some task or finding information in the web site (Yusof *et al.*, 2010).

Usability is an important quality attribute that has gained a well-recognized reflection for web advance. Usability can be defined in different contexts like ease of use, task performance and ease of learning (Nielsen, 2003). The ISO (25010:2010) stated as the usability in general the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. In this definition, effectiveness means the accuracy and completeness with which users accomplish specific goals, efficiency is the resources expended in relation to the accuracy and completeness with which users achieve goals, and satisfaction is described as the comfort and acceptability of use. While usability is defined in a general context, web usability is more specifically defined as clarity, simplicity, and consistency in the website design, in order to allow users to perform their tasks easily (Cappel & Huan, 2007).

2.3 Usability of website

Usability of a website communicates to how easy it is to find information and navigate many pages of the site. Usability, or how easy it is to use a site, is serious because if a site is difficult to use, users will go away elsewhere for the information or service. Poor usability has been established to undermine overall site credibility (Hasan, 2013). It is a web designer's main responsibility, for the sake of user retention, to create a design that makes it easy for users to find information through a clear and simple navigation system and well-organized content. Website usability is the quality of a user's interaction with a website or, in other words, how usable a web site is to the user. Eventually, users want to be able to easily access a website and determine how to use it within seconds. Usability influences whether many users will return to a website, how often they will use the website, and how happy they are with their overall experience at the website. Millions of websites in competition for users' time and attention, users can get their expectations for usability from the best of all of these other sites (Brinck&Gergle 2002).

According to Brinck&Gergle (2002) also studied Usable website is a one that allows users to accomplish their goals quickly, efficiently, and easily. The characteristics of a usable website include following factors.

- ❖ Functional correctness
- ❖ Efficient to use : -
- ❖ Easy to learn
- ❖ Easy to remember
- ❖ Tolerant of error
- ❖ Subjectively agreeable

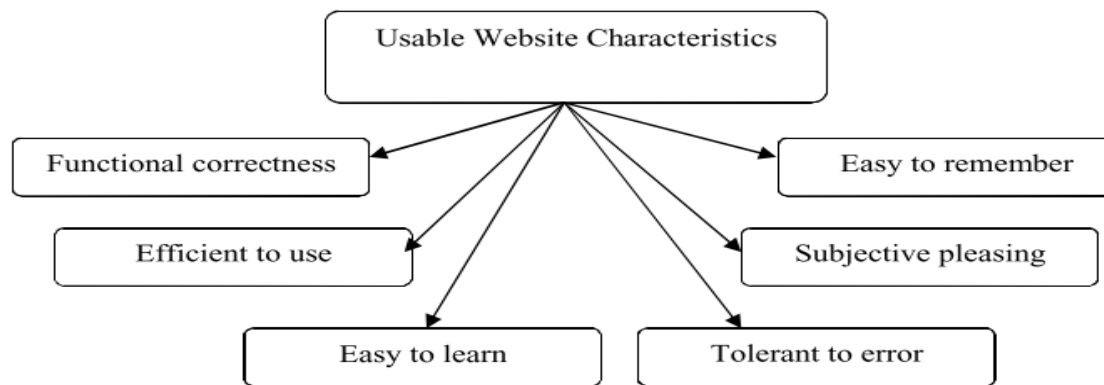


Figure 1: Characteristics of usable website (Brinck &Gergle 2002)

2.4 Existing usability model

There are various usability modes recommended by scholars some of them are described below,

2.4.1Eason Model

Eason Model is proposed by Kenneth Eason (1984) and available his model in an early issue of Behavior and Information Technology. Eason Model has 3 aspect, task, user and system. For task it has 2 subs attribute that is frequency and openness. User has three sub attributes that is knowledge, motivation and discretion. System has ease of learning, ease of use and task match. Eason Model cannot measure or compute usability without considering users and their target task. It is causal type of model because it has input that is independent variable and or result that is dependent variable. A causal model is one that makes prediction about causality. Eason model

sees usability as the result of several interacting variables or “multivariate” (Uitm, &Alam, 2010).

2.4.2 Shackel Model

Shackel Model was developed by Brian Shackel. In this model, there are 4 attributes such as effectiveness; learn ability, flexibility and attitude. Shackel Model does not mass the dimension, recognizing that the importance of each of these may different from project to project. Shackel model emphasizes measurement of a number of human factors, relating to human performance and approach (Lee, &Kozar, 2012). Modified Shackel model and adapted the model into usefulness, effectiveness, learn ability (or ease of use) and attitude or likeability, Marsico, & Levialedi (2004) said that definition with one or more of four criteria in Booth model are generally accepted by usability community.

2.4.3 Nielson Model (2003)

Nielson Model was developed by Jacob Nielson (2003). The main model is system acceptability and usability is part of usefulness. Other characteristics that contribute to the main model are utility, usefulness, practical acceptability and social acceptability. Under usability it has five characteristics such as easy to learn (learn ability), efficient to use (efficiency), easy to remember or memorize (memorability), few error and subjectively pleasing (satisfaction). Nielson Model focus on acceptability that mean if the system is not useful such as did not meet the user requirement, it will not accept it either it usable or not.

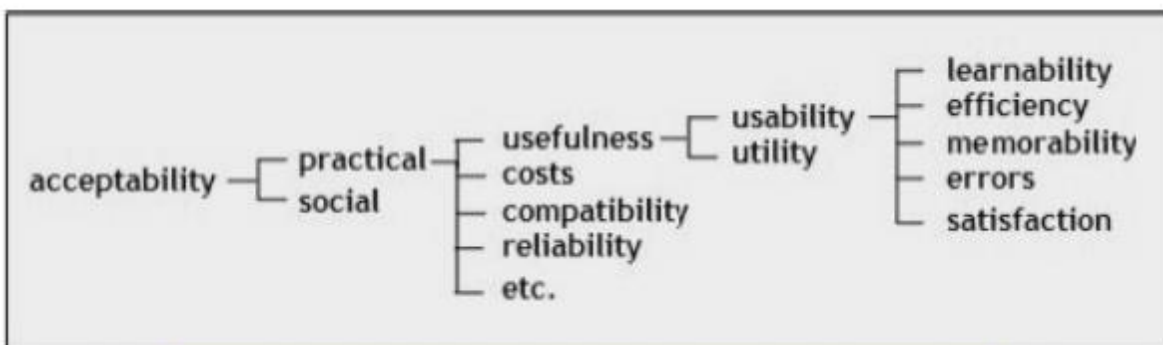


Figure 2: Jacob Neilson’s definition of usability model (source: Neilson, 2003)

During the study, researcher uses the theory from previous research, and narrowed down to five factors of Nielson Model (2003), (Website Standards Association, 2008):

- Learnability: - how easy users understand the layout of the website when they visit the website on their first time.
- Memorability: - how easy users can remember the process of the website to achieve the task after a period of not using it.
- Error Tolerant: - how easy users can recover from the errors.
- Efficiency of website: - is defined as a representation of resources expended in relation to achieving goals while visiting a website Lee and Kozar (2011).
- Satisfaction: - is the design of website is easy to use.

2.4.4 ISO 9241 – 11 (2010) usability standard

ISO 9241 is an international standard for guidance on usability based on process oriented. Nielson and Shneider man are among the committee members in the development of ISO Guidelines. For ISO 9241 – 11 has three attributes that are effectiveness, efficiency and satisfaction. ISO 9241 – 11 are put together from a different usability viewpoint. Effectiveness describes the interaction from the process perspective, efficiency which focus on results and resources involved and satisfaction which is a user viewpoint (Abran, *et al.*, 2003). ISO 9241-11 has objective measures of usability.



Figure 3: Usability sub characteristics according to ISO 9241 – 11 (source: Folmer& Bosch,2004).

- Effectiveness: refers to the completeness at which users achieve specified goals;
- Efficiency: refers to the resources used in completing a task; and
- Satisfaction: reveals positive attitudes toward using the system (ISO, 2010).

2.4.5 ISO 9126 (2001) usability standards

The approach was quality model of the product and initially published in 1991 and refined over the next ten years by ISO's group of software engineering experts. ISO 9126 is an extension of previous work done by McCall, Boehm, FURPS and others in defining a set of software quality characteristics. ISO 9126 divided into four parts which address respectively to the quality model, external metrics, internal metrics and quality in use metric. The internal and external measurements are functionalities, reliability, usability, effectiveness, maintainability and portability (Abran, *et al.*, 2003).

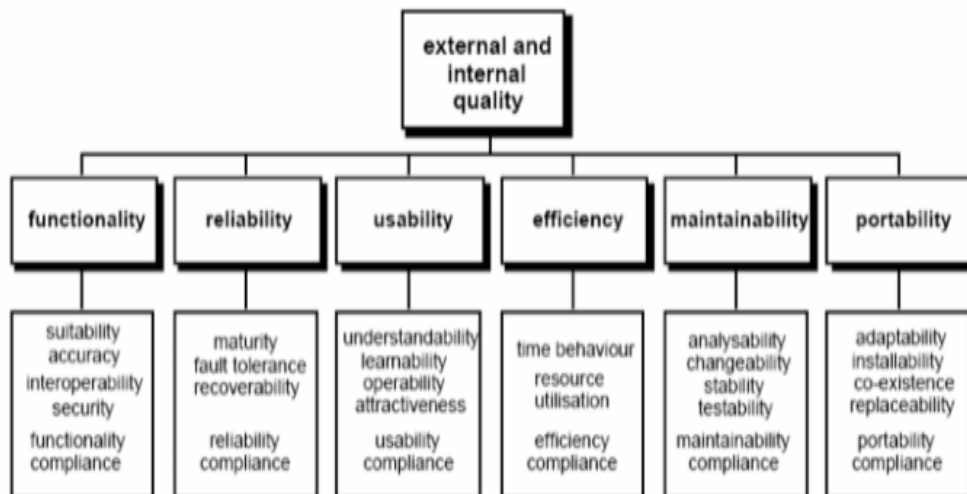


Figure 4: ISO 9126-1 model external and internal usability approaches

Under usability it has five characteristics such as understandability; learn ability, operability, attractiveness and usability compliance (Abran, *et al.*, 2003). The advantage of ISO 9126 model provides a framework for making trade-offs between software product capabilities and the attribute are applicable to any kind of software including computer programs and provide consistent terminology for software product quality.

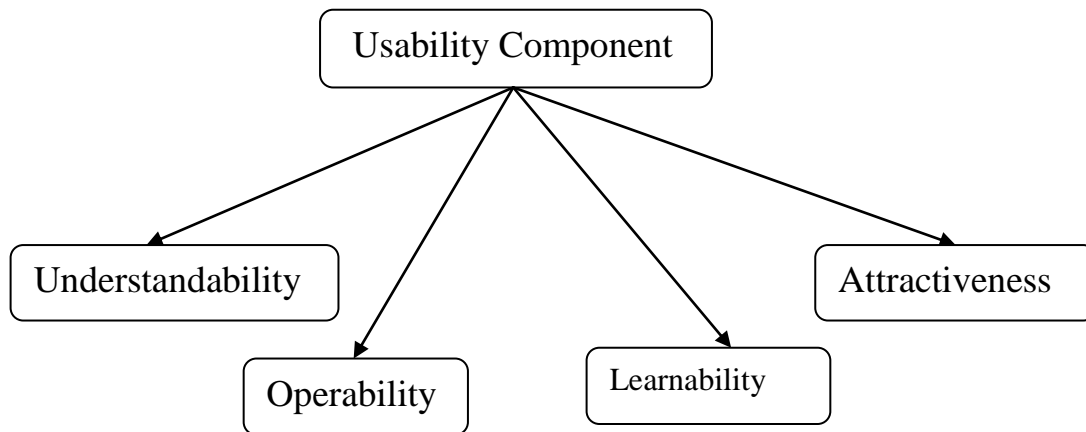


Figure 5: Usability sub characteristics according to ISO 9126 (2001) standards(source: Folmer& Bosch,2004).

- **Learnability:** -refers to how easy it is for casual users to learn a system. In the websites with high learnability users feel they are able to start using the site with the minimum of introductions and everything is easy to understand from the start.
- **Attractive:** -websites are visually pleasant, and appeal the interest of the users, whether it is functionality or information.
- **Operability:** - indicates the capability of a website to be easily operated by users. Users of the website must be comfortable with the manner through which services and content are presented in the website and be able to use the website easily without being frustrated or confused (Tsigereda, 2010).
- **Understandability:-** the user comprehend how to use the system easily

2.4.6 QUIM (2006)

Quality in Use Integrated Measurement (QUIM) is developed by Ahmed Seffah *et al.*, (2006). It is consolidated model for usability measurement and metrics. It combines various standard and model such as ISO 9241 and ISO 9126 are combined into a single consolidated, hierarchical model. It outlines methods for establishing quality requirements as well as identifying, implementing, analyzing, and validating both process and product quality metrics. This model

appropriate for novice user has little knowledge of usability and can be applied by usability experts and non-experts. QUIM model consists of 10 factors and subdivided into 26 criteria or measurable criteria, and lastly into specific metrics consist 127 specific metrics. The 10 factors consists Efficiency, Effectiveness, understandability, Learnability, Productivity, Safety, Reliability, Accessibility, Usefulness and Universality. The model is used to measure the actual use of working software and identifying the problem. In QUIM model association factors with criteria and metrics in a clear and consistent way. It also usable generally and can adapt in specific context of use cited in (Aziz & Kamaludin, 2014).

Usability	Factors
	Effectiveness
	Efficiency
	Productivity
	Satisfaction
	Learnability
	Safety
	Truthfulness
	Accessibility
	Universality
Use fullness	

Figure 6: Summarizes QUIM's ten usability factors model (Ahmed Seffah, *et al.*, 2006)

The researcher Seffah, *et al.*, (2006) employed that the factor that affect usability of website based on quality use integrated measurement consolidated models are as follow:

- **Efficiency:** - the capability of the software product to enable users to expend appropriate amounts of resources in relation to the effectiveness achieved in a specified context of use.
- **Effectiveness:** - is the capability of the software product to enable users to achieve specified tasks with accuracy and completeness.

- **Productivity:** - which is the level of effectiveness achieved in relation to the resources (i.e. time to complete tasks, user efforts, materials or financial cost of usage) consumed by the users and the system. In contrast with efficiency, productivity concerns the amount of useful output that is obtained from user contact or interaction with the software product.
- **Satisfaction:** which refers to the subjective responses from users about their feelings when using the software i.e., is the user satisfied or happy with the system.
- **Learnability:** - the ease with which the features required for achieving particular goals can be mastered. It is the capability of the software product to enable users to feel that they can productively use the software product right away and then quickly learn other new (for them) functionalities.
- **Safety:** This concerns whether a software product limits the risk of harm to people or other resources, such as hardware or stored information. It is stated in the ISO/IEC 9126-4 (2001) standard that there are two aspects of software product safety, operational safety and contingency safety.
- **Trustfulness:** the faithfulness a software product offers to its users. This concept is perhaps most pertinent concerning e-commerce websites but it could potentially apply to many different kinds of software products.
- **Accessibility:** the capability of a software product to be used by persons with some type of disability (e.g., visual, hearing, psychomotor). The Worldwide Web consortium suggested various design guidelines for making Web sites more accessible to persons with disabilities.
- **Universality:** which concerns whether a software service accommodates a diversity of users with different cultural backgrounds (e.g., local culture is considered).
- **Usefulness:** - a software sites enables users to solve real problems in an acceptable way. Usefulness implies that a software product has practical utility, which in part reflects how closely the product supports the user's own task model. Usefulness clearly depends on the features and functionality offered by the software product. It also reflects the knowledge and skill level of the users while performing some task.

2.5 Quality characteristics of website usability model

In general there are five quality characteristics of website usability such as

2.5.1 Effectiveness

Effectiveness is among characteristics that always include in standard usability model (Madan & Dubey, 2009). Effectiveness is more about the accuracy and completeness with which users can achieve certain goal. The main focus users when visit the website are required to complete the main reason visit the website. It also include it can be measure by measuring the outcome of the user's interaction with the website and error rates while attempting to complete the task.

2.5.2 Efficiency

According to International Organization for Standardization (ISO) efficiency refers to the resources used in completing a task (ISO, 2010). Efficiency defined as a representation of resources expended in relation to achieving goals while visiting a website. The user can achieve goals a quick visit without putting much cognitive effort and do what is of interest to them in an effective. They feel that the website responds at a reasonable speed. Confusion, or the tendency to lose one's sense of location in a website, can cause users to become frustrated, lose interest, and experience a measurable decline in efficiency (Tojib, *et al.*, 2008). Efficiency also can measure as task completion time and learning time.

2.5.3 Accessibility

Accessibility refers to the ease with which a visitor can reach a website. Download speeds due to access logs, transmission logs or server logs can be source of frustration to users. Adding graphic and media sometimes can make long waiting time to load a web page or inability to access a website temporarily (due to server breakdown or server capacity constraints). It can cause users frustration and negative publicity. There are a few issues that consider in accessibility such as cultural issues including language, color and symbols, social issues involving matters such as disability, gender and age, skills, economic factors and legal matters and technological issues

that relate to computer, internet connections, telecommunications network and infrastructure (Elsley, 2007).

2.5.4 Learnability

In order to achieve the efficiency and effectiveness while using a website, users must first learn how to interact with the device. The ease, in time or effort users can learn website and achieving a sufficient level of competence with the website and be able to complete goals in efficient and effective manner. Based on Nielsen's usability model (2003), learn ability refers to how easy it is for casual users to learn a system. In the websites with high learn ability users feel they are able to start using the site with the minimum of introductions and everything is easy to understand from the start. In the websites with low learn ability users feel that the site may be using concepts or terminologies which are unfamiliar and need more explanations (Nam& Nam, 2012).

2.5.5 Satisfaction

Satisfaction means that when users feel comfort and positive attitudes towards the use of the website. Users believe that the website can fulfill their needs has an impact on user satisfaction. The International Standard ISO 9241-11 (2010) defined this as the extent in which the users are free from discomfort while using the product and the general attitude of users during the use of the product (Moore, 2009). It also measure the level of comfort that user feels when using the website and how acceptable the website to user in achieving their goals. This attribute is more subjective and a researcher tends to indicate that is more difficult to measure. Effectiveness, efficiency, learnability, satisfaction and accessibility are identified as the main characteristic of website usability. All the characteristics will re-examined based on relevant literatures related to website usability.

2.6 Criteria for Evaluating the Usability of Websites

This section presents the categories and their corresponding or related subcategories criteria for evaluating the usability of Higher Learning Institution websites. There are many website evaluation criteria. Those may include navigation, architecture/organization, and design layout, ease of use, communication and content.

2.6.1 Navigation

This criterion assesses whether a website includes the main tools (i.e. navigation menu, internal search facility) and links which facilitate the navigation of users through a site, enabling them to reach the required information rapidly. Research showed that navigation is one of the design factors that influence website usability. Navigation comprised five subcategories (Pearson, & Green 2007), These were: navigation support: navigational links are clear and understandable in each page so that users can explore and find their way around the website and navigate easily; effective internal search: Internal search is effective: e.g. it is fast, accurate and provides useful, concise and clear results which are easy to understand; working links: Links are discernible, working properly and not misleading so that the user knows what to expect from the destination page; no broken links: The site has no broken links; and no orphan pages: The site has no dead-end pages cited by (Aziz & Kamaludin, 2014).

The basic element of an effective website is its navigability. “Good navigation in a website is comparable to a good road map.”Shahizan& Li, (2005) with good navigation, proper grouping of contents, users would know where they are, where they have visited, and how they can get to a destination from their current position. Asimwe& Lim (2010) claimed that a good navigation structure and navigation tools help users find information easily and quickly on WebPages. It has the following website features were examined in this category:

- Website address (Universal Resource Locator) clarity: Every online website has an address that uniquely identifies it. The address should portray the name of the institution and should be easy to memorize in relation to what the institution does.
- Main menu and other links: Links connect WebPages and documents within the website to each other and to other external websites. Links should not be broken and should have names that correspond to the linked information.
- Sitemap: A sitemap is a collection of links for all main WebPages on a website. It helps users find specific information under a certain section of the website.
- Search tool: This is a tool for searching information within a website without browsing through WebPages. It is an important tool because it facilitates fast information retrieval.

- Help/FAQ (Frequently Asked Questions) pages: These pages provide useful information to users when the users need help. Frequently asked questions are based on the common queries raised by users.

2.6.2 Architecture/organization

This criterion relates to the structure of a site's information which should be divided into logical, clear groups; each group should include related information. Architecture/organization consists of three subcategories(Aziz & Kamaludin, 2014). These are: Logical structure of site: The structure of the site is simple and straightforward; related information is grouped together; not deep architecture: Architecture is not too deep so that the number of clicks to reach goals is not too large, e.g. it does not require clicking more than 3 links; and simple navigation menu: The navigation menu is simple and straightforward.

2.6.3 Ease of use and communication

This relates to the cognitive effort required to use a website and to the existence of basic information which facilitates communications with the university in different ways. Research has found that ease of use is an important factor/issue in determining website usability (Tarafdar& Zhang 2005). Ease of use and communication comprises four subcategories (Agarwal, &Venkatesh, (2002). The first one is Quick downloading of web pages: The download time of the pages is appropriate the other is easy interaction with a website: Interaction with the website is easy for different groups of users, e.g. navigating through the site's pages is easy; returning to the home page from any page is easy; finding information is easy; contact us information: Useful information to enable easy communication with the university is displayed, e.g. contact us (e.g. name, physical address, telephone number, fax number, email details); and foreign language support: The site's content is displayed in different languages.

2.6.4 Design layout

This relates to the visual attractiveness of a site's design; the appropriate design of a site's pages, and the appropriate use of images, fonts and colors in the design of a site. Design comprises six subcategories(Aziz & Kamaludin, 2014):

- Aesthetic design: The site is attractive and appealing so that it impresses the potential client; appropriate use of images: The quality of images is sufficient, there are no broken images, and images make a contribution to the understanding and navigation of the site, image size is relevant so that it has minimal effect on loading time;
- Appropriate choice of fonts: Font types are appropriate and easy to read; appropriate choice of colors:
- Choice of colors for both fonts and background is appropriate, the combination of background and font colors is appropriate;
- Appropriate page design: Pages are neat, page margins are sufficient, the page title is appropriate; and consistency:
- Page layout or style is consistent throughout the website: e.g. justification of text, font types, font sizes, colors, and position of the navigation menu in each page.

According to Shirley (2004), the layout (design) is essential for websites. It helps users to understand the structure of content better, and influence the first impression as well. Psychologists at the Carleton University cited in Lindgaard *et al.*,(2006) found that it takes the users only 50 milliseconds to decide whether they like a website or not. There is no time to lose! Within the blink of an eye it is necessary to succeed in making a positive impression on the user. If users get negative impressions, they probably lose interest no matter how excellent the website is from perspectives of content and usability. In addition, one important component of website design is Media. The main media elements are sound, graphics, images, audio and video Sound that can help improve or degrade usability (Asiimwe& Lim 2010).

2.6.5 Content

This assesses whether a site includes the information users require. Research stresses the importance of this factor and shows that it is one of the most important factors that influence web usability its content consists of seven subcategories (Agarwal & Venkatesh, 2002). These are:

- Up-to-date information: The information is up-to-date, current and often updated;
- Relevant information: The information is sufficient and relevant to user needs, e.g. content is concise and non-repetitive,
- Terminology/terms are clear and unambiguous;
- No under-construction pages: There is no 'under construction' pages;

- **Accurate information:** The information is accurate; information about the university: Basic facts about the university are displayed, e.g. university overview, higher management, academic calendar, registration, description, photographs, etc.; information about the colleges: Adequate information about the colleges is displayed, e.g. overview, department, specializations, and information about the departments: and information about the departments is displayed, e.g. overview, academic staff, outlines, course descriptions, study plans, specializations.

2.7. Related works

Usability of website has been conducted over the year and in many domains. The main focus of this study is to design a usability model particularly for public universities' websites. This section presents a number of previous studies related to the evaluation and assessment, factors of usability and accessibility of different Websites in generally and specifically to those related to the HLI Websites in different part of the world. However, none of studies yet conducted in Ethiopia on the accessibility and usability of higher learning institution websites' as mentioned above in statement of the problem this also one gap to fill the gap in our context because research can be start from the scratch and other reviewed researches.

Research was done by Astani & Elhindi (2008) on the heuristic evaluation method to evaluate the usability of the top 50 colleges and universities. This study was conducted by two experts who evaluated and rated the sites (based on Likert scale) against five characteristics: Information content, navigation, usability, customization, download speed and security. Finally, the result indicated that the tested websites had usability problems related mainly to old content and inappropriate layout.

According to Bairamzadeh & Bolhari (2010) investigates that factors affecting students' satisfaction of university websites. The proposed model consisted of usability, trust, perceived usefulness, satisfaction and website innovation. Out of the 9 hypotheses stated in the study, the data only supported 7 hypotheses. The most significant factor affecting students' insight of satisfaction, usefulness and trust was found to be website innovation. The authors suggested that website innovation should be given more consideration in order to enhance students' insight of satisfaction, usefulness and trust.

Educational websites were also studied from many different perspectives. Zhang and Dran (2001) developed a theoretical framework for evaluating website quality from a user satisfaction perspective. Others concentrated on some specific features of websites. For example, Lautenbach *et al.* (2006) developed a framework to measure usability of websites, while Yoo and Jin (2004) investigated and evaluated the design of university websites. Other researchers, while assessing the university websites took in consideration other features. Singh & Sook (2002) attempted to find solutions to user problems and involved evaluating South African university websites on certain factors.

Christoun and his colleague conducted a research on the usability of academic websites providing higher education. They conducted an online survey to measure the student's satisfaction with regards to their institutional website. The online survey consists of three major areas of usability such that content, aesthetic and updated technology implementation. Their survey analysis resulted that 89.4% students were satisfied with selected websites (Christoun *et al.*, 2006).

Abdul Aziz, *et al.*, (2010) did a research to investigate the usability of Malaysian university website. This study used 120 samples of higher education institution websites from the online portal of the MOHE. Page size, broken links and web performance are the usability features that the study focused on. The authors concluded that still there are several issues that need to be addressed in these websites and also gave some suggestion on how to increase the usability of website.

A study was conducted by Chiew & Salim (2003) on developing a web-based tool (called WEBUSE) which consists of 24-questions for evaluating the usability of websites. The report generated by the tool indicates how good the website with respect to usability is. The researchers claim that WEBUSE is suitable for the evaluation of all types of websites and for any domain. The tool can assist webmasters to improve their websites based on the response provided by the visitors or respondents of the intended websites.

In addition, review of related studies shows that website usability evaluation is becoming important in higher learning institution to give quality service and information access is critical in delivery of quality educational information and to provide up to date information, events and

news to students, academics and administrative staffs as well as the institution communities in efficient way.

Though few literatures of other countries are available addressing the issue of website usability, they were all focused on the same group of users, the students. Most of the researchers on the literature opted to be too specific by evaluating only a single feature or design of a given website (Astani and Elhindi 2008; Bairamzadeh & Bolhari 2010; Osborne and Rinalducci 2002). They also used heuristic approach, evaluator based and tool based approach to conduct their research.

The previous study was presented in quality and factors of website in academic institution or sectors to access educational information on students' satisfaction. On the above related study the researchers used several evaluation methods have been used to evaluate the usability of websites in order to suggest enhancements to the design of websites. Some methods are address experts, while others are directed toward users.

Such evaluation methods included in the above research such as automated evaluator based, tools-based and user - based (heuristic evaluation) methods was employed to assess specific part of the website. The researcher of this study use different methodology to collect the data and its unique from the previous studies, this is survey research design which includes qualitative and quantitative research design for questionnaire and observation data collection technique.

And also, the study is done on some selected Ethiopian higher learning institutions website from perspective of academic staffs' as potential users which is a newer point of view because the previous studies conducted on students' perspective. The research addresses usability factors of selected HLIW in Ethiopia by using questionnaire and observation method and In addition this research focused on different variable's influence on websites usability such as content, design layout, ease of use and communication, utilization, efficiency and reliability. So, this research is different from the existing researches.

One of the main contributions is the presentation of the usability model to help users in order to make user friendly websites.

This study is expected to provide the other researcher with insights into potential problem areas of usability factors which include effectiveness, content, design layout, efficiency and ease of use

and communication as well as reliability not only for university websites but for other academic related institutions' websites.

At the end, this research has contributed in presenting some essential findings related to usability of higher learning institution websites particularly in Ethiopia. The proposed model can play a major role towards future usable websites, and can be modified to improve usability in similar websites.

CHAPTER THREE: METHODOLOGY OF THE STUDY

3.1. Description of the Study Area

There are 33 universities established in different parts of Ethiopia that have been authorized by the Ministry of Education. Those universities are classified into 3 categories based on their establishment period. Ten are relatively older and categorized in first categories, 11 are established somewhat later and categorized in 2nd generation and 12 are newly established and categorized in third generation. Therefore, for this study one university taken from first generation and the other is from second generation. i.e. 1st and 2nd category respectively Jimma University (JU) and Dilla University (DU) are selected by using convenient/suitable method. The researcher believes that these two universities represent the public universities in Ethiopia as they have relatively equal budget and maturity level with their respective categories. They all also have websites and infrastructure for academic staff to access the websites.

Jimma University (JU) is a public higher educational institution established in December 1999 by the amalgamation of Jimma College of Agriculture (founded in 1952), and Jimma Institute of Health Sciences (established in 1983). Jimma is the town of Jimma zone, which is one of 18 zones of the Oromia Regional State found at 352 km from Addis Ababa, the capital city of Ethiopia, in the South western part of the country(www.JU.edu.et).

Dilla University is 2nd generation university found in Dilla Town - the capital of Gedeo zone. Located 360 KMs south of Addis Ababa, Dilla is an administrative center, resident area of multi-nationalities and where vigorous trade activities are undertaken. Gedeo zone is one of the 14 zonal administrations of SNNP Regional State. Yirga Cheffe specialty coffee, prominent staple food plant 'Enset' production and agro-forestry land use system which encompasses varieties of fauna and flora species being the out mentioned, the zone is primarily known for its agriculture and related production and trade activities(www.Dilla.edu.et).

3.2 Research methods

This research focuses on investigating the usability study of higher learning institution website in some selected public universities. The research method was survey method. Survey was used in order to gather data at a particular point of time or a single period being a strategy and used for wide population, employed in achieving the objective of the research with the intention of describing the nature of existing conditions or identifying standards against which existing conditions can be compared, or determining the relationships that exist between specific events and which includes qualitative and quantitative methods. Generally, survey design enabled the researcher to collect in depth information on views, opinions, practice.

3.3 Study Population

According to (2009) statistics the population of each universities academic staff data in JU and DU respectively were reflected in table 1, which indicated 3097 academic staff; actively engaged in teaching-learning and research output.

Table 1 Name of universities and the total population

NS	Name of universities	Total population
1.	Jimma	1697
2.	Dilla	1400
Total		3097

Source: based on website and asking human resource (2009).which where Jimma and Dilla universities

3.4 Sampling Technique and Sample Size Determination

3.4.1 Sampling technique

The total population for the study was three thousand ninety seven (3097). Since it is impossible to collect data from the whole population in the given period of time for this study samples representing the population was taken into consideration.

The study employed proportional sampling technique, which used to draw three hundred forty one (341) respondents from three thousand ninety seven (3097) academic staff; according to the different universities of academic staff. There were two categories (Jimma University and Dilla University). To identify individual participant's proportional random sampling was used to ensure that respondents from different universities were equally considered.

3.4.2 Sample size determination

The data collected by the researcher from two universities, Jimma University has a total of 1697 and Dilla 1400 academic staffs actively working on their day to day academic activities. Having the population of each university the total sample size was determined using (Kothari, 2004) formula as follows:

$$n = \frac{n_o}{1 + \frac{n_o}{N}} \quad n = \frac{z(\frac{\alpha}{2})^2 * p(1-p)}{d^2}$$

Where

n = sample size

N = total population of academic staff

P= proportion of population

α = level of significance

d= degree of accuracy desired setting at (5%)

q = 1-p Where: d = 0.05, p = 0.5, α =0.05

$$n_0 = \frac{1.96^2 * 0.5 * 0.5}{0.05^2} = 384$$

Considering the population correction factor into account the sample size is:

$$n = \frac{384}{1 + \frac{384}{3097}} = 341$$

Therefore, the total sample size was 341 academic staffs. To proportionally allocate samples for each universities total sample size of all universities were multiplied by the ratio population size of the proportional to total population.

That is:

$$n_h = (N_h/N) * n$$

Where:-

n_h = sample size for the proportion

N_h = the population size for the proportion

N = Total population

n = total sample size

The sample of academic staff from JU, and DU can be calculated as follows:

$$JU = (1697/3097) * 341$$

= 186.85 since humans cannot be in fraction; by approximating to the nearest non-fractional number = 186

$$DU = (1400/3097) * 341$$

= 154.15

= 154

3.5 Data collection techniques

The data has been collected with a structured questionnaire using both open-ended and close-ended by randomly selecting respondents from each universities according to their sample size. This is because the questionnaire provides an opportunity for respondents to give frank and anonymous answers if not affected by the presence of the researcher Secondly; questionnaire also has an advantage of enabling respondents to give their opinions independently (Sarantakos, 2003).

Observation employed by the researcher for the usability of selected universities websites and the observation check list was prepared based on related literature review for the study.

The methods used to collect data for this study were questionnaire and observations. From different categories of each data collection methods fixed alternative questionnaire method was used to collect data from the academic staffs in their university whereas and also detailed observation checklist was prepared for the availability of internet service and computer at each study site.

The questionnaires included several types of questions: demographic information, usability of website and Likert type items. Likert – type items were used by researcher to ask the respondents to respond to statements by choosing “strongly disagree” (scored a”1”), “disagree” (scored a “2”), “neutral” (scored a“3”), agree (scored a”4”) and “strongly agree” (scored a”5”). Generally fixed alternative questions were used by the researcher to identify how strongly respondents believe in a certain position and how much of a certain behavior the position did.

3.6 Source of data

Primary and secondary data were used in this study. The data was collected through observation and questionnaires. Primary data is recognized as data gathered for a specific research in response to a particular problem through observation and questionnaires these methods help to collect firsthand information through questionnaire from academic staffs. Additional data were obtained by secondary sources such as articles were acquired by using document analysis technique.

3.7 Data Collection Procedure

The data for this research was collected using an observation and questionnaire. The questionnaires were created using suitable questions modified from related research and individual questions formulated by the researcher and approved by the advisors. To collect data from the respondents the researcher got official letter from the Department of Information Science, Jimma University requesting for assistance from institutions of all study site of the

study. Then the researcher submitted the letter to the academic vice presidents (AVPs) of the study site to get permission to conduct the survey.

3.8 The Study Variables

The important variables of this study were dependent and independent variables. Dependent variable is a variable that is affected or explained by another variable. An independent variable is a variable that causes change in other dependent variables (Jabar *et al.*, 2013).

3.8.1 Dependent Variable

The Dependent variable of this study was website usability.

3.8.2 Independent Variables

Independent variables were Attractiveness, Helpfulness, Efficiency, Reliability, Learnability, Functionality, Satisfaction, Effectiveness, and Content, ease of use and communication, navigation & links, and user interface design that are factors of usability. These usability factors can serve as a guideline and can also be used for measuring usability level of universities websites.

3.9 Pre-test of data collection instrument

The purpose of a pre-test exercise was to test reliability and validity of the data collection instruments. Reliability is the extent to which a procedure yields the same answer time after time. In testing reliability, the researcher was interested in knowing if the instrument brings consistency in the research. Validity is the degree to which the researcher collects data that reflects the true picture of the phenomenon being studied. In measuring the validity, the researcher tested whether the instruments collect credible data. Prior to final data collection, a pilot study was done to test the questionnaire. It was geared towards establishing whether the questions were clear, appropriate, and if there were other questions that could be asked. It also helped in testing the language and content of the questions. Modifications were then made appropriately on the basis of the findings of the pre-test.

3.10 Data Quality Control

A brief orientation was given to the data collectors. The questionnaire was done at first time and necessary adjustments done based on the feedback. The completeness and consistency was also checked at the site by the researcher. The missing data, completeness and consistence were checked before data analysis. This increases the validity of the research.

3.11 Methods of Data Analysis

Data analysis is the process of bringing order, structure and meaning to the mass of collected data. After the required amount of data was received from the field, it was reviewed for any inconsistencies, organized and then analyzed. Data analysis statistical software, SPSS version 20 was used; data was analyzed using both descriptive and inferential statistics (linear regression model). After that interpretation of the data was done and a summary report developed identifying the major themes and associations between them. Percentages, charts, tables used to present the finding.

3.12 Ethical consideration

Ethical issue is considered in all steps of the research and the issue was a critical for both researcher and respondents. Detailed explanation of each and every activity in this study about the objective, purpose and benefit of the study was specified to the study population. Study participants full cooperation and oral consent was taken. During the study, the respondents feel free and express their ideas freely without any internal and external pressures and any personal information kept confidential. This research checked by Validity and reliability of data: by avoid jargon words, confusing and ambiguous questions the researcher selected fifty academic staffs to cheek a content validity of data as quality control and all the data collection tools were designed from standardized related literatures and its reliability was tested by SPSS software.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1. Response rate

This chapter deals with the results and discussions of the data analysis. The data was gathered from different faculties (colleges) which are found in two selected universities; Jimma and Dilla Universities. It was obtained through questionnaires and observation. Most of the questionnaire was self-administered; this is done to increase the quality of data collected and the response rate. Meeting respondents in person helped to better clarify and explain the objectives and importance of the research, so that they would give the actual information. The total numbers of distributed questionnaires were 341 out of which 260 were filled and returned. These number shows that above 76.4 % were filled and returned. Those entire 260 questionnaires were filled properly and found appropriate for analysis.

Table 2: Number of distributed and collected questionnaire

No.	Name of the institution	Number of Questioners		
		Distributed	Collected	Percentage (%)
1	JU	186	141	76 %
2	DU	154	119	77.2 %
Total		340	260	76.4 %

4.2 Socio demographic data

Table 3: Socio demographic information

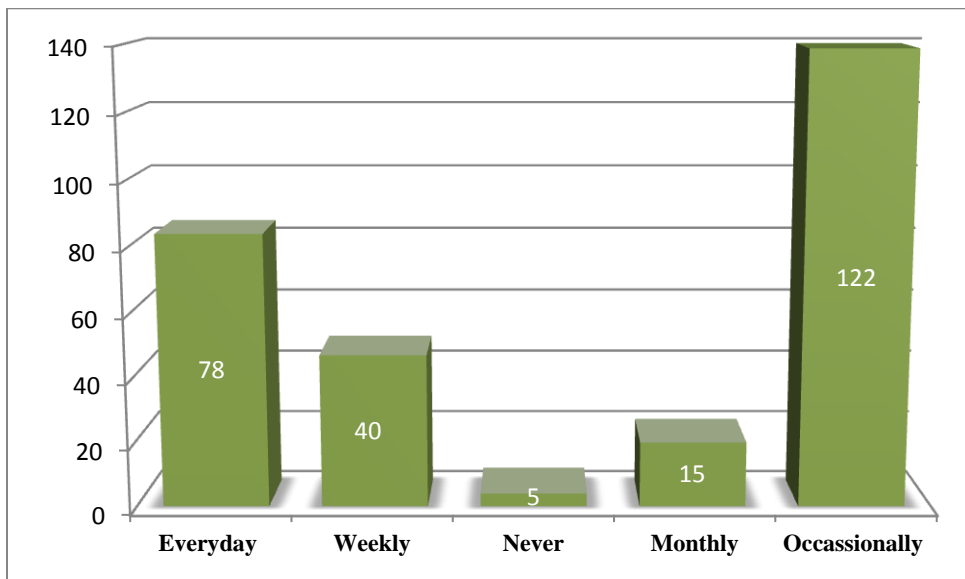
Respondents University					
Category		Frequency	Percent	Valid percent	Cumulative percent
	JU	141	47.8 %	47.8	47.3
	DU	119	40.3 %	40.3	100.0
Sex					
Valid	Male	208	80 %	80	80
	Female	52	20 %	20	100.0
Respondents academic qualification					
Valid	B.Sc/BA	135	51.9 %	51.9	51.9
	Msc/MA	96	36.9%	36.9	88.8
	PHD	29	11.2%	11.2	100
	Other	0	0.0 %		
Respondent position					
Valid	Academic staff	260	76.4%		

Table 3 above, shows that the respondents were asked to give their opinion about common questions in two selected universities. The result presented in above showed that majority of the study participants in terms of gender 80 % were males and 20 % were females. According to Table 3, 51.9 % of the respondents have B.Sc/BA degrees, followed by MSc/MA degrees holders, 36.9%. The rest 29 (11.2%) have PhD.

4.3 Frequency of use higher learning institution website

The respondent's reply about how often you visit the website among higher learning institution is depicted in Figure 7 below:

Figure 7: Frequency of visit the higher learning institution website

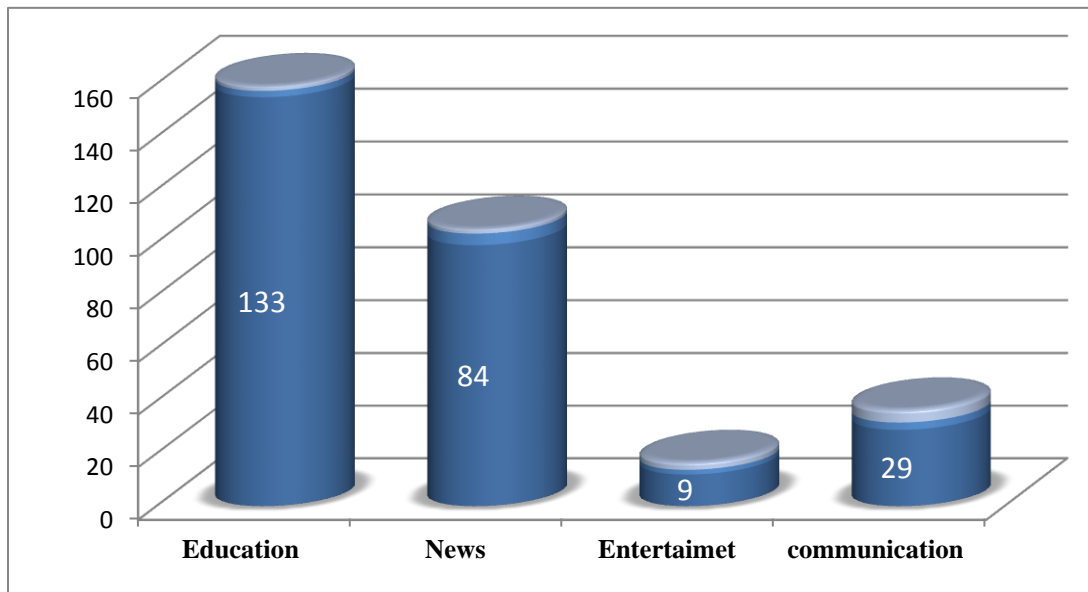


The above finding shows that the frequency of the academic's staffs visits the website varies in the response gathered from two universities; Jimma and Dilla. The options given to the academic staffs to choose from were, every day, weekly, monthly, occasionally and never. Some student responded saying three times a week, so this response is added to the occasional option. Therefore, according to the responses gathered, the highest frequency of use is in a weekly 15.9 %, occasionally period options scoring response rates of 46.9 %. The options monthly 5.8 % and everyday scored a response rate of 30 % and finally never scored option scored 1.9 %. Therefore, the result shows that Ethiopian public higher learning institution academic staff use or visit the educational website the occasionally. This is similar to the study conducted by Tsigereda (2010); the frequency of the student's visits to the website varies in the response gathered. The options given to the students to choose from were, every day, weekly, monthly, occasionally, never and other. Therefore, according to the responses gathered, the highest frequency of use is in a weekly

and occasionally period with both options scoring response rates of 32.4%. This implies that there is still low level of usability of the website, which is affected by different factors.

The most common things that the instructors are attempting to do on higher learning institution website. The summary of the responses are presented in figure 8 below:

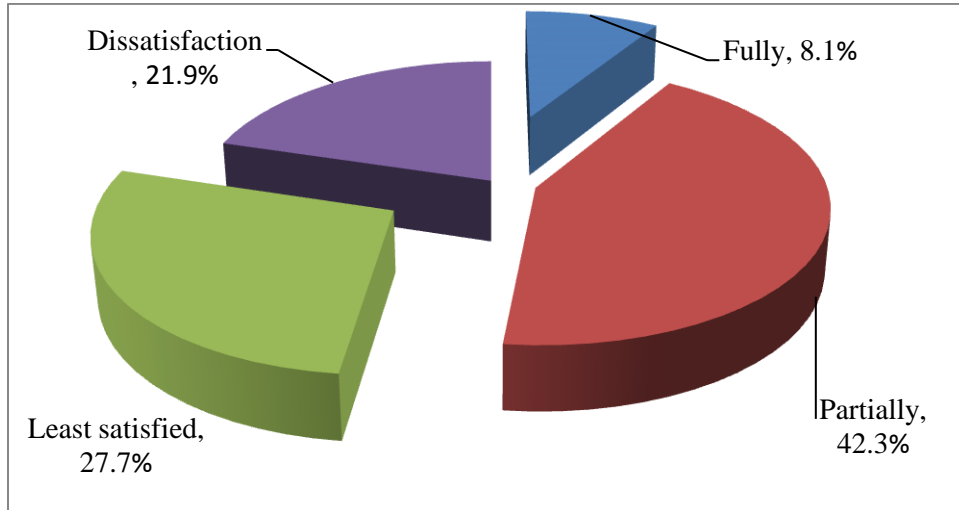
Figure 8: purpose of visiting the website



From fig 8 above shows that for what purpose the academic's staffs use the higher learning institution website vary in the response gathered. The options given to the academic staffs to choose from were education, news, communication, and entertainment. 32.3 % academic staffs responded saying for news or events, 3.5 % of respondents use for entertainment, 9.8 % for communication and 51.2% use for education purpose. Therefore, according to the responses gathered, the highest frequency is for education purpose. So, the result shows that instructors or academician use the higher learning institution website for education purpose and new events. This was also emphasized by Wang (2009), most visitors 56.9% want use the higher learning website to find information about courses/programmes. Furthermore, 42.2% of them want to learn more about their University. Moreover, 36.7% of the visitors want to find practical help about studying at Lund University. 31.2% of them are attempting to find contact information based on particular purpose.

The satisfactions of higher learning institution website from academic staff's perspective in selected universities were presented in figure 9:

Figure 9: Satisfaction level of higher learning institution



The above result revealed that the satisfaction level of higher learning institution website from the whole academic staff's in the selected universities website vary in the response gathered. The options given to the academic staffs to choose from fully satisfied, least satisfied, partially satisfied and dissatisfied. 8.1% academic staffs were responded for fully satisfied, 27.7 % of respondents use for least satisfied, 42.3 % for partially and 21.9 % said for dissatisfied on higher learning institution. According to the responses gathered, the highest frequency is on partially satisfied. The satisfaction and effectiveness level of higher learning institution website for academic staff are partially satisfied. Therefore, result shows that majority of the respondents in selected Ethiopian public universities were not fully satisfied as HLIW

4.4 Satisfaction and effectiveness of the higher learning institution website

There are different questions and usability issues raised to know the factors of website usability, satisfaction and efficiency of higher learning institution website.

Table 4: Satisfaction and effectiveness of the higher learning institution website

Indicators	Item	Respondents' level of satisfaction					Central Tendency		
		SDA	DA	U	A	SA	Mean	SD	Dec
Understandable	The website provide clear information to user	16.9%	28.8%	21.5%	31.5%	1.2%	2.72	1.158	A
Relevant	Users of higher learning institution website get important information	9.6%	25.4%	19.2%	37.7%	8.1%	3.09	1.158	A
Update information	It is easy to find information about events in the university	13.8%	25.4%	16.5%	40.4%	3.8%	2.91	1.152	A
	The website offers current and up to date information	18.8%	35%	18.8%	23.4%	4.2%	2.59	1.130	DA
Content	The website provide important links to outside sources and reference	14.2%	34.9%	23%	21%	6.3%	2.73	1.148	DA
	HLEW display logs, copy rights and calendar information to users	10.5%	30.2%	22%	31.2%	6.1%	2.95	1.130	A
	The website provide accurate information about the university, college and department	10.2%	34.2%	18%	30.5%	6.8%	2.89	1.154	DA
	Websites information acknowledge authors, place and dates of publications	15.3%	31.5%	24.7%	22.7%	5.8%	2.72	1.145	DA
Interface attractiveness	I found the interface of the website is clear	16.3%	32.9%	24.1%	22.4%	4.4%	2.66	1.125	DA
	Pages are overcrowded with information	14.2%	23.7%	23.7%	35.6%	5.1%	2.97	1.141	A
	Similar font and color are used throughout the website	11.9%	19%	21.4%	22.7%	25.1%	3.30	1.345	SA

SA(5)= strongly agree, A(4)=agree, UD(3)= undecided, DA(2)= disagree, SDA(1)=strongly

Table 4 revealed that the descriptive statistics on the satisfaction and effectiveness of higher learning intuition website in Ethiopian selected public universities. The researcher asked the respondent to rate the question on the base of the five Likert scale. To analysis the results the researcher considers the percentage corresponding to mean(X) and standard deviation (SD) of the scale for analysis respectively. The respondents agreed to that for the questioner website provide clear information to users with the percent 32.2%, and also respondents agreed for the questioner users of higher learning institution get important information with the percent of 36.6%. And also respondents disagreed for the questioner website offers current and up-to-date information, and it is easy to find information about events in the universities 39.3%, 35.3% are disagreed. For the question the website provides important links to outside sources and reference 36.3%) respondents are disagreed and 36.6% respondents' responds for the question HLEW display logs, copy rights and calendar information to users are agreed. For the question the website provide accurate information about the university, college and department, Websites information acknowledge authors, place and dates of publications, I found the interface of the website is pleasant, and the alignment of text and page element is consistent throughout the website 28.8% to 37.3%, all the respondents respond disagreed on the content and interface attractiveness issues of higher learning institution. And 25.1% were strongly agreed for the question similar font and color are used throughout the website and also 35.7% agreed on Page are overcrowded with information. The result as presented in Table 4.4 shows that some of the respondents agreed that the website provide clear information to user with mean value 2.72, Users of higher learning institution website get important information with mean value 3.08 and accordingly, the mean value was 2.92 HLEW display logs, copy rights and calendar information to users respectively. The second most respondents scale disagreed that the up-to dates information, content, interface and attractiveness. Accordingly, the mean value was 2.57 to 2.79 from selected universities. From this the result shows that the types of satisfaction and effectiveness problems that identified on the two websites, with regard to the three main usability problems themes. Is show that disagreed on the usability problems that were identified on each site is related to up to date information, content and interface attractiveness area, while agreed on

the usability problems that were related to the accuracy and relevance of information. Therefore, the highest learning institution website not provides up to date information and the interface is also not attractive for their users.

4.5 Usability factors of higher learning institution website

There are different factors raised in the following table to know the degree each factors on the usability of website.

Table 5: Factors for usability of the higher learning institution website

Indication	Items	Respondents' level of satisfaction					Central Tendency		
		SDA	DA	U	A	SA	X	SD	Dec
Reliability	Clicking on any referenced link redirect you to a valid page	16.9%	32.9%	24.1%	23.4%	4.1%	2.65	1.133	DA
	Whatever errors occur, the website recover quickly	16.6%	39.7%	17.3%	22.7%	23.4%	2.57	1.122	DA
Efficiency	I can access the website from any favorite browser	20.7%	14.9%	31.9%	22.7%	9.6%	2.86	1.258	UD
	It is possible to find what I want within a reasonable time	13.2%	30.5%	15.6%	37.3%	3.4%	2.87	1.153	A
Understandability	I think the overall structure of the website is straightforward	14.2%	30.2%	22.4%	27.1%	16.1%	2.87	1.172	DA
	Terminology used in the website are understandable	44.1%	20.7%	8.1%	22%	5.1%	2.23	1.161	SD A
	I think it is easy to learn how to use the website	14.6%	25.8%	16.3%	38%)	5.4%	2.94	1.199	A
	It is ease find information I need on the website	16.6%	30.7%	16.6%	29.8%	5.4%	2.78	1.205	DA
	Organization of information website is easy to understand	13.6%	28.1%	20.3%	30.8%	7.1%	2.90	1.188	A
Interactivity and Multiple language	I know who I contact for more information about any thing	29.5%	25.4%	19%	21%	5.1%	2.47	1.253	SD A
	It is easy to switch between language in the site	21.4%	32.9%	20.7%	22.7%	7%	2.52	1.130	DA
	Necessary supplemental reference material are available more than in one page	17.3%	23.4%	33.6%	22%)	3.7%	2.72	1.104	UD

support									
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SA(5)= strongly agree, A(4)=agree, UD(3)= undecided, DA(2)= disagree, SDA(1)=strongly disagree

Table 5 shows the descriptive statistics on the usability of website in the Ethiopian selected public Higher Institutions. The researcher asked the respondents to rate the questions on the base of the five Likert scale. To analyze the results the researcher considered the percentage corresponding to the mean (M) and the standard deviation (SD) of the scale for analysis respectively.

The respondents disagreed that clicking on any referenced link redirect you to a valid page 32.7%, and also 39.7% of respondents disagreed on whatever errors occur, the website recover quickly and respondents disagreed on I can access the website at anytime 37.6%, the respondent underside on I can access the website from any favorite browser 94 (31.9%) and the respondents also responds agreed on it is possible to find what I want within a reasonable time 37.3%, and also 30.2% respondents agreed I think the overall structure of the website is straightforward, 130 44.1% strongly disagreed on Terminology used in the website are understandable. 38% respondents respond agreed on I think it is easy to learn how to use the website and disagreed on it is easy to find information I need on the website were 30.7% and agreed on organization of information website is easy to understand 28.1%. Strongly disagreed and agreed on I know who I contact for more information about anything and it is easy to switch between languages in the site 29.5% and 32.9%, other respondents undecided on necessary supplemental reference material are available more than in one page.

Questions to determine the factor that affect website usability were asked to respondents' of each two universities. Indicated that on efficiency the item it is possible to find what I want within a reasonable time with the mean value 2.8, understandability the item I think the overall structure of the website is straightforward with the mean value 2.8, with Learnability the item I think it is easy to learn how to use the website was high with mean value and in operability with the item Organization of information website is easy to understand with the mean value 2.9 and It is easy to find information I need on the website with mean value 2.7, under multiple language support the item necessary supplemental reference material are available more than in one page 2.72 are

which had the highest mean value. From this the result shows that the types of usability problems that identified on each websites, with regard to the four main usability problems themes. Is show that the disagreed are the highest percentage on the usability problems that were identified on each site is related to reliability, operability and multiple language support area Therefore, the higher learning institution website are not reliable, operable and multiple language support for the user.

4.6 Functionality of higher learning institution website

This subsection presents the results obtained from qualitative data obtained from the respondents regarding the functionality of the two selected universities websites regarding navigation, search and suitability of the website.

Table 6: Functionality of higher learning institution website

Website functionality Indication	Items	Respondents' level of satisfaction					Central Tendency	
		SDA	DA	U	A	SDA	M	SD
Navigation	It is easy to go to the homepage from any other in the site	15.3%	32.5%	19%	26.8%	6.4%	2.77	1.188
	While navigation, I can immediately tell where I am in the website	16.9%	35.3%	16.3%	26.1%	5.4%	2.68	1.187
	I can easily navigate backwards through previously visited pages	17.6%	34.2%	16.3%	26.4%	5.4%	2.68	1.196
	I am able to move from one page to another page without getting lost	17.6%	29.8%	16.6%)	24.1%	9.8%	2.79	1.264
Suitability	I am satisfied with the functionality of the website	13.9%	30.2%	13.6%	15.3%	27.1%	3.12	1.445
Search	Search hints are provided when wrong keywords are used	15.9%	37.3%	17.3%	20%	9.5%	2.70	1.226
	The website provides varied search options (eg. By faculty, employees, course program)	14.2%	30.5%	22.7%	25.1%	7.5%	2.81	1.180
	I can Easy interaction with a website	9.2%	26%	15.3%	27.1%	21.4%	3.25	1.307
	Higher learning institution website provides foreign language support.	15%)	30.2%	22%	26.1%	5.8%	2.76	1.173

SA(5)= strongly agree, A(4)=agree, UD(3)= undecided, DA(2)= disagree, SDA(1)=strongly disagree

Table 6 shows the descriptive statistics on the usability of website in Ethiopian selected public Higher Institutions. The researcher asked the respondents to rate the questions on the base of the five point Likert scale. To analyze the results the researcher considered the percentage corresponding to the mean (M) and the standard deviation (SD) of the scale for analysis respectively.

Table 6 illustrates about the attitudes of the majority of the academic staff on functionality of higher learning institution website. The result shows that from the total number of respondents, 88 % to 110 % (i.e. the highest percentage) disagree on It is easy to go to the homepage from any other in the site, While navigation, I can immediately tell where I am in the website, I can easily navigate backwards through previously visited pages, I am able to move from one page to another page without getting lost, I am satisfied with the functionality of the website, Search hints are provided when wrong keywords are used, the website provides varied search options (eg. By faculty, employees, course program) and Higher learning institution website provides foreign.

Furthermore, 25.8% to 27.1% were the highest percentage of the respondent agrees on the idea that the website provides quick downloading of web pages and Higher learning institution website provides foreign language support. From this the result shows that the functionality of the website problems that identified on the two universities websites, with regard to the three main usability problems themes. Is show that disagreed on the usability problems that were identified on each site is related to navigation, search and suitability area, while the agreed on the usability problems that were related to the ease of use and communications area Therefore, the higher learning institution website not searchable, suitable and navigate for their user.

Table 7: Regression analysis output/result

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	11.579	.737		15.710	.000
Content	-.109	.046	-.148	-2.386	.018
Interface Attractiveness	-.010	.058	-.010	-.176	.861
Efficiency	.242	.076	.195	3.180	.002
Understandability	-.113	.038	-.207	-2.981	.003
1 Interactivity and multiple language support	-.150	.057	-.175	-2.647	.009
Navigation	-.045	.042	-.071	-1.060	.290
Internal search	.131	.056	.151	2.319	.021
Ease of use and communication	.127	.053	.156	2.382	.018

a. Dependent Variable: usability

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Sig
1	.361 ^a	.130	.106	.000

a. Predictors (Constant), Ease of use and communication, interface attractiveness, Efficiency, Content, internal search, Interactivity multiple language support, Navigation, Understandability

The model summary shows that the regression model can explain 36.1 % of the variance in the dependent variable. When adjusting the number of estimated parameters and study population, the model can contain 13.0% of the dependent variable's variance.

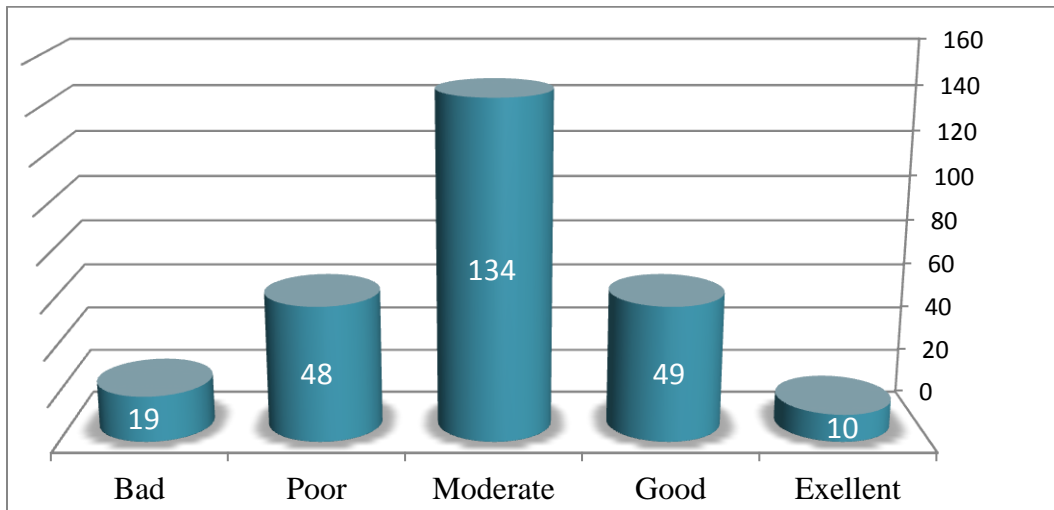
The regression analysis results show that the association between interface attractiveness and usability of website is not significant. The regression result shows organizational culture has $\beta = -.176$; $p\text{-value} = .861$. The results prove that, there is no relationship between interface attractiveness and usability in this study. This means the $p\text{-value}$ of interface attractiveness is greater than 0.05 so, in this study it's not effect on the dependent variables.

The results of this study revealed that the association between understandability and usability is significant. The regression result shows understandability have $\beta = -.207$, $p\text{-value} = .003$. The results prove that, that there is negative relationship between understandability and usability.

The regression analysis results show that the association interactivity and usability is significant. The multiple regression result shows interactivity and multiple language support has $\beta = -.175$; $p\text{-value} = .009$. The results prove there is also a negative relationship between interactivity and usability in this study which means the variable has negative relation but it is a significant the reason is the $p\text{-value}$ is less than 0.05.

The results of this study indicate that the relation between internal search engine and usability is significant. The regression result shows internal search have $\beta = .151$, $p\text{-value} = .021$. The results prove that, that there is relationship between the two variables. Navigation and usability of website shows that in this study multiple regression analysis shows results of ($\beta = -.0.71$, $p\text{-value} = .290$), implying that there is a negative and no significant relation between usability of website. And efficiency of the website the regression analysis show that there is significant and positive relation with the $\beta = .195$, $p\text{-value} = .002$. The results revealed that there is a relation between efficiency and usability. And also the content result show that there is negative relation and significant with the value of $\beta = -.148$, $p\text{-value} = .018$.

Figure 10: Overall usability rating of HLIW



From fig 10 above illustrate that apart from the Liker type questions, students were asked to give a rating to the overall usability of the higher learning institution website in the scale similar to the quality levels of the WEBUSE method (bad, poor, moderate, good and excellent). The responses gathered showed that 19 % of the staffs rated the website as having bad usability. 51.5 % of the respondents rated the website as having a moderate usability, 18.5 % of the staffs rated the website as having poor usability. 7.3 % of the academic staffs gave it as having a bad quality while another 3.8 % of staffs rated the website as having an excellent usability quality, which reflect. This shows that the higher learning institution website not gives a reliable result that matched with the academic staff's perception of the usability of the case website.

4.7 Suggested improvement of respondent

Academic staffs were provided with an open-ended question to clearly put their opinion on usability of higher learning institution website and the researcher did want users to provide us with as much useful suggestions as they could. There are several voices from academic staffs as follow:

Some of them respond that some college and department information is not refreshed, accurate and update information not post on time. College of ICT coordinator and ICT office of JU

should be reacting on this repaired, it seems the website is only for formality. Especially some head departments even don't have any description regarding their undergraduate and post graduate program they are in active and staffs profile is not updated on time. And also some respondents said that different site and links are blocked in the website as well as the website is not updated frequently and most of the data are outdated, as well as the website were not attractive this includes: the photo gallery, videos are not downloadable and attractive. The other respondents answer the website is not ease to find information its better if the website focuses on the speed and activation of website to improve the interruption of it at any time. lots of the visitor think that color of higher learning institution website should be changed, English and Amharic language is require the option should be made on the top of webpage. Furthermore, some of visitors think that the function of the website is delimited to some function for example grade submission hence, it requires multiple purpose. Lots of visitors respond that the home page of the website unnecessarily colorful with forum photos and too bulky information and other pages links are not complete like college holds limited information. And also the website it takes long time to load so, the website should have short loading time. And they also suggested to design printable web pages and appreciated the "Top" and "Bottom" option to avoid too much scrolling in the webpage.

4.8 Result and Discussion of the Observation

The researcher also carried out observation checklist with two selected universities. Such as the availability and efficiency of internet connection, organizational website, computer/server internet network or LAN and type of internet speed from the two universities. It was clear that the entire university used internet service for providing services for their users. From JU and DU the researcher observed that the computers available in the university were sufficient. In addition the researcher saw the universities have wireless network so, the academic staffs to access internet any were inside the university but it's not sufficient. Internet use and band width distribution among all universities were varied. The other point the researcher observed that from the two selected universities. They indicated that most of the staffs have no awareness about website usability.

Other detail summarized observation result carried out by the researcher for two selected public universities based on website usability evaluation criteria such as Navigation, Design layout, content, ease of use and communication and organization/architecture.

Design layout problem

The observation result shows that under design layout the problems concerned four major issues: inconsistency, inappropriate page design, problems with the use of images and problems with inappropriate choice of colors. The results identified some inconsistency problems on the higher learning institution website. The largest number of these problems related to inconsistency in the language of the interface. This is related to either: links at the English interface of the site, which opened pages that displayed Amharic content and vice versa; or pages at the English interface which displayed English and Amharic content together, regarding the sites simple or not confuse menu and good use of graphic and color issue. And the researcher suggests in to consideration other detail design layout problem this includes inappropriate / not representative quality of image, ineffective text format should be taken in to consideration.

Navigation problem

The second criteria is navigation problem this include seven different navigational problem but the researcher observed that some navigation support problem in selected universities such as links not opening the destination pages, orphan pages and ineffective internal search engines the internal search did not work properly even in some university there is no internal search function it's also one of the usability problem. This problem is identified in this research were also identified by the questioner result of higher learning institution academic staffs. Therefore, the owner/designer of higher learning institution website could give weight to improve the navigation problems.

Content problem

The other evaluation criteria is content; the researcher observes that content is one of the most important factors of websites, especially educational websites. In this research the researcher

identify some usability problems that were old content (in academic staff and department information), incomplete information and empty pages; the other problem is inappropriate content example of this problem includes: crowded pages, repetition of content e.g. the overview of page, vision and mission. Therefore, the designer of the higher learning institution website should focus on presenting current/update information on the pages.

Ease of use and communication

The fourth educational website usability criteria is ease of use and communication based on this criteria the researcher observed the two selected educational website and identify different issues regarding website usability problem this includes: difficult interaction with the website which means it is not easy to visit pages or to find information on the site. And the other problem under the factor of ease of use and communication lack of support for the multiple languages these issues were among the most important issue regarding educational from the view point of user. The other website usability factor is the organization/architecture the researcher observed that in organizational structure of higher learning institution website is not simple navigation menu, it's a deep architecture which means scroll pages up and down in the site to find information. Generally, the observation indicated that the tested websites had usability problems related mainly to availability of network connection as well as content, navigation and inappropriate page design layout.

4.9 Proposed website usability model

In order to design the new proposed model, a careful study on key usability factors for websites was done by using questionnaire, previous related works in higher learning institution websites evaluation and the usability factors in the reviewed website models was made to identify necessary factors that affect on usability of higher learning institution website and sub characteristics. Based on the main usability factors of the chosen base model QUIM (2006), the usability factors were rearranged to group factors with an equivalent semantic meaning into one category by eliminating existing repetitions and different factor names.

The main usability factors in the proposed model are usability, content, reliability, efficiency and design layout. Except the design layout, ease of use and communications well as content main usability factors, the rest are part of the QUIM (2006) usability model and also from this model productivity, safety and universality high level factor were not included in to the new proposed descriptive model because they has not feasible on website usability.

The model outlines are necessary high usability factors based on questionnaires result, which are further classified into sub factors and criteria. Common usability factors adapt from the Quality in Use Integrated Measurement (QUIM) developed by Ahmed Seffah *et al.*, (2006). QUIM is consolidated model for usability measurement and metrics. It combines various standard and model such as ISO 9241 and ISO 9126 are combined into a single consolidated, hierarchical model. The proposed descriptive model includes QUIM (2006) usability standard model, the website usability evaluation criteria and suggested improvement from the respondents such as design layout, content high level factor make up the high level factors and sub level factors and other high level factors come out from research questionnaire. This indicates factors identified as important for making judgment on the feature of the usability factors. The proposed descriptive model constructed from survey of use and communication and reliability the other were content and design layout from open ended questioner of respondents and the remaining utilization efficiency from the adopted usability standard model as shown in Figure 11.

Generally, the proposed model came after the current result and improvement suggestion of respondents using this for solving the problem that is found in the website. From the current result efficiency, reliability, ease of use and communication, content, design layout and usability are the main input or factors or for ease use and accessibility of HLIW

Factors of Website Usability

Content

- Relevance of information
- Accuracy of information
- Update information
- Authority
- Identify the organization

Utilization

- Learnability
- Understandability
- Interactivity
- Operability
- Interface attractiveness
- Multiple language support

Ease of use and communication

- Ease of interaction with a website
- Contact as information
- Quick downloading of web page
- Internal search function

Reliability

- Fault tolerance
- Recoverability
- Availability

Efficiency

- Time behavior
- Accessibility

Design

- Appropriate Use of images
- Appropriate Page design
- Appropriate choice of colors
- Appropriate use of fonts, text, video and sound

Adopted from QUIM's usability factors model Ahmed Seffah, *et al.*,(2006)

4.9.1 Sub factors of proposed model

The factors of the proposed model are further decomposed into number of sub characteristics or sub usability factors. Brief descriptions of the high level factors, their sub categories and how the sub characteristics under each high level factor were compiled and regrouped under each high level characteristic are explained in the following sections.

Based on the sub characteristics in the ISO model, the reviewed website models, and other related works the sub characteristics identified for usability are: Understandability, Learnability, Operability, Aesthetics, Multi-lingual support (internationalization) and Interactivity:

1. Understandability

A website should make it easy to help instructors understand how to use the website for a specific task under specific context of use. The organization of the website also forms part of this sub quality factor. The arrangement of the labels, links and terms used in the website should match to user's terms so as not to confuse the user of the website.

2. Learnability

The website should not be bulky for users to learn how to use it. Necessary help documents other supplemental materials describing how to use the website, how to find particular kind of information or how to perform a certain type of task on the website should be available to help users easily learn to use the site.

3. Operability

Operability indicates the capability of a website to be easily operated by users. Users of the website must be comfortable with the manner through which services and content are presented in the higher learning institution website and be able to use the website easily without being frustrated or confused.

4. Interactivity

A website must provide facilities for users to interact with the Webmaster, a particular professor or an author of content in the site. Providing FAQ that summarizes answers to frequently asked questions, clear error messages and contact information are one of the possible methods to facilitate the interaction of users with the website Interactive feedback systems email

Communications and free call systems are basic tools to support the interaction of users with the website Lin and Joyce, (2004).

5. Aesthetics (attractiveness)

The user interface of the website should be attractive, enjoyable and pleasant enough for users to create an emotional appeal to use the site. In addition, the choice of color, label names and font types used must be consistent throughout the website. Except for titles, the fonts used are the same throughout the website. The Web Pages should not also be overcrowded or overloaded; white spaces should be effectively used to avoid overcrowded pages Hasan and Abuelrub, (2008).

6. Multiple- language support (Internationalization)

Language can be a barrier for website access. It is essential to reach out for large number of users to increase the value of the website. A website should provide the facility for users to choose the language they would prefer to access information on the website or perform a particular task in the website. So, the website can be able to entertain all its users without their cultural background or country Hasan and Abuelrub, (2008).

Content (Website Information Quality)

This factor is not part of the base model, but it is part of the website usability models studied and it is frequently mentioned in previous related studies of higher learning institution websites. Content is the information provided on a website. After reorganizing the sub factors into categories based on their definitions, the following sub characteristics or factors were identified as sub characteristics for content: relevance of information, information accuracy, up-to-date information (currency), identity of the organization and Authority.

1. Relevance of information

Information provided in the website should be relevant and engaging to users. Unless the information in the website is important to students, the interest to use the website may decrease. As a result, the website may not achieve its objective. In academic websites, the information should be instructor-oriented, student-oriented, useful, comprehensive, appropriate and within the expected level of detail.

2. Information accuracy

Academic staffs rely information in the website and hence it is important to ensure the accuracy of the information made available on the website. Educational websites provide on their websites include contact information of professors, information about particular upcoming activity, events, news about the university and the like. Grammar and spelling errors that could alter the meaning of the information should be avoided. If the content of the website is accurate, this can improvement the confidence of the users to rely on the information the website offers Shedr, (2010).

3. Up-to-date information (currency)

The website must deliver current information related to current situations in the university or institution (upcoming events, news). There should also be some means for users to know the website is updated. Displaying the date when exactly the content was last updated is one approach to help users recognize that the specific time when the information was released and hence relate to the situations that occur during that specific time.

4. Identity of the organization

The logo of the organization (academic institution) which owns the website must be available and clearly visible in every page. This give assurance to users that the website is managed by the organization identified in the logo and the institution is responsible for all the information posted in the website.

5. Authority

The information about authors who edit the contents of pages in the website should be available for any kind of reference users would lie to make. Making available these information increase the credibility of the content. References used from other sources outside the academic institutions should also be indicated by citation or putting a direct link to the reference.

Reliability

Reliability is mainly concerned with the performance of the higher learning institution website. This factor is included in the website models reviewed. According to the ISO model, reliability consists of three sub characteristics: fault tolerance, availability and recoverability. Those are considered to be part of the new model as sub characteristics of reliability is all about the performance of the website and the performance of the website starts with the fact whether the

website is available to users or not to the capability of the website to recover quickly at times of any kind of problems Micali, and Cimino, (2008). The sub factors identified as necessary for the reliability high-level usability factors were: fault tolerance, recoverability and availability.

1. Fault tolerance

The capability of the website to keep a certain level of performance even there is major fault. A website should not have dead links. Links should work properly to lead instructors (Signore, 2005).

2. Recoverability

The capability of the website to recover the website to a previous state after the occurrence of faults

3. Availability

The website should be available for users to access at any time. The percentage of time the website is available for use is ideally 24hours/day and 7 days/week.

Efficiency

Efficiency indicates the time it takes the website to perform a task or the throughput of the website. This characteristic is included in the website models reviewed, with an explicit term.

In the ISO model, Efficiency consists of two main sub characteristics: time behavior and resource utilization. Accessibility emphasizes on the technical capability of the website to support users with various disabilities.

1. Time behavior

The amount of time the website takes to load or perform tasks should be short. Users should be able to open pages within few clicks.

2. Accessibility

The website should be technically capable of supporting website users with different disabilities access the website. Accessibility also indicates the capability of the website to support multiple browsers.

4.3 Discussion of the findings

4.3.1 Usability of higher learning institution website

This section of the chapter discusses about the major finding of the analysis of the data collected through questionnaires and observation.

The demographic status of respondents shows that in terms of gender, education qualification. The Table indicates that more than 81.7 % of the respondents were male and majority of the respondents 54.6% have educational qualification of master and bachelor degree. The disproportionate functionality of selected public higher learning institution website in Ethiopia needs to have necessitated improvement in the way of website usability. University ICT or universities' website developer is now required to embrace this improvement and provide service the best way that satisfies the users that they serve the website. Services on internet, electric power, and university website provided in Jimma University and Dilla University seems similar. Internet use and band width distribution among all universities were varied. Similar findings indicated by Okiki (2011) slow connection and electricity breakdown problems are stated as the most encountered problems by the respondents.

On how often do you visit the website the bases of the result obtained, it is clear that most of the respondents/ academic staffs of selected public universities of Ethiopia occasionally visit the higher learning institution website, which is similar to Tsigereda (2010) who indicate that the response gathered the highest frequency of use academic website I times a week, so this response is added to the occasional option. This shows that the respondents access higher learning institution website only when they find it necessary.

The purpose of academic staffs to use HLIW indicate that the majority of academic staffs at Jimma and Dilla universities have similar purpose to use the higher learning institutions website that use for education and news. This is very encouraging. And also Wang (2009) note that most visitors (56.9%) want to find information about courses/programmes furthermore, some of them want to learn more about University.

4.3.2 Satisfaction and effectiveness of higher learning institution website

The satisfaction of higher learning institution website from academic staffs perspective respondents, with the major area of usability such as content, interface attractiveness (aesthetic), update information and accurate information the survey analysis result indicate that 47.3 % academic staffs were partially satisfied with Ethiopian selected universities websites. This is different with the study through online survey consists of three major areas of usability such that content, aesthetic and updated technology implementation. The said survey analysis resulted that 89.4% students were satisfied with selected websites (Christoun *et al.*, 2006). In general, the results showed that the majority of the academic staffs were partially satisfied with the usability of the selected public higher learning institution website in Ethiopia. Specially, from this study the results showed that the academic staffs were partially satisfied with the accuracy of relevant information

4.3.3 Factors of usability for higher learning institution website

On factors of usability the variables were identified with their themes to know the level of agreement on website usability factors from academic staff point of view. These include reliability, efficiency, understandability, interactivity and multiple language support, navigation, internal search and ease of use and communication. The study also found out those factors content, interactivity and multiple language support, understandability, reliability, ease of use and communication were the most important factors that hinder and use of academic staff to use higher learning institution website in Jimma and Dilla universities respectively. This is partly in line with the finding of this research revealed that the content category was the most important factor that influenced the usability of educational websites from the point of view of students. This is in agreement with the results obtained from earlier research Tarafdar and Zhang 2005).

Relation between usability of website and the variable those includes the independent variables on this the finding indicate that there was significant relationship between usability of website provide by JU and DU perceived effect on higher learning institution users (academic staffs) Hence usability of website in higher education has significant effect on ease use of accurate, relevant information, understanding of the content and navigation of the site.

In a regression analysis, the mediating variables are treated as independent variables to measure their effect on the dependent variable, usability of website. Together, these variables have a high descriptive value on usability of website. There exists a relationship between the independent variables and independent variable. Looking at each individual variable's explanatory value, six variables are significant: content (P-value= 0.18.), efficiency (P-value=0.002), understandability (P-value=0.003), ease of use and communication (p-value =.018) and internal search (p-value=0.021). Each independent variable has own effect on website usability.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

This final chapter contains the conclusion of the results and the researcher's recommendations.

5.1 Conclusions

Higher learning institution websites are educational websites that aim to provide the information and services to its users in efficient ways. To achieve their purposes, universities' websites design should go through several design guidelines to ensure that users are satisfied with the services provided by these websites. By evaluating the usability aspects of these websites we can improve the usability of these websites.

This research addressed a gap noted in the literature regarding the lack of a comprehensive evaluation study of an educational website, from the perspective of users of academic staffs. The research used questioner and observation method to collect the data needed. It also addressed a gap related to the fact that there is a lack of research investigated on the area of usability of Ethiopian educational websites.

This study investigated a websites of two universities from the viewpoint of 260 academic staffs. Then, it comprehensively evaluated the usability of website of one of the oldest universities and also one from the third generation universities in Ethiopia using questioner method; in addition, all the website pages related to the faculties and departments of selected universities were investigated.

Most of the problems identified are related to accuracy, updated information, navigation, search and suitability, ease of use, content, efficiency, reliability, understandability, operability, learnability and interactivity of the website. More specifically, this research identified a total of 35 specific usability problems (factor) that were common on the selected public universities websites respectively Jimma and Dilla universities. The results provide a detailed clarification of these specific problems. These problems furthermore are classified into the following major factors identified from the analysis of the results: reliability, efficiency, understandability, content, interactivity and multiple language support, and ease of use and communication.

The research suggests that the developers of higher learning institution websites should consider the above issues and other most common usability problems identified in this research in order to improve the overall usability of the universities' websites. From the results, the researcher attempts to provide a better model for the developers of higher learning institutions' websites regarding areas which need improvement in order to reap the advantages of having usable website. The results of this research could also be drag for other universities, which are willing to evaluate and improve the design of their websites.

This research has challenges, mainly during the data collection process. The first is related to the participants, most of them did not respond the questionnaire at the required time. And the facts that there are only few researches have been conducted on the website usability of higher learning institutions at global level, and to the researcher knowledge none are available in Ethiopia that gave the researcher another challenge due to finding standard reference point. Therefore, most of references in this study were based on research undertaken from other countries

5.2. Recommendation

Based on the findings of this research, the researcher strongly agrees on the need of the following recommendations. In order to improve the facilities and services for effective usability of website in Ethiopian higher University the following recommendation can be made.

- The proposed adopted model focuses on only one group of users, the academic staff. It is important to consider different group of users' perspectives to design a more comprehensive evaluation model. In relation to this, the study conducted on two selected Ethiopian public university websites, used only lecturer and other academic staff from different faculties. Conducting the same study by using students, administrative staffs and other outside users from specific field of study and faculty might bring different results. Therefore, it is worthwhile to carry out a similar study on different groups of users.
- Some characteristics may be more important than the others depending on the type and purpose of the website. The degree of importance of the factors also differs for different types of users. Therefore, it is important to differentiate which of the usability factors are highly important for educational institution websites and which ones are less important.

This can be done by assigning weight values for each of the usability factors in the model based on the need and expectations of different user groups.

- The proposed model only consists of structured lists of website usability issues. After assigning weights to the high level usability factors and sub factors, it would be interesting to design and develop a software tool that simplifies the evaluation activity.
- The usability factors and sub factors in the proposed model are arranged based on their intrinsic definitions. However, in the study, it is shown that some of the sub factors reflect inconsistent item scores, which indicated that they do not measure a similar concept to the rest of the factors.
- The other recommendation is to practice collecting continuous feedback from the users presents valuable input to universities to improve their web sites. In order to satisfy the constantly changing demands of the website users and improve the usability of the website, university administrators may deploy a site intercept survey on their website and collect survey data for an extended time which will give the administrators extensive opportunities to improve the website.

5.3 Future works

Regarding the future work, the research has raised some ideas and suggestions for future work that can be developed in further studies.

- The research suggested that the manager or designer of the University of higher learning Institution Website should consider the most common usability factors / problems identified in this research in order to improve the overall usability of the university's web.
- Further work may be carried out with more distributed governmental and private universities with different user groups are recommended for other researchers.
- In addition research should focus to design the framework for the possibility of using it to other sectors and find out if it is appropriate, for example in government and business sectors website.

REFERENCES

- Abran, A., Khelifi, A., Suryan, W., & Seffah, A. (2003). Usability meanings and interpretations in ISO standards. *Software Quality Journal*, 11(4), 325-338.
- Abuaddous, H. Y., Jali, M. Z., & Basir, N. (2013). Study of the accessibility diagnosis on the public higher institutions websites in malaysia, vol. 122, pp. 412–417.
- Agarwal, R., & Venkatesh, V. (2002). Assessing a firm's web presence: a heuristic evaluation procedure for the measurement of usability. *Information Systems Research*, 13(2), 168-186.
- Asiimwe, E N., & Lim, N. (2010). Usability of government websites in Uganda. *Electronic Journal of E-government*, 8(1), 1-12.
- Astani, M., & Elhindi, M. (2008). An empirical study of university websites. *Issues in Information Systems*, 9(2), 460-465.
- Ataloglou, M. P., & Economides, A. A. (2009). Evaluating European ministries' websites. *International Journal of Public Information Systems*, 5(3). 147-177.
- Aziz, M. A., Isa, W. A. R. W. M., & Nordin, N. (2010). Assessing the accessibility and usability of Malaysia Higher Education Website. In *User Science and Engineering (i-USER), 2010 International Conference on* (pp. 203-208). IEEE
- Aziz, N. S., & Kamaludin, A. (2014). Assessing website usability attributes using partial least squares. *International Journal of Information and Electronics Engineering*, 4(2), 137.
- Bautista, J. (2010). Students' perspectives on university Web site usability: An evaluation (pp. 1-143).
- Brinck, T., Gergle, D., & Wood, S. D. (2001). Usability for the Web: designing Web sites that work. Morgan Kaufmann.
- Broberg, L. L. (2011). A grounded theory approach to examining design and usability guidelines for four-year tribal college web sites, Capella University.
- Caglar, E., & Montes, S. A. (2012). The usability of university websites—a study on European University of Lefke. *International Journal of Business Information Systems*, 11(1), 22-40.
- Cappel, J. J., & Huang, Z. (2007). A usability analysis of company websites. *Journal of Computer Information Systems*, 48(1), 117-123.
- Chiew, T. K., & Salim, S. S. (2003). Webuse: Website usability evaluation tool. *Malaysian Journal of Computer Science*, 16(1), 47-57.

- Christoun, S., Aubin, H., Hannon, C., Wolk, R. (2006). Web site usability in higher education, *Information Systems Education Journal*, issue 4(110)
- Elsley, M. (2007). Thesis the Issue of Accessibility: Considerations when Designing for a Worldwide Audience,” RMIT University,
- Former, E., & Bosch, J. (2004). Architecting for usability: a survey. *Journal of systems and software*, 70(1), 61-78.
- Hasan, L., (2014).
- Hasan, L., &Abuelrub, E. (2011).Assessing the quality of web sites. *Applied Computing and Informatics*, vol. 9 (1), 11-29.
- Hasan L.,&Abuelrub. (2008)."Assessing the Quality of Web Sites," *INFOCOMP Journal of Computer Science*, vol. 7, pp. 11-20,
- Gordon, J., &Berhow, S. (2009). University websites and dialogic features for building relationships with potential students. *Public Relations Review*, 35(2), 150-152.
- ISO 9241–11, (2010). International Standard First Edition. Ergonomic Requirements for Office Work with Visual Display Terminals (VDTs), Part11: Guidance on Usability,
- ISO/IEC, (25010:2010)."Systems and software engineering – Systems and software Quality Requirements and Evaluation (*square*) – *System and software quality models*”, Guide to square, ISO Copyright Office, Geneva,
- Jabar, M., Usman, U. A., &Awal, A. (2013).Assessing the usability of university websites from users' perspective. *Australian Journal of Basic and Applied Sciences*, 7(10), 98-113.
- John, I. L. S., & Phippen, A. D. (n.d.). “ The websites of Higher Education Institutions are more than merely promotional interfaces with potential students ” Web Accessibility and Usability in a HEI environment Previous Studies of Accessibility of HEI websites.
- Khosrowjerdi, M. (2013).Asian top universities in six world university rankings.*Webology*, 10(2). 1–9.
- Lautenbach, M.A.E., Schegget, I.S., Schoute, A.M., Witteman, C.L.M. (2006). Evaluating the Usability of Web Pages: A Case Study.
- Lee, Y., &Kozar, K. A. (2012). Understanding of website usability: Specifying and measuring constructs and their relationships. *Decision Support Systems*, 52(2), 450-463.
- Liu, B. Zhao, K., & Yi, L. (2002).Visualizing web site comparisons.In*Proceedings of the 11th international conference on World Wide Web* (pp. 693-703).

- Lindgaard, G., Fernandes, G., Dudek, C., & Brown, J. (2006). Attention web designers: You have 50 milliseconds to make a good first impression! *Behavior & information technology*, 25(2), 115-126.
- Madan, A., & Dubey, S. K. (2012). Usability evaluation methods: a literature review. *International Journal of Engineering Science and Technology*, 4(2), 590-599.
- Manzoor, M., & Hussain, W. (2012). A web usability evaluation model for higher education providing Universities of Asia. *Sci., Tech. Dev*, 31(2), 183-192.
- Manzoor, M., Hussain, W., Ahmed, A., & Iqbal, M. J. (2012). The importance of higher education website and its usability. *International Journal of Basic and Applied Sciences*, 1(2), 150-163.
- Mentes, S. A., & Turan, A. H. (2012). Assessing the usability of university websites: an empirical study on Namik Kemal University. *TOJET: The Turkish Online Journal of Educational Technology*, 11(3).
- Micali, F., and Cimino, S. (2008). "Web Q-Model: a new approach to the quality," in *The 26th Annual CHI Conference on Human Factors in Computing Systems* Florence, Italy,.
- Moore, J., Liu, M., & Chen, H. L. (2009). A case study of usability testing on an asynchronous e-learning platform. In *Pervasive Computing (JCPC), Joint Conferences on* (pp. 693-698). IEEE.
- Mustafa, S. H., & Al-Zoua'bi, L. F. (2008). Usability of the academic websites of Jordan's universities an evaluation study. In *Proceedings of the 9th International Arab Conference for Information Technology* (pp. 31-40).
- Nam, A. M. & Nam, A. H. T. (2012). "Assessing the Usability of University Websites: An Empirical," 11(3), pp. 61-69,
- Nielsen, J. (2003). Usability 101: Introduction to Usability. Useit.com: Usable Information Technology. *UseNet Alertbox*.
- Panneerselvam, P. (2015). Analysis of Universities Website in Tamilnadu : Special attention to Library Content *International Journal of Library and Information Studies*, 5,(2), pp.1-9.
- Parajuli, J. (2007). A content analysis of selected government web sites: A case study of Nepal. *The Electronic Journal of e-Government*, 5(1), 87-94.
- Pierce, K. (2005). "Web Site Usability Report for Harvard University", Technical Report, Capella university,

- Pearson J., Pearson A., and Green D.(2007). "Determining the Importance of Key Criteria in Web Usability", *Management Research News*, vol. 30, no. 11, pp. 816-828.
- Sarantakos, S. (2002). *Social Research*. Palgrave: Newyork.
- Sandvig, J. C., & Bajwa, D.(2004). Information seeking on university web sites: an exploratory study. *Journal of Computer Information Systems*, 45(1), 13-22.
- Seffah, A., Donyaee, M., Kline, R. B., & Padda, H. K. (2006). Usability measurement and metrics: A consolidated model. *Software Quality Journal*, 14(2), 159-178.
- Şengel, E., & Öncü, S. (2010). Conducting preliminary steps to usability testing: investigating the website of Uludağ University. *Procedia-Social and Behavioral Sciences*, 2(2), 890-894.
- Shahizan, H. and Li, F.(2005). Evaluating the Usability and Content Usefulness of Web Sites: A Benchmarking Approach, *Journal of Electronic Commerce in Organizations*, 3(2)
- Shirley, H. (2004). *Effective electronic training, designing electronic materials: Articles and papers*.
- Shackel, B. (2009). Usability-context, framework, definition, design and evaluation. In *Interacting with Computers*, 21(5), pp. 339–346.
- Shedr, N., (2010). "Recipe for a Successful Website.
- Singh, I., Sook, A. (2002). An evaluation of the usability of South African university web sites. In: *Proceedings of the 2002 CITTE Conference*, Durban, South Africa.
- Sindhuja, P.N. & Surajith, G.D. (2009). Impact of the factors influencing website usability on user satisfaction. *The IUP Journal of Management Research*, 8(12), pp. 54-66.
- Signore, O. (2005). "A Comprehensive Model for Web Sites Quality," in *Seventh IEEE International Symposium on Web Site Evaluation*, Budapest, Hungary
- Tarafdar, M., Zhang, J.(2005). "Analyzing the Influence of Website Design Parameters on Website Usability", *Information Resources Management Journal*, vol. 18(4), pp. 62 – 80.
- Tsigereda, W. (2010). A framework for evaluating Academic Website's quality
- Tojib, D. R., Sugianto, L.F. and Sendjaya, S. (2008). "User satisfaction with business-to-employee portals: conceptualization and scale development," *Eur. J. Inf. Syst.*, 17(6), pp. 649–667, Dec.
- Turk, A.(2001). *Towards Contingent Usability Evaluation of WWW Sites*, *Proceedings of Australian Int. Conf. on Computer-Human Interaction*.

- Yoo, S., Jin, J.(2004).Evaluation of the home page of the top 100 university web sites. *Academy of Information and Management Sciences* 8 (2), 57–69.
- Yusof, U. K., Khaw, L. K., Ch'ng, H. Y., &Neow, B. J. (2010). Balancing between usability and aesthetics of web design. In *Information Technology (ITSim), 2010 International Symposium in* Vol. 1, pp. 1-6.
- Zafiropoulos, C., Vrana, V. (2006). "A Framework for the Evaluation of Hotel Websites: The Case of Greece," *Information Technology & Tourism*, vol. 8, pp. 239-254,
- Zaphiris, P., & Ellis, R. D. (2005).Website Usability and Content Accessibility of the top USA Universities. In *WebNet* (pp. 1380-1385)
- Zhang, P., Dran, G. (2001). Expectations and ranking of website quality features: results of two studies on user perceptions. In: *Proceedings of the 34th Hawaii International Conference on System Sciences*.

Appendices

Jimma University
College of Natural Sciences
Department of Information Sciences
Questionnaire for academics staff

Appendices A: Dear respondent,

This questionnaire is aimed at collecting information for Msc thesis. The study aims is to investigating the usability study of higher learning institutions websites: in selected public universities in Ethiopia. The research will benefit academic staff and others in higher learning institution in Ethiopia. There are no physical effects in participating in the study. Your confidentiality will be respected throughout the study. Please respond to the questions as honestly as possible as your response will be treated with utmost respect confidentiality. Allresponses will be used purely for academic purposes for a successful completion of the study. Before answering the question visit the website please: Visit each homepage website of your university and browse through the whole website (click as many links as you can)

Section A: Socio-demographic information

For each of the following questions, please indicate your response by a tick (✓) in the appropriate box.

1. Name of your Institution_____

2. Educational status?

B.Sc/BA Msc PhD Other please

specify_____

3. Sex Male Female

Section B: Usability of website in higher leaning institution

Please indicate your agreement by ticking one of the responses (strongly agree, agree, neutral, disagree and strongly disagree) and please indicate your response by a tick (√).

How often do you visit the website?

- Everyday Never Other please specify _____
 Weekly Occasionally Monthly

For what purpose do you use the higher learning institution website?

- Education News
 Entertainment Other please specify _____
 Communication

Are you satisfied with higher learning institutions websites in Ethiopia?

- Fully Least satisfied
 Dissatisfied Partially

What overall rating would you give to the usability of your public higher learning institution website?

- Bad Moderate Good Excellent
 Poor

Section three: satisfaction of higher learning institution website

Question 1-3 please Provide your opinion on the content of information the website provides

1= strongly disagree, 2= disagree, 3= neutral, 4= agree, 5= strongly agree

1	Accuracy and relevance of information	1	2	3	4	5
	The website provides clear information to users					
	Users of higher learning institution website get important information					
2	Update information					

	It is easy to find information about events in the university					
	The website offers current and up to date information					
3	Content and identify of university					
1	The website provide important links to outside sources and reference					
2	Higher learning institution website display logs, copy rights and calendar information to users					
3	The website provide accurate information about the university, college and department					
4	Websites information acknowledge authorities, place and dates of publications					
4	Interface attractiveness					
1	I found the interface of the website pleasant					
2	Page are overcrowded with information					
3	Similar font and color are used throughout the website					
4	I think the alignment of text and page element is consistent throughout the website					

Section four from question 5-8, provides your opinion on the usability factors of the website

5	Reliability	1	2	3	4	5
1	Clicking on any referenced link redirect you to a valid page					
2	Whatever errors occur, the website recover quickly					
3	I can access the website at anytime					
6	Efficiency					
1	I can access the website from any favorite browser					
2	It is possible to find what I want within a reasonable time					
7	Understandability, Learnability and operability					
1	I think the overall structure of the website is straightforward					

2	Terminology used in the website are understandable					
3	I think it is easy to learn how to use the website					
4	It is easy to find information I need on the website					
5	Organization of information website is easy to understand					
8	Interactivity and multiple language support					
1	I know who I contact for more information about any thing					
2	It is easy to switch between language in the site					
3	Necessary supplemental reference material are available more than in one page					

Section From question 9-10 provide your opinion on the functionality of the website

9	Navigation	1	2	3	4	5
1	It is easy to go to the homepage from any other in the site					
2	While navigation, I can immediately tell where I am in the website					
3	I can easily navigate backwards through previously visited pages					
4	I am able to move from one page to another page without getting lost					
10	Search and suitability					
1	I am satisfied with the functionality of the website					
2	Search hints are provided when wrong keywords are used					
3	The website provides varied search options (eg. By faculty, employees course program)					
11	Ease of Use and Communications					
1	The website provides quick downloading of web pages					
2	I can Easy interaction with a website					
3	Higher learning institution website provides multiple language support.					

13. Is there any comments and suggestions for improvement of your website?

Thank you.

Appendices B: Observation check list

NO	Observation	Jimma university		Dilla university	
		Available	Efficiency	Available	Efficiency
1	Intranet				
2	Organizational website				
3	Computer /server				
4	Internet network or LAN				
5	Internet connection				
6	Types of internet speed				