RESEARCH BASED STATE -OF-THE-ART WEBSITE DESIGN USABILITY GUIDELINES

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Abstract

Introduction of web technology have turned the current world into a global village and web design becomes a huge challenge to develop a website in a better way. To develop a user friendly interface and easy access environment of webpage is the key issue of usability in this field. Improved and user friendly interface of a web site is becoming more popular. There are so many mistakes being committed when a designer develops end users interface of a web site. The main purpose of usability in this field is to provide a user friendly, easy access environment. This paper reveals a guideline for usability of the website design.

Most of the designer or developer thinks about their websites outlooks rather than thinking about users' concern. If it becomes difficult to use their website, people won't revisit their site. So if designers want to have a successful website, they have to ensure that their design fulfills the users' requirement. The purpose of this paper is to indicate the existing common usability issues which are being overlooked by the designers and developers, and to provide some possible solutions to reduce these usability problems. It also suggests some simple but effective tips and techniques as well as some guidelines for website design that could be helpful for designer and developer if they keep these in mind during designing a website. The results of the paper specify that there should be the interest to designers and developers who are concerned about improvement of usability and more accessibility of their websites by users.

In this thesis, I am committed to create the understanding on the aspects of usability principles suitable to make a user interface more acceptable to the users. This understanding will surely be a pilot project for upcoming future researches on the development of interface design.

Keywords: usability**,** loading time, homepage, navigation, complexity, user-Interface.

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1. INTRODUCTION

1.1 Background

Nowadays it is a daily routine using the words 'Internet' and 'World Wide Web' (www) although these two phrases are not similar; as the Internet is an international network of computers interconnected to each other whereas the websites are the services offered by people and companies providing some particular contents to the public. The contents of different categories from many resources are gathered and displayed by using uniform (or universal) resource locator (URL's). Consequently, the website is a collection of information, text, audio, and video as the case may be hosted via web server, useful and available through Internet by putting the link into the address bar of Internet explorer.

Various web pages filled with text, color and images are necessarily included in a website. Hence, the web is a huge aggregation of enormously out of control documents. With the passage of time, the role of websites has varied from provisions of information to computerized tool for different software's. Due to ever increasing popularity of websites, everyone is becoming eager and familiar with looking at the websites.

Contemptible and unforced web design demonstrates to solid ship to users' effectiveness and does not serve the enterprise. Therefore the website design with further standard has distinct assistance for having the standard web design. Though a lot of proposals regarding the instructions of designing an excellent website is still increasing trouble; it is advised that the eternally web design is an ongoing procedure. The researchers Vincent and Michel Wills (2012) say that constant design should be developed by looking for a poor design.

Hence, navigation plays an essential role in the design of website configuration as it determines the course to be moved to appear at an obligatory web page. Commonly a website configuration is same to tree like composition emerging from the homepage as a base. Homepage of any website must be properly designed; though, in the course of the home page should not many links. The website design and navigation has a better effect on achievement or collapse than approximately any other reason. To improve the links produces a complication of the screen resolution of lots of systems, with the browser inappropriateness. In this research paper the solution to find diverse areas which can be highlighted in developing usability of any website.

The effectiveness of usability is maintained to the website configuration. The composition of the website should be in as a procedure that users could simple interacts with website irrespective of any particular guidance. A well-ordered web design is one that produces it simpler for users to navigate all through the various pages on the web site. The website composition is revealed by a directed graph as each every node shows web pages and edges illustrate link to similar web pages. These factories even worry on the navigational connection with web pages. The website volume of the pages is a fundamental problem to distinguish the web site effectiveness. It is possible to declare usability necessities that can be common for every website. The navigation of a website is entities of the basic parts in concluding usability. The navigation on a website must represent user's position, what website they are surfing on. Navigation on a website should also possess links to pages where visitors may go during the web site. The page navigation allows user's simple entry for having the information they look for thus enabling simplicity of use. The navigation links should also use proper text that will not make problem for users. Consequently the visitors should not have a thought where a link will bring them. For example, about us or about our company when the users click on the link they identify exact where they will be. The in

sequence link wording has to also be important to make it easy to read. Excellent wording and format of navigation links allow websites enhanced usability.
The general issues for usability studies are to generate the web easy to recognize, minimizing difficulties, contentment of visitor's needs, web site competence, agree to users assist to error development and common general instruction of the website. For the IT learners and organizations, usability turns into renowned for its visitor research to create the exact design for the visitor.
There are still many other research fields, which are really involved to improve usability website design. So I have several connected theories to recognize the usability. They are rules of web design and usability theories; however every one of these theories emerges in the subject field of human computer communication. To make a resourceful perceptive of the usability of website design it is so essential to use each thinking of human computer interaction. There are also earlier researches frequently concentrated to improve the usability of website design.
Gould and Lewis (1985) described as each system designed for users should be simple to use and find out, easy to recognize and valuable to the users. These two researchers propose the following rules while designing for usability or values of user focused design. Early emphasis should be on users and assignments, experiential measurement and Iterative design. They conceal particularly that this rules of user emphasized design approach can develop the user contentment.
There are a lot of vital factors in the website design, where the users experience trouble of a website design use.

1.2 Statement of problem

Usability is important to create websites that your visitors will need to come back to the website. In case they are not able to use the website, they won't stop. Some issues of website designs are as follows:

1.2.1 Browser incompatibility

Browser compatibility is the procedure to make sure that your website is being viewed similarly on different browsers; such as Firefox, Google Chrome, Microsoft Explorer and Safari etc.
There may also be such an experience that the website design could be emerging on a lot of Internet browsers. However, it can entirely be an issue.

- **Statistics resource**

The statistics of several browsers along with their market share is displayed in the figure below.

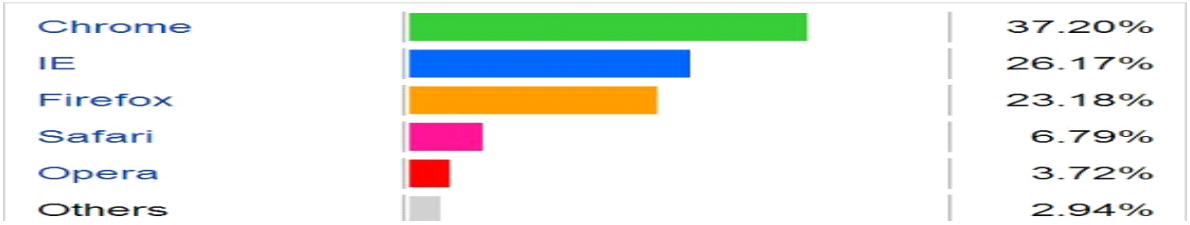

Figure 1 Different Internet browsers

What is the reason for happening of issues in browsers?
The code fragments used to create websites gets displayed appropriately on one browser, however when they are seen on another browser, they get displayed in a dissimilar format.

1.2.2 Unfriendly screen resolution

Unfriendly screen resolution is a main issue which web developers generate. Most of the computers uses (1024 X 768) pixels as their screen resolution and the entire web enhancers must be optimized, as building a website with mentioned screen resolution.
Why do the majority of the computers use (1024 X 768) pixels as their screen resolution?
This is a usual size and most websites use this resolution to avoid problems.

1.2.3 Poor readability and legibility

Readability and legibility are also basic aspects of web design. A carefully designed interface will enable the users to easily read and recognize the information. A number of websites use font styles and sizes that are complicated to read causing poor readability and legibility.

1.2.4 PDF files for online reading

Jacob Nielsen says that users extremely dislike upcoming across PDF file during browsing, for the basis that it divide their run. Yet uncomplicated equipment such as printing or saving credentials is difficult as standard browser commands do not hold. Layouts are normally optimized for a sheet of paper, which not standard match range of the user's browser window.

1.2.5 Page loading issue

There should be less time for page loading. The usual loading time of any website is estimated as 8.4 seconds. It is a vital website usability issue as no one likes to stay longer sufficient for a web page to download. It’s an exasperating and complex issue for web developers as they have to transfer stuffs for creating website attractive but at the same time they are bound to follow the routine page loading time.
Why does the issue happen in loading?
On the web site page there are frequent images and tables meant so the issue appears for page loading.

1.2.6 User-friendly navigation

Navigation is one of the grave usability issues. Visitors have experienced definite frequent web basics and design. Appropriate use all of the standard page essentials for example company logos, about us, contact us and search menu etc.
Why does the issue appear in the user-friendly navigation?
Designers do not create proper links in the user-friendly navigation the web.

1.2.7 Broken links or not memorized links

Some of links possess broken or are not identified or known as URLs are by mistake misspelled. This produces it tremendously complex for visitors to open the link or to just identify the links. In addition, if the font colors and link colors are the alike, visitors cannot be quick to identify which is a link or a text.

1.3 Research question

The research range is to reveal a lot Website usability consistent with thesis. The research will check the four basic facts on the main website and confirm how it is working the four basic facts: Learnability, Memorability, Efficiency and Satisfaction. The thesis guideline will be regarded as the standard to check the four key facts.
This question will be clarified by studying the following.
What are the most significant or essential rules that will help to get better the usability of any website?

1.4 Research purpose

Many users experience problems as they are browsing a variety of websites as the systems have not been designed using the appropriate principle (Safari 2009). Web sites are at present used in accurately each field of life for example banks, educational institutions, traffics, online shopping and online ticketing. In a few words, the websites are the very important position of the e-world. As a result the websites are necessary element of everyone's life; though the disadvantage is that organizations and companies are not achievement desired profit from the website. Therefore, the purpose of this research work is the provision of such guidelines for web site developers to create an improved usable website design.

1.5 Expected outcome

In the research, question is 'What are the most significant or essential rules that will help to develop the usability of any website?' Usability is the fundamental issue in the research; therefore to have enhanced usability of any website will supply with practical information such as:

- How simple to navigate?
- In the analysis and empirical review chapters to build up the usability of any website design.
- Any company and organization prepared to develop the usability of the website. To develop the usability are helpful for the company and organization to enhance and improve.
- To enhance the usability there are many techniques used for example, developing usability with fits' law, principle of web design and principles for developing usability etc.

1.6 Target group

For learners, academic and the researchers in appropriate area can recover the thesis intersecting whilst they desire to get a proposal on how usability is used in the website design area.

- Target groups are qualified web designers who design the website existence.
- The users who do not recognize the way to use the website design just.
- In business organization who desires to expand the usability on the business design.

1.7 The author experiences and background

I earned the master's degree in 'Computer Science and Information Technology' in City University of Peshawar. I am at present studying for 'Masters in Informatics' at the University of Boras. I take pleasure in more than one year experience in web applications and I have created many websites in Sweden.

1.8 Structure of the thesis

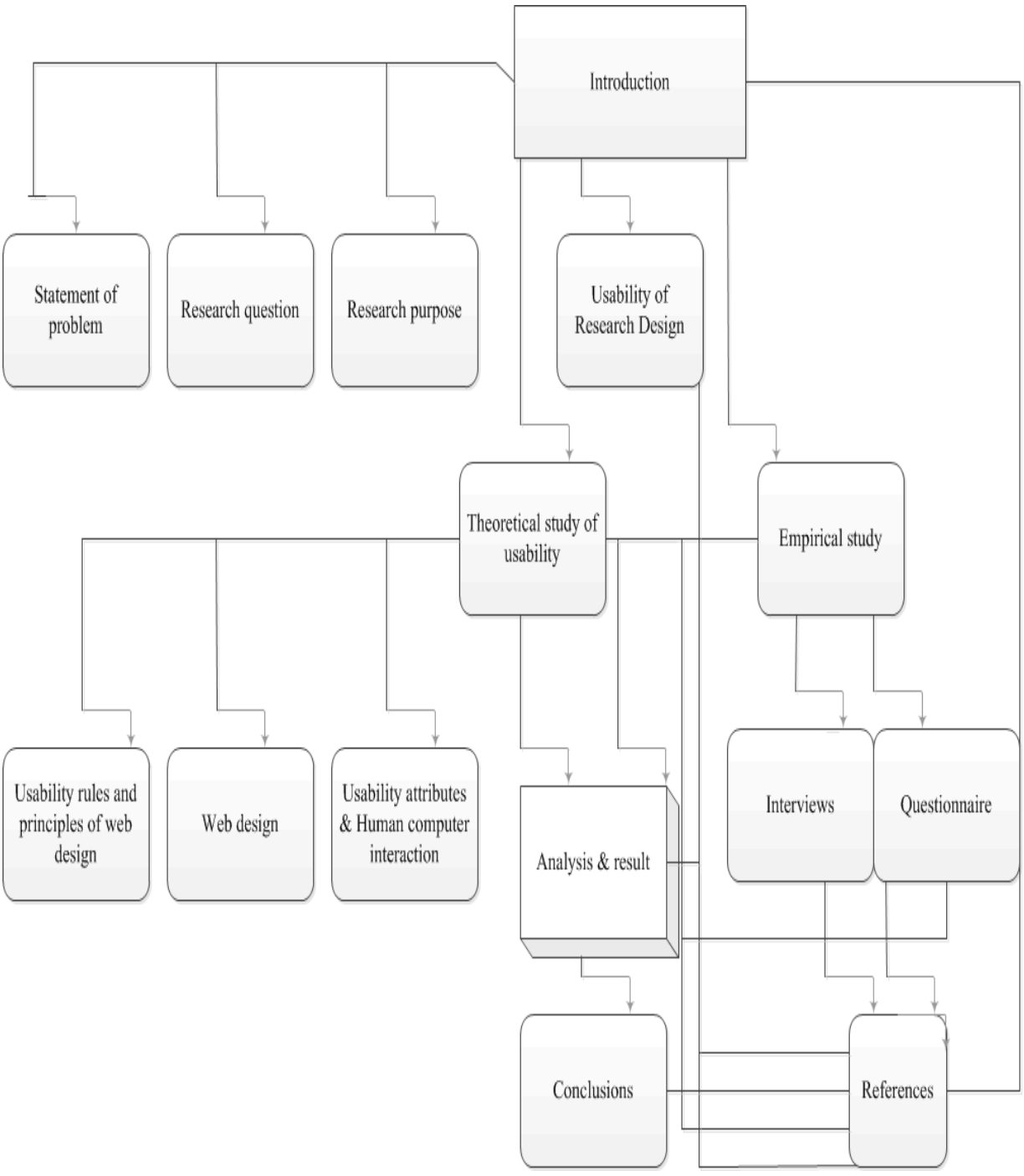

Figure 2 Structure of the Thesis diagram

2. USABILITY RESEARCH DESIGN

2.1 Research perspectives

It is essential for the person who reads to be familiar with what kind of approach this has been and characterized by. There are two types of scientific perspectives different in nature from each other i.e. Positivism and Hermeneutics (Ann Lind, 2005).

2.1.1 Positivism

Positivist subscribe to accuracy via verification by pattern of deductive and inductive hypothesis to suggest the conclusion by autonomous observers (O'Brien, 1998). While positivists hope that the researcher and the researched individuals are free of each other, post-positivists propose that theory, environment, information and morals of the researcher can affect what is observed? In contrast, alike to the positivists, post-positivists follow objectivity by recognizing the probable consequences of biases.

2.1.2 Hermeneutics

Hermeneutic theory is a part of the social subjective paradigm where connotation is inter subjectively created, contrary to the empirical universe of indefinite scientific realism. Hermeneutics is the learning of the theory and presentation of interpretation. Innovative hermeneutics contain everything in the interpretative process including verbal and nonverbal forms of communication and prior characteristics that influence communication, for instance presuppositions, the intelligence and philosophy of language, and semiotics. I wish to create vision for knowledge; a hermeneutic viewpoint is most outstanding for the research. The purpose of the hermeneutic analysis is striving hard to develop an understanding of the complete, and the affiliation between people, the company, and information technology (Michael D. Myers, 1997). Hermeneutics has been defined as "the theory of the operation of understanding in relation to the interpretation of text" (David L. Rennie, 2006).
"Hermeneutics treated with two facets of understanding which will be encountered once more: first, the troubles of analyzing texts in a way that looked further than the surface characteristics (e.g. of a story), and second, the issues of verifying the study so produced" (Wallace, Ross, Davie, 2003) the objective of this perception is to attain a deeper perceptive of the different elements for making the bigger picture. For that specific reason, I believe that the use of a hermeneutic perspective will turn this learning as a simple approach towards perceptive of the subject I would like to study.

2.2 Qualitative and quantitative research

There are two valuable research designs commonly used one is qualitative research and the other is quantitative research.

2.2.1 Qualitative research

Qualitative research investigates information in a descriptive and comprehension way. The target of qualitative research is to investigate a whole and pop-up explanation. In qualitative research data is gathered once the research is carried out. The qualitative research frequently involves use of words, visuals and items. Some superb examples of qualitative data collection

have focus groups, pop-up and descriptive interviews and subjective information. This qualitative research technique is intentionally used by the researchers to help out them to identify the logic in people as assigning to the social conditions and to clarify the mental developments during studying basically their manners. As is described, "Qualitative researchers aim to gather an in-depth understanding of human behavior and the reasons that govern such behavior" (Wikipedia, 2010, Denzin, Norman K. & Lincoln, Yvonna S. (Eds.), 2005).

2.2.2 Quantitative research

Quantitative research is the collection of objective data through numbers and statistics. In quantitative research I use to classify statistical models resolving and clarifying what is examined? Study of quantitative data is proposed in the final phases of research. A lot of researchers apply tools of quantitative research, for instance, questionnaires and surveys to collect numerical information. Quantitative data is highly creative, competent to test hypotheses. Quantitative researches determine and ensure objectivity and reliability. Moreover, "The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena" (Wikipedia, 2010, Lisa M, 2008). What are the basic differences between quantitative and qualitative research techniques?

Quantitative and qualitative research techniques are different generally in.

- The forms of data in quantitative and qualitative research techniques differ that they create.
- Both quantitative and qualitative research techniques create various kinds of questions.
- Both quantitative and qualitative research techniques use extraordinary kinds of tools for data collection.

General framework	Look for confirmation hypotheses about phenomena. Use extra structured techniques for example Questionnaires, Surveys, and structured Observation.	Look for exploration phenomena apply semi-structured techniques for example in-depth interviews, focus groups, and contestant observation
Analytical Objectives	To calculate variation To foresee causal interaction To describe uniqueness of a population.	To explain variation To explain and clarify the relationship To depict individual understandings To express group norms.
Question format	Close- ended Numerical acquired by assigning	Open-ended Textual attained from

Data format	numerical values to responses	audiotapes, videotapes, and field notes
Flexibility in study Design	The Study design is constant from opening to end contestant responses do not influences or conclude how and which questions researchers inquire next The Study design is subject to statistical assumptions and circumstances	Some aspects of the study are Flexible for instance, the addition, elimination, or wording of specific interview questions Participant responses affect how and which questions researchers inquire next The Study design is iterative, that is, data compilation and research questions are familiar according to what is Well-read.

Table 1 Comparison between quantitative and qualitative research approaches (Source web, fhi.org)

In the thesis, both quantitative and qualitative research techniques are applied to think the structure of research. As research topic is instruction for usability of website design subject, the data I collected in the research could produce different kinds of results. And qualitative technique in this research is extremely significant as I highlight on how the website usability facilitates its users. While quantitative research will be used as a purpose of statistical method. So the questionnaire used in this study uses both the approaches (quantitative research and qualitative research). The planned research is much about testing the presentation of website usability. While testing usability, tools I choose for data collection were both Interviews and questionnaire on which the respondents could mark their answers in major conclusions.

2.2.3 Deduction & Induction

2.2.3.1 Deduction

Deduction works from more common to the more specific. On specific occasions the deduction is casually called a “top-down” approach. The deduction can start with thinking up a hypothesis about the area of outcome; it can be limited even more as the researchers gather observations to deal with the hypotheses. This eventually leads us to be capable to test the

hypotheses with certain data, a verification of the innovative theories (Socialresearchmethods).

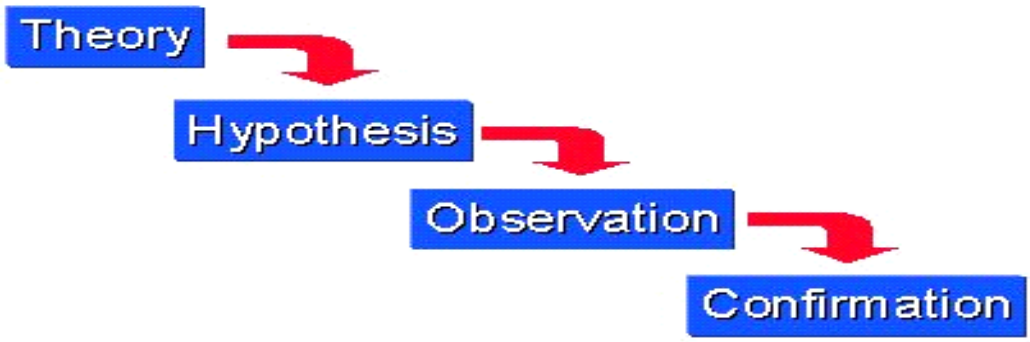

Figure 3 Deduction research

2.2.3.2 Inductions

The induction method is dissimilar from deduction therefore; the induction methods occasionally recognize a "bottom up" approach. In inductive method, I can begin with certain observation and calculations launch to notice outlines and regularities, devise some tentative hypotheses that may discover and finally wind up developing a few general conclusion or theories (Socialresearchmethods).

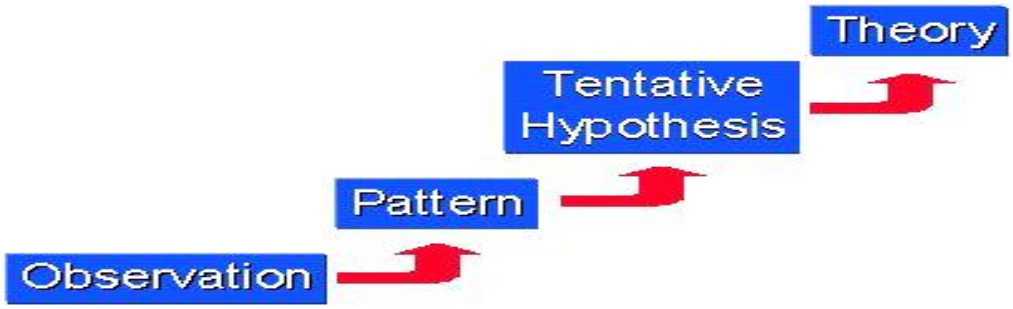

Figure 4 Induction research

The Inductive method is an option to take out the research. As I disclosed in the research plan section, I was on way to research from theoretical study to find the background awareness of topic and research question, afterward joined and confirmed the outcomes I got from an interview with theory. After this I needed to put together the data reach an inclusive understanding of usability of website design and analyze and evaluate so the complete process is taken out in the guideline of the inductive method.

2.3 Research strategy

In this research strategy prefer qualitative research approach and quantity research approach, it is necessary to turn into the research approach for gathering the indispensable data. A

research approach is defined as a box of gathering, evaluating and validating the collected data in a systematic procedure. Research strategy could use research question to channel the complete performance in the choice of source and kind of information (Cooper, 2003).
According to the Yin (2003) research strategy defined as five main research strategies such as below.
1. Experiment 2. Survey 3. Archival analysis 4. History 5. Case study.

Relevant situations for different research strategies

Strategy	*Form of research question*	*Requires control over behavioural events?*	*Focuses on contemporary events?*
Experiment	how, why	yes	yes
Survey	who what, where, how many, how much	no	yes
Archival analysis	who what, where, how many, how much	no	yes/no
History	how, why	no	no
Case study	how, why	no	yes

Table 2 relevant situations for different research strategies (Yin)
As a research strategy I choose one of the following or a combination.

2.3.1 Experiment

The experimental strategy used an exploratory type of research. What types of experimentations basically rely on the research topic? This is really time consuming and costly type of research technique. In this research one does not use take the experimental strategy?

2.3.2 Observation

Observational data can be recorded for locating empirical relationship between different parameters of your research. This type of research is that it is extremely time strong and expensive method.

2.3.3 Historical

Is the research strategy to focus on events that occurred earlier since this research emphasize the usability of website design consequently the history is not fitting?

2.3.4 Surveys

The Survey is mostly used to build up data from different people to conclude the problem (Oates, 2006) the surveys used the exploratory type of research normally used in business

studies. Therefore in the thesis use questionnaire and interviews some particular groups of individuals to get the research result.

2.4 Data collection procedures

Data collection is fundamentally how data is getting together. There are various methods of data collection in which I gather the data for example interview, individual interviewing, mail and internet. These procedures can be used for data collection.

Overview of data collection procedures in this thesis

2.4.1 Interviews procedure

An interview is a conversation between two or more individuals where questions are asked by the interviewer to acquire information from the interview. There are many types of interview for example structured interviews, semi-structured interview, informally interview and unstructured interview.
When with semi-structured interviews, the researcher can provide assurance a relaxed conversation covering much idea of research questions. Semi-structured interviews are mostly used in explanatory research to identify the interaction between variables, maybe as have been showing by one or two previous descriptive research. In addition, semi structured interviews I make use in exploratory studies to provide additional information regarding the research area. As a result, interviews technique for searching realities and conclusion compiled by possible users of a system or website being tested. This is a one to one semi-structured interview to gather data. In the current research I have selected the semi-structured interview as conducting of such interviews can clarify questions to the respondents thus the semi-structured interview is open, enabling fresh thoughts to be brought up during the interview accordingly to what the interview declares. The semi-structured interview guide offers an obvious set of information for interviewers and can provide dependable, equivalent qualitative data. Many researchers like to apply semi-structured interviews as questions can be arranged ahead of time.
Therefore the semi-structured interviews are commonly organized around a set of prearranged open-ended questions, with other questions rising from the conversation between interviewer and interviewees. Semi-structured in-depth interviews are the highly used interviewing set-up for qualitative research and can happen either with an individual or in groupings. Most usually they are merely carried out once for a person or cluster and take between half hour to many hours to complete. During the interview the queries must be altered, understandable and give hush-hush open-ended reactions. Essentially the interviews are generally qualitative in the normal world.

2.4.2 Questionnaires

In the research uses opinion poll as a tool of data collection as the replies can be examined by means of quantitative method and effects just compared to the qualitative method. Open ended question and closed ended questions are mostly used in this study evaluated and considered.

2.4.3 Focus group

Focus groups are applied as outlines of group interviews. A focus group usually includes of five and more individuals. If the focus group is excessively huge, then the groups break down into two-groups as the supervision is so hard. The researcher is prepared as a catalyst rather than an interviewer. The facilitator starts with a logical theme converse to the respondents and a set of a plan of items. In usability engineering, a focus group is a questionnaire method to collect the sight of users on a software or website. The focus group for the research was divided into two major sections, for example IT learners and web designers. The notion of separation is to demonstrate the sensible perspective from the data of IT learners and attain the technical explanation from them.

2.4.4 Criteria for theoretical study

During past days it was enough for people to use a pen and paper to execute theoretical studies. Recent days, it is a contemptible activity. Theoretical studies have constantly been an incredibly significant method in scientific research. Even though in recent time, it has been essential for researchers to study a lot of journals, magazines, use the internet to search out an enormous quantity of information.

- The literature resource I will move violently to discover through our library access as there are a lot of universities has several databases which emphasize the prerequisite of the research work.
- The keyword that I will relate when seeking out for the literature will be the usability of website design issue, improve the usability of website design etc.

2.4.5 Criteria for empirical

Empirical research is a technique of having information by way of direct and indirect observation or experience. Research design dissimilar areas and by the question being explored. Many researchers merge qualitative and quantitative forms of analysis to improved answer questions which cannot be considered in laboratory background, especially in the social sciences and in education.

- Empirical will consist of interview consistent with the research question and the research field.
- The selection of the contestants will depend on the sequence of the participants in that area like working website design on the group in which the participant's particle work to use website design.

2.5 Data analysis procedures

Data analysis is a continuing activity; data analysis not only responds your queries, but in addition provides you the directions for prospect data collection. Data analysis process makes possible you to arrive at the data analysis. The implementation of such procedures determines your research plan in perspective and helps you in testing the hypotheses with which you have initiated your research. In the research how the data is collected and analyzed, the procedures are below.

Data analysis is a continuing activity; data analysis not only answers your question, but furthermore provides you the instructions for future data collection. Data analysis procedures make possible you to reach at the data analysis. The use of such process places your research project in perspective and helps you in testing the hypotheses with which you have

commenced your research. In the research how the data is gathered and examined, the procedures are below:
I established a logic which is simple to understand and is indispensable for the research. Once the data is gathered empirically, with the intention of theoretical study I will collect the data from different areas for example as periodicals, books, e-books and other empirical researches earlier made like interviews, questionnaires which will be compared afterward to reach at definite conclusions.

2.6 Strategy for validating findings

Fundamentally the validity in a qualitative research passes on findings of a study which are true and "certain"." True" in a sense that the research findings accurately reproduce the state and "certain" in the common sense that research findings are preserved by the confirmation. I have applied Triangulation, a technique used by qualitative researchers to ensure and found validity in their study a research question from a number of viewpoints. Patton (2002) has used triangulation which helps the study by linking methods. I have established my findings with the theoretical validation whereas following are types of it:

- Reliability
- Internal validity
- External validity

2.7 Result presentation method

The results of the research will be demonstrated in text and coding with the aim obtaining an excellent presentation.

3. THEORETICAL STUDY OF USABILITY

3.1 Usability

Usability means that how much a website is usable and how it can be used by its users. It ensures that people can get their desired information quickly and easily in a more user-friendly manner. In this research, the emphasis is on how to enhance usability and how to improve the navigations of the website.

3.1.2 Website usability

Website usability is the level of comfort with that user is enabled of utilizing your website. In case user find your website easy to use, they are seriously more likely to become a client. Thus the website usability is to ensure your website is as simple as possible to utilize, for instance, valuable as potential in altering users into clients.

3.1.3 Navigation

Navigation is a tremendously essential feature of a web site as it makes possible visitors look into their technique around, shows where they entirely can go to the website. It offers a visual process for symbolizing the hierarchy of details on the site. Navigation is same to producing instructions for the visitors, and also to discover his technique on the website simply, find appropriate details, get to a right product which he/she requires to purchase and quickly buy it.

3.1.4 Web usability

Web usability is regarding producing your website in such a way that your website visitors might get what they appear to quickly and professionally. Therefore, the usable website cans huge incomes on to your website and also your company.

3.1.5 Designing for usability

John Gould and Clayton Lewis (1985) say, many systems designed for visitors should be simply to use and learn, easy to keep in mind, and support to users. Both of the researchers propose that designers trying their best for usability below these three design principles.

- Early focus on users and tasks
- Empirical measurement
- Iterative design

3.2 Subject areas relevant for the research

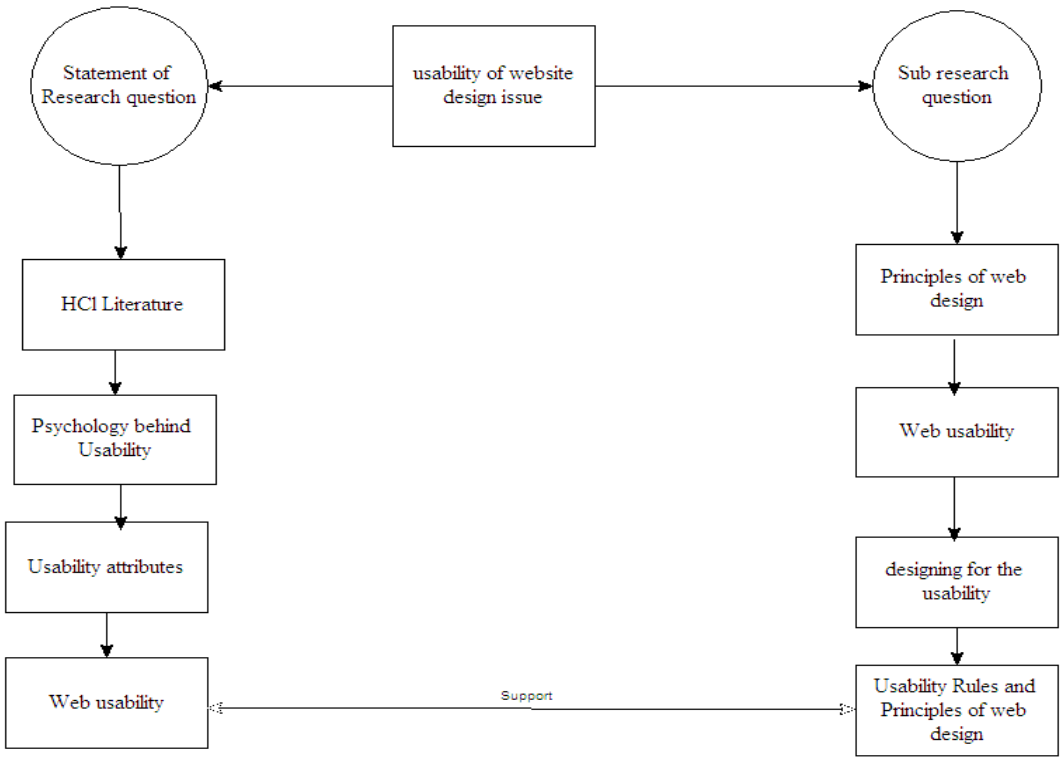

Figure 5 Subject areas relevant for the research

3.3 Previous research

(Löwgren & Stolterman, 2004) suggest that there is continually an enhancing significance in the role and nature of design in HCI research. Using computers had a steadily main question of interfacing. The techniques by which human has been interconnected with computers has several times. The usability of website design has previously to develop in the present year, but now much website design has a little issue of usability. This shows that the usability of a website design is not improved with the exact human-computer communication design principle.

Jakob Nielsen (1999) says, "The website is the chief rules of the environment, if man or woman who clicks is able to find making his/ her mind up the entire thing. Therefore, it is simple to go in a dissimilar place; the whole contestant in the world only the mouse clicks away." The issue which can make the aim of identifying entirely usability problems to a few degrees is as of the other inhabitants are increasing in age, hope, details needs, accountabilities, and user capability. Though, website designers need containing the entire similarities over time (Al-Badi & Mayhew, 2010) the majority websites do not have excellent usability turn it tough for Internet visitors to achieve what they wish. Internet users are frequently impatient, and a lot of websites out there produce it solid to acquire information. In case visitors have to look for a website to have the information, they are emerging for they will not wait.

As per International standards (ISO 9241-11); "the degree to which a conception can be used by certain users to get specific objectives with convenience, capability and pleasure in a

special circumstances of use"; According to the Alexander (2011) idea, the website usability as the measure of facility with which users can complete dissimilar duties using a website interface with which they are unidentified. Some of these duties take in: browsing and common site navigation, locating exacting information, purchasing supplies and services, submitting data using forms and contribute in web-based conversation collection. These point out that to improve the usability of a website must be the users and task needs. It displays how fine the user should carry out or navigate to a website to investigate the position that should be done efficiently and pleasantly.

3.4 Relevant literature sources

The appropriate literature sources used in this thesis are strategies of web usability by David Pärsson, clarified to improve the navigation of the site. Usability attributes for assessing usability of the website by Nielsen (1993). Nielsen suggests that usability is not an only, single dimensional belongings of a user interface, but has a lot of mechanisms and is frequently associated with four characteristics. Improving usability with Fitts' law, principle of usability human-computer interaction by Te'eni et al. (2007) The principles of web design are make use of to test how to develop navigation, font size, logo and competence of the website. The Psychology behind the usability, Benway and Lane (1988) these two researchers were considering regarding banner blindness, Gestalt principles are the fundamental rules of human being psychology in the extent of human computer communication design. According to George A. Miller's (1965) studies reveal that the human being intelligence small time remembrance can just maintain a 5 – 9 outcomes at a time. Ben Shneiderman "provided "8 golden rules of interface design." While Bevan (2006) says, UCD strives to make products that are strongly user oriented. In this thesis usability rule and principles of web design are the highly significant of using a lot of circumstances for example, I will use analysis chapter where I will make sure the rules to apply, check the detail in analysis chapter.

3.5 Human-Computer Interaction

The word of Human-computer interaction was endorsed in the middle of 1980s.
Association for Computing Machinery (ACM): "discipline related with the design, evaluation and implementation of interactive computer systems for human use and with the learning of most important phenomenon surrounding them" (1992). Carroll: "HCI is the study and practice of usability. It is about perceptive and producing software and other technology that individuals will intend to use, will be able to use, and will discover effectual when used" (2002). In this, thesis work, human computer interaction deals with the interaction between the users and the website design.

3.5.1 Principle of usability Human-Computer Interaction

There are five objectives of the Human-computer interaction are "to extend or develop the safety, usefulness, efficiency, competence and usability of systems that comprise computers" Te'eni et al. (2007) says, 'the learning of Human-computer interaction is "not restricted just to the interface between the computer and user" but should be used to: "extend extra usable and unbeaten systems; offer researchers with consistent and collective knowledge for theory building, and; relate this theoretical information to improve real information systems." In earlier, the human-computer interaction was frequently concentrating on satisfaction, effectiveness, efficiency and to product huge usability, therefore at present the human-

computer interaction researchers are coming across to identify and help the individuals and also how the human being their communication with systems regarding understanding, liability and sensation.

Distress is a major issue for visitors dealing with websites. The issue happens as a result of software, hardware but especially from poor usability of the website. If the user's goals are dissatisfied, the frustration will occur, since "pleasure was not attained and expectations were rapidly thwarted. The thwarting or hindrance – terms frequently used as of same meanings with frustration – is not restricted to the real activity underway, but relates to what the person is expecting."

Annoyance in website use frequently emerges against navigation issues, together within and between sites. Usability is associated with "consumer ability to know where s/he is at any time and what can be completed." Web designers and the visitors should be taken into concern this part in their website design; the designers must make use of the content - based navigation instead of graphic navigation. The advantages of text-based navigation the website loads quickly and the other hand graphical navigation can acquire matters for the visitors. The website loading times will take many times the users will be aggravated. Therefore, to stay for pages to load, the higher irritation, this could direct visitors to leave the website or struggle another website to get information. To avoid this complication, the web designers and users must work together to create a website, which get a small amount time in downloading graphics and also video to hold up users to visit the website persistently. Consequently, it is very important that a website development technique gets into concern the principles of usability and Human-computer interaction to discontinue the user errors and reduce user annoyance. Including users in the design from the beginning will support the website to be extra wide-ranging, user-friendly and interesting and the principle of web site visitors by gathering their requirements.

3.5.2 Benefits of Human Computer Interaction

The individuals wish to purchase or make use of products with huge usability for example Google's search engine has the major market share as it is easy to use with enormous efficiency.

3.6 Psychology behind usability

3.6.1 Baby-Duck-Syndrome

Baby-duck-syndrome clarifies the inclination for the users to connect to the innovative design they earlier learned and judge to the modern designs by their contrast to the creative design. Therefore the users generally support the system like to those they formerly learned on and dislike modern systems. These effects in the usability issues most redesigns to have; and the users can be hurting to change, so the website layout, structure, navigational techniques and same can be annoying to change it.

3.6.2 Banner blindness

Banner blindness is the tendency of individuals to ignore banner ads on the website. In (1988, Benway and Lane)these two researchers were viewing regarding banner blindness, and they originated that visitors had the further intricacy result of details as it was placed in a banner ad. Benway and Lane named this happening "Banner blindness." Specialist believes that

banner blindness occurred as skilled web users are in "search mode" ignore banner ads as unconnected to their search. (Benway and Lane in 1988)
The websites that are having pop-up ads are commonly aggravated by users and decrease the quality of the website being created (Nielson 2007).

3.6.3 Eye-tracking

Eye-tracking is the process of evaluating either the position of seeming or the movement of an eye relative to the head. Eye-tracking learning may facilities be estimated how relaxed web visitors are with the website they are browsing through, website response time; horizontal attention leans left and also how rapidly they can learn the configuration and the system after it (Simple usability 2011; Gould& Zolna 2012).

3.6.4 Gestalt principles of form perception

Gestalt principles are the fundamental regulations of human being psychology in the level of human computer interaction design.

- The law of proximity states that as a unit distinguishes a variety of objects they perceive objects that are close to each other as making a group.
- Law of similarity in this law fraction will be established perceptually if they are the similar for each one.
- The law of symmetry describes that the brain recognizes objects as being balanced and forming just about a middle point.
- Law of closure perceptually entire of the objects that are not straightforward.

3.6.4.1 Uses in Human-Computer Interaction

The gestalt laws are applied in user interface design. The gestalt laws of resemblance and immediacy can, for example, be applied as leads for insertion radio buttons. The gestalt laws may also be used in scheme computers and software for additional instinctive human being use. The pattern encloses the design and layout of desktop shortcuts in rows and columns. Gestalt psychology, additionally, has software's in computer vision for struggling to make computers "see" the parallel things as humans perform.

3.7 Usability rules and principles of web design

When a design of a website the major hub is visitors as of this thesis are about how to use the website design simply? The motive behind the website should be completed to the visitor's attention and necessities. Consequently, it should generate attentively that the visitors will find their methods in the course of hard site architecture; in this thesis are some practices on usability rules and principles of web design and apply to the analysis chapter.

7±2 Principles

In (1965) by George A. Miller's studies reveal that the human being brain small time memory can merely preserve a 5 – 9 effects simultaneously. So it is a fine practice to presently figure of options is seven links in your navigation. Alternatively, there are impassioned debates about The Myth of "Seven, Plus or Minus 2″. According to the Miller's studies 7±2 Principles did not memorize to be relevant to the web.

2-Second-Rule

In the 2-second rule usability, the study must have attentiveness the time of a respond. In the 2 -second rule that the visitor must not have to stay more than 2 seconds for something to occur. When visitors click fresh pages must not be done in 2-second for execution it will leave the pages for that reason to create the website should continue the efficiency time of the website (usability first 2012).

3-Click-Rule

According to 3 -Click-Rule this rule concerned that if a visitor does not find what they look like for in 3 seconds that they will run off the website.

80/20 rule

“The pareto principle” is also regarded as 80-20 rule. The rule is normal in business "80% of your sales come from 20% of your clients". This idea could be used in web design. Dramatic improvements can often be acquired by recognizing the 20% of users, customers, activities, products or procedures that account for the 80% of contribution to earnings and increasing the concentration applied to them (Towers 2010).

Example of 80/20 rule

The user interface design has a lot of aspects just like a drop down menu in a registration form. In this shape has a list of countries symbolized. Many web designers or contented originator to recognize that 80% of the time, certain countries will be selected. The users will observe own selection at the top of drop down as represented in the figure.

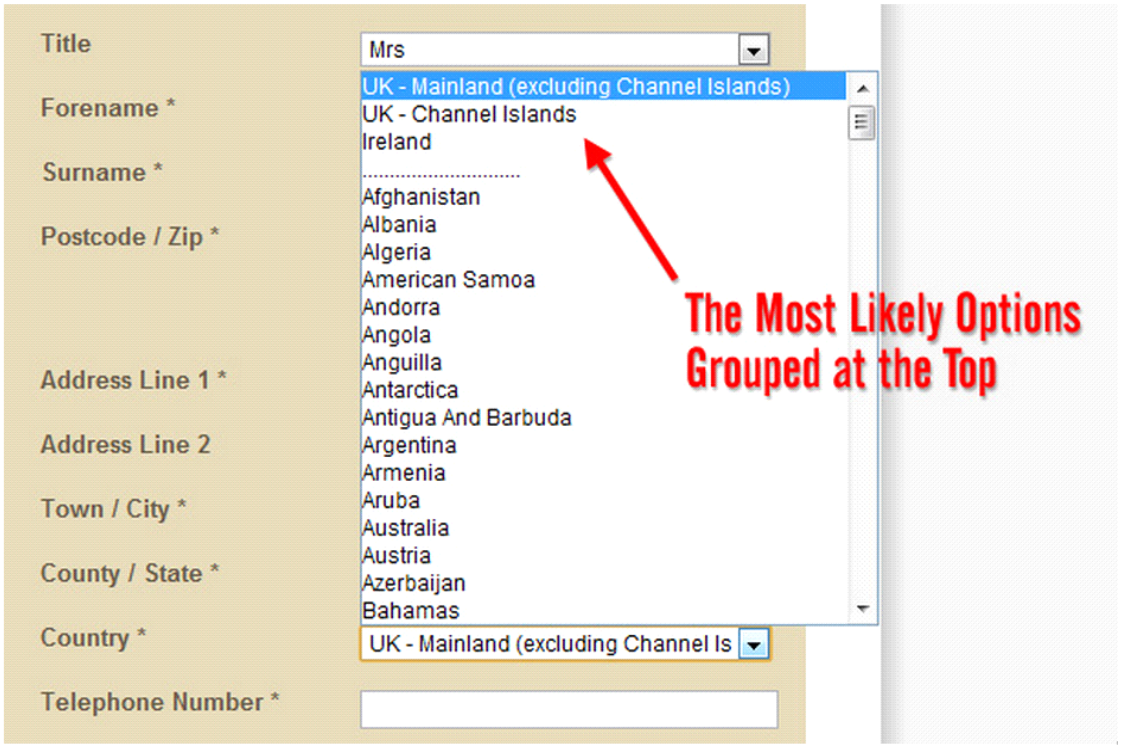

Figure 6 Drop down list of countries form

3.8 Interface Design

As said by Faulkner (1998, 141), as designing a fresh user interface, or assessing an current user interface, the following design principles must be focused, Focus on user' as well as assignments that are to conclude the number of users that are required to accomplish the task and also about the suitable users as who should be; somebody who has not used the interface earlier, will not utilize the interface in the upcoming days, is most probable not a legal user. It also describes the tasks that users will be carrying outing and how frequently the task is required to be achieved. Set the experimental measurements similar to testing the interface untimely on with genuine users who remain in contact with the interface on a daily basis. Remember that outcomes may be changed in case the presentation standard of the user is not perfect. Set up quantitative usability essentials such as: the number of users achieving the tasks, the duration to complete the tasks, and the number of errors occurred during the accomplishment of tasks.

3.8.1 Principles of Interface Design

There are several principles on interface design, so when designing a website, a designer must put together the principles that essentially focus on the user whilst using the system so as typically to provide the pleasure.

3.8.2Simplicity

Simplicity is the base of all principles, according to Clements (2000), "simplicity is the vital element of design. Ironically using simplicity is the toughest thing to do as it is easy to develop a massive design by adding repeated pages with features than it is to build up a simple and clear design. Users are not tolerant but time aware individuals, therefore they would not try to make huge efforts to try and learn how to utilize the interface and its functions fairly the interface must be reserved simple and uncomplicated.
Defectively managed interface that is disordered with complex functions is merely not good sufficient for users to assist them achieve a proposed task. Functions must not divert users as they attempt to perform tasks somewhat they should be appropriately integrated; for example essential functions should be noticeable and understandable while advanced functions can be less apparent and designed in a way that users can improve how to use them with the passage of time. (Wiley and Sons 2002, 27).

3.8.3 Consistency

Among other principles consistency is one of the moral one of the user interface. End users have a reliable standard of expectation and the user interface must be able to meet them. The system language of expressing messages should similar. In case a user realizes the particular way of interacting with the system which is reliable; then they will always do very similar thing repeatedly. A user should not be probable learning a process from one area of the system and then a new technique in another area. (Faulkner 1998, 56)In web pages, the design format must be constant throughout the website and if any modifications are made to the screen layout should be significant and must be observable. Consistency in pages must constantly be observed for such page.
Length should be upholder little with simple navigations whichever horizontally or vertically, long pages are boring to read that is why frequently users lose their attention from the

website. It facilitates to have a dependable layout as the users normally know what they are doing currently and what they will do subsequently.

3.8.4 Easy to learn and use

A website must be created in an uncomplicated way with the emphasis being that the user wants it to be easy to learn, and use rather than difficult. If a website is being created for a wide range of people then it might be challenging to form a site that is pleasant to use. Primarily is that the layout must be reliable. A simple and easy navigation system should not be tough to find out and use.

3.8.5 Feedback

A web site must offer enough details so as the users to acquire preferred goals while performing various tasks. Documentation is a fraction of the system that users usually don't like to use however should be offered nevertheless. There should be reasonable feedback that the user can trust so as not to be disturbed. This helps out much as it answers user's queries i.e. where they are, how they got there and what to do subsequently. A useful interface should be able to give feedback once the user requires it; it should not just leave the user with sentiments of uncertainty and distrusts. Some user say that interface have a bad pattern of not corresponding to their users on related matters like revealing action feedback messages, for instance while giving a feedback from the user presses the send button but does not have any message as response. Users should be given feedback for their actions. (Jones referred 18.10.2011)

3.9 Usability heuristics for Interface design

There are many usability heuristics as said by Nielsen (January 1, 1995) for interface design. They are described here as follows:

- **Visibility of system status**

This suggests the system should make available an acceptable feedback to users regarding happenings in the system when their command is being processed.

- **Use users own language**

This refers that the system must use the user's individual language with words, phrases and perceptions that are user friendly.

- **User control and freedom**

This means user's normally select system functions by oversight and will require a clearly marked "emergency exit" to leave the unnecessary situation without having to go in the course of an extensive dialogue for example undo or redo.

- **Consistency and standards**

This means that the system must be reliable within itself and also the standards pursued in one part of the system should be followed right through the system. For instance: If in a part of the system the selection of checkbox button explains a feature is functional, that specific standard must be followed from beginning to end the whole system.

- **Error prevention**

The error messages which are supportive to the user are constantly required.

- **Recognition and Recall**

It refers to the system objects, actions and options must be observable to the user, so that there is no requirement for the user to memorize the information enclosed in one part of dialogue to the other.

- **Flexibility and Efficiency of use**

The system must be flexible and simple to use for any level of users such as beginner user, intermediate users and expert users by providing user manual or online helping to users.

- **Aesthetic and minimalist design**

The avoidable information in the dialogues must be eliminated and also the information that is unrelated in the dialogue competes with the essential units of information, which decrease its relative visibility.

- **Sensible error messages**

The error messages details must be in the user's language and must tell about the issue and give a solution.

3.10 8 Golden rules of Interface design

According to Ben Shneiderman (2010) provided "8 golden rules of interface design." What is the motive behind 8 golden principles of interface design? The design model is used in computer science to resolve the difficulty of usability and make the interface fast simple to utilize by the users and to create better user satisfaction with the interface. These rules are common for user interface design, as well as for web design. Here are the 8 Golden rules of Interface design.

- **Strive for consistency**

Struggle for the stability must be used in menus; make possible screens, font size, regular color, design and so on should be working all through the whole website.

- **Cater to universal usability**

A superior interface should produce to the worldwide usability, for example to make a web site it is an wonderful thought to create a web site in such as a technique that is addressed regularly the low speed and the higher-speed users.

- **Offer informative feedback**

Offer useful feedback similar to the navigation in web design, and the users can look the feedback for every action. At ultimate, they will not discover mislaid browsing the webs.

- **Organize actions into groups**

The same achievements can be grouped together thus the users can naturally locate what they require in the webs.

- **Offer error prevention and simple error handling**

A web must keep away from huge errors. Initially; verify each link on the website to ensure that there are no quiet links. As the users run into error messages certainly they increase the breakdown in the web site. Therefore they need helpful and specific commands for recovery. Specific commands are help page, and also make normal ask queries is needed.

- **Permit easy reversal of actions**

When the users generate errors throughout the use of a website, and the users may simply undo the action. For example the re confirm button in very important functions in business websites.

- **Permit users to be in control**

According to the Nielsen states that Flash is 99% unpleasant, as it splits web fundamentals. For instance to make a back button in Flash websites it will take many time and also influence the effectiveness of the website. Users misplace the control in Flash websites.

- **Reduce short-term memory**

Short-term memory the website should have simply displays, and the users can easily keep in mind what they have done in the whole website.

3.11 Improving usability with Fitts' law

Published by Paul Fitts in 1954, Fitts' law is that outlines may make easy designers make knowledgeable effects in user interfaces and web page designs.

- **Fitts's rule 1: Make bigger targets**
- **Advantage**

Generate larger objectives will facilitate communication in addition to agree with you to get the almost all pixels out of your interface. A small number of websites do not create a larger connecting area of a button. Fitts's Law would advise using every available pixel to enhance the click region making it a better target to click saw in the figure.

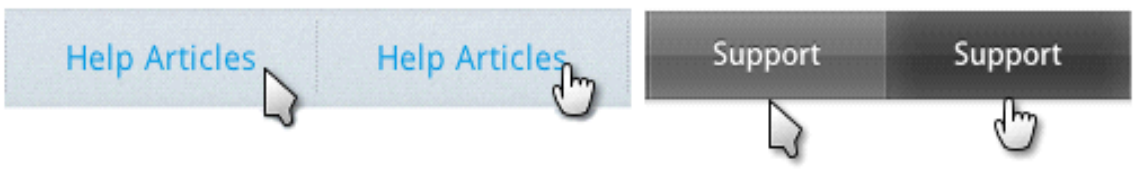

Figure 7 Bigger target of the click

- **Fitts's Rule 2 Minimize Cursor Movement**

Next rule one can understand from Fitts's law is that the previous an objective, the earlier it is to increase.

- **Grouping items**

It has significance to stay interface items that are connected in nearness to each other to minimize the space between them, and thus improving usability below the Fitts' law model. As you create a website design you must be emphasizing on the distance of the horizontal navigation menu bar or vertical navigation bar. You will see the pattern of the horizontal navigation bar; there is no space in the figure.

Figure 8 Horizontal navigation bars

3.11.1 Wire Frame

Wire frames are produced by a user knowledge expert known as "interaction designers." The wire frame represents the page layout or compilation of the website's content, and interface essentials and navigational systems, and how they work jointly. Alternatively, a wire frame does not generate any entire design of the website. It offers the idea design of the website (wiki 2012; Mashable 2010).

3.12 User-centered design

User-centered design technique concrete on users through the planning, design and expansion of a product. It is completed by contact straight with the end users to have the comprehensible requirements. Bevan (2006) says, UCD strives to create products that are strongly user oriented. This occurs in all design procedures beginning with an emphasis on user requirements as a base to design and improvement. If a system fulfills particular user needs, usage of this product enhances user satisfaction and productivity, and it also minimizes training costs (Bevan & Macleod, 1994).

The User-centered design has four actions from the basic cycle of works, which are as under:

- **Requirements gathering**

Identify the individuals who will use the product and under what situation will utilize it.

- **Specify requirements**

Identify many business needs or user objectives that must be joined for the product to be unbeaten.

- **Create design solutions**

Create design stage is producing a design.

- **Evaluate designs**

The Evaluate design is the highly indispensable part of this technique, in this procedure usability testing with genuine users. As they assess testing is also exceptional from a website software progress.

3.12.1 Principles of user centered design or designing for usability

Gould and Lewis (1985) says, each system designed for users should be simple to use, learn, remember, and beneficial to users. These two researchers suggest the following principles when designing for usability.

- Early focus on users and tasks
- Empirical measurement
- Iterative design

- **Early focus on users and tasks**

- The design group must be focusing the end-user taken an indirect contact with potential users. The designers give details of the website if the users do not assure, the designers will work yet again user's area.
- As a section of perceptive users this information should "be played beside the tasks that the users will be probable to perform."(Gould,J.D.,Lewis)

- **Empirical measurement**

In this context, empirical measurement denotes to the practice of testing and validating design decisions before time in the procedure with intended users using example of the system. Iterative design denotes to a sequence of design, test, and measure and redesigns as several times as is essential (Gould and Lewis, 1985). Though, the fields of user focused design and usability has been entirely significant since the publication of the article by Gould and Lewis, the principles stay found at present.

- **Iterative design**

- The iterative design segment has improved the standard and functionality of a design.
- The major requirements for iterative design are identification of mandatory changes, and capability to make changes.
- When the issue occurs in interactive design, merely empirical techniques that can be used during system improvement or to uphold the entire website project.
- Lastly, the iterative design capacity towards meeting targets for example creating the website system user friendly, easy to use website, worry-free to function, etc.

3.12.2 Usability of user-centered design

The objective of the user-centered design is to produce products that have an important level of usability. ISO 9241-11 (1998) defined the usability as" degree to which a product can be used by specified users to achieve specified objectives with efficiency, competence and pleasure in a specified context of use."

Jeffrey Rubin (1984) gives details usability plan as:

- **Usefulness**

Product make possible user to achieve their objectives, the tasks that it was designed to extract and/or would like necessities of the users.

- **Effectiveness or ease of use**

Quantitatively calculated by speed of performance.

- **Learnability**

User's skill to work the system to some defined stages of capability behind some predetermined phases of training. In addition, it refers to the aptitude for unusual users to relearn the system.

3.12.3 Progressive enhancement (PE)

"Progressive enhancement is an approach for web design that stresses accessibility, semantic markup, and external style sheet and scripting technologies." (Ryan Boudreaux August 8, 2012)

A delicate strategy for making websites those work with older devices, new devices and approaching devices. Be it text browsers, screen readers, search engines, mobiles and desktop browsers it is probable to be inclusive to them all and still use the highly up to date technologies. Believe of these web technologies as being in layers, with HTML as the first layer, CSS is the subsequent, and JavaScript as being the third.

When to use (PE)

- When producing a standard web site.
- When producing a mobile web site.
- Any visitor's reachable web site.

Benefits of progressive enhancement

- **Improved accessibility**

The occasional visitors are not able of reading from a screen, and progressive enhancement allows the impaired to like websites with improved usability throughout text readers and screen readers, which enhance user engagement.

- **Expand transferability**

Websites will remain effectual for no issue the browser of navigation and the device, all through the use of the principle of PE, comprising CSS3, and HTML5.

- **Site Performance**

Improvements regarding page loading times are more eagerly implemented.

3.13 Principles of web design

- **Home page**

The home page is the preliminary pages of the users appear as they enter on a web site. The homepage of a typical web site has to be in touch many of the items. Some of them are as under:

- **URL**

A home page is the opening page available when a visitor decides site or occurrence on the URL. The regular URL for a web site is the home page address, still though you may undergo the address (Uniform Resource Locator) of a number of pages and have that page sent to you. From the usability point of view, the users search on Google's keywords of a URL, if the keywords are not accessing the users will leave the site.
Nielsen has a merely a few strategies for URLs. Nielsen describes that a working site needs:

- Little URLs.
- The domain name must be simple to remember and also easy to spell.
- Easy to type URLs.

- **Search**

As said by Nielsen (1999), about fifty percent of the web visitors are searching central, representing that they will frequently go straight to the search box as they go into a web site. Therefore, generally home pages need a highly demonstrated search box. To generate a search box it is functional for the visitors to look for menu for a website easily.

- **Site hierarchy**

The home page must offer an explanation of what the web site has to present, likewise in words of content and characteristics. An excellent designed navigation interface can converse this; most of the website makes use of parallel navigation bars see the feature the navigation part.
A homepage should obviously update the web site's purpose and reveal every key option reachable on the web site. Normally, the most of the homepage should be visible 'above the fold,' and also comprise some degree of amount of prose text. Designers should supply straightforward entrée to the home page from each page in the site.

- **Navigation**

Navigation denotes to the way used to get details in a web site. A navigation page is used frequently to facilitate users locate and link to target pages. A web site's navigation design and aspects must allow users to get access details successfully and professionally. When achievable, these way designers must uphold navigation-only pages short. Designers should enclose site maps, and offer effectual feedback on the user's place in the site. To make easy navigation, designers should differentiate and collection navigation factors and use appropriate menu types. It is also essential to use descriptive tab labels, give a clickable list of page stuff and furthermore include 'glosses' where they will ease users choose the exact link.

- **font size**

Webpage fonts are vital for generating impact on the user's impression of a site. That is why; designers acquire tremendous care in selecting the accurate fonts for a website. Font size is an extremely vital aspect that should also be taken into consideration. When selecting a font size one must maintain in brain that selecting size nearer to one another for different levels within your website will output a further proficient and graceful webpage

- **Test your font size**

- Open up your website.
- Pages where some texts, go to the home page or about page.
- Read a text.

- **Speed**

- As you create the website must be quicker to loading time.
- 40 % of the visitors desert a website if it gets further than three seconds to be loaded.
- 7 % of the visitor's still only one-second remains for the load time.
  Website loading speed must be a basic concern in any website design scheme.

- **Logo**

The individuality block that explains on the website must be comprised the business or company's logo or corporation name, and sit in the upper of each page of the web site must be logo, and the users remembers that the pages they're viewing are part of a business site. The basic improvement of the logo links will be improving the search engine.

- **Footer**

Positioned at the foot of the each page of the website, the footer usually comprises copyright, contact with the company, and legal details, with a little link to the key sections of the site. In the footer links, also improve search engine, and it's simple for the users if something is missing the above website design must be included in the footer.

- **Physical Consistency**

This perception gives explanations the reliable external look of a web site, for example logo position, navigation and the use of images. Physical reliability is significant for improving orientation and unbeaten site navigation.

- **Gloss**

It can offer the hints and the conceptual details on where the links press and where it will obtain the visitors once it's clicked. Hints can be provided using the title quality of links. From the usability point of view, the visitors would like to have the absolute power over all that is occurring on the web site, for example supported by sound anchor text could be improved the usability of a web site.

3.14 Usability Attributes

As said by Nielsen (1993) that usability is not a merely, single dimensional property of a user interface, but has a lot of mechanisms and is frequently associated with these four characteristics are below.

- **Learnability**

The system must be worry-free to be trained so that the user can quickly begin getting some work completed with the system (Nielsen, 1993) This awareness of characteristic the users should be kept in mind the design interface of the website how was made and how relaxed to use the website.

- **Efficiency**

The system must be well-organized to use, in order that once the user has well-read the system, a high stage of productivity is probable (Nielsen, 1993) this effectiveness of the attributes the anticipation of the users should be greater as the users have learned the website interface. Therefore, this usability characteristic plays a very significant role in concluding the website usability.

- **Memorability**

Consistent with the Nielsen (1993), the system must be easy to keep in mind, in order that the casual user can come back to the system after some duration of not having used it, devoid of having to learn the lot all over again. This attribute generates the user decide a certain website's usability. The major goal of this attribute at present the complex interface of the website to a simple interface that make the user remember the process without problems.

- **Satisfaction**

In accordance with the Nielson (1993), the system must be agreeable to use with the intention that users are individually contented when using it; they like it. This feature means the users convince the interface design for example used suitable images, simple to read, the competence of the web site this is basic factored where the users must be contented.

3.14.1 Good Usability Criteria

Good usability calculates the characteristics of a user's experience whereas interacting with a system whether it is a website, an application, a cell phone or any machine controlled by the user. As said by Nielsen (1993, 26) good usability consists of learn ability, efficiency, memorability, faultlessness and satisfaction. Figure 2 shows all these factors, learnability includes of how simple and quick an end user can learn a fresh user interface satisfactorily to achieve an essential task. Efficiency determines the pace of presentation that is how rapidly an experienced user can take to achieve a given task. Memorability explains the situation consistent with which a user can consider enough after a phase of time with no use of the system so as to use it efficiently or not. Faultlessness measures the errors that a user experiences while using the system, it depends on the seriousness of the errors and how the user recovers from them. Satisfaction measures the standard of the user's interaction with the system.

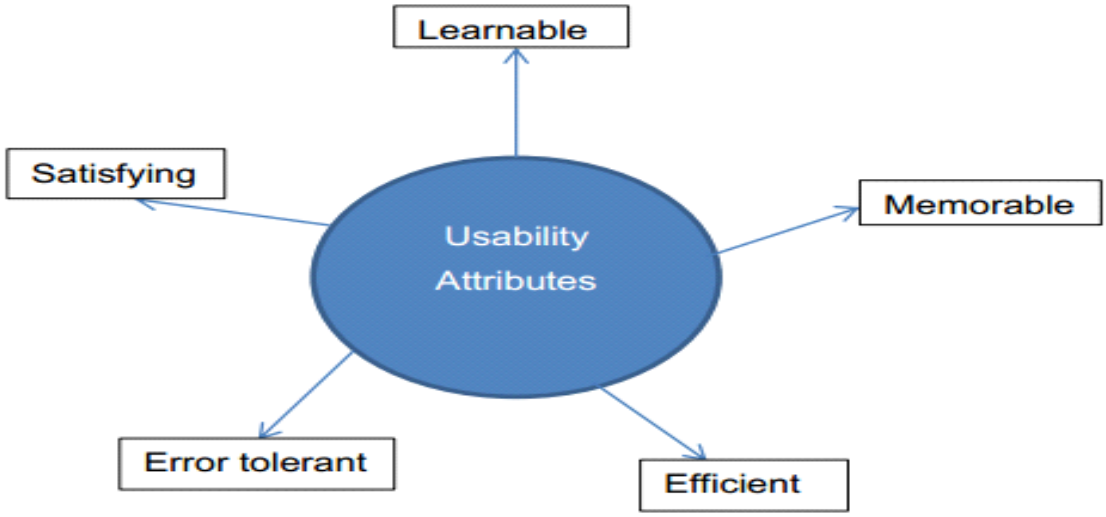

Figure 9 usability measures Nielsen 1993, 26

3.15 Web Usability

- **Usability**

Usability is the field to which a product can be used by certain users to get particular goals with effectiveness, competence and satisfaction in a proper condition of use.

- **Effectiveness**

Effectiveness is the correctness and fullness which particulate users can get accurate goals in specific environments.

- **Efficiency**

Efficiency is the resources finished in connection to the accuracy and completeness of goals finished.

- **Satisfaction**

Satisfaction is the straightforwardness and suitable of the work system to its users and more people worried with its use.

So, "Web Usability" is the making of web sites that users would like to use, with the least amount of attempt, time and annoyance. Lastly, you desire all of your users to have the immense knowledge on your site.

- **How the web is utilized?**

The amount of websites existing on the Internet is immense. Already available for 200 million active web sites accessible to the Internet visitors and the number of pages is sure even upper, so it's no speculate the majority of users are in a quick (Netcraft, March 2010). Krug (2000) says, the fact that visitors are in a swift also involving their ability to pick. Again, Krug says that generally users "satisfies" a cross between fulfilling and sufficing by selecting the first sensible choice they place that might they like their requirements.

- **Navigation**

The necessary part of web site design is the navigation. It recognizes how end users go around the web site the navigation interface as well supplied to another endeavor. As said by Nielsen's (1999) navigation interfaces need to facilitate users recognize three things, which are as follows:

- **Where they are**

The users to be able of remember where they are on the web site each page must identify the user's current location.

- **Where they can go**

If users can obtain some kind of the web site's structure, the users can also find a general thought of other places to go.

- **Where they have been**

Adjust the color of links to be visited pages made easy. The initial choice is major significant where they are (Nielsen).

- **Show Navigation Options**

Nielsen and Krug (1999, 2000) have the similar opinion on that when pages offer navigation options, users can find a common sense of where they may go. If users can obtain some thoughtful of the web site configuration, the users may also get a frequent idea what the site comprises, other than what they presently observe.

- The navigation must be accessible for each page of the site.
- These rules should be going after on each page with two possible exceptions. The home page which might have navigated that changes from the rest of the pages. The other choices are pages where forms are the basic actions, on which the constant navigation could be a preventable distraction.
- As said by the Krug, on the other hand, suggests that pages with forms at rest should have a process to find to the home page.

- **Buttons and navigation**

There are a merely some endorsement for buttons and clickable objects to stay to ensure usability. Initially, confirm that objects that are clickable. In the same method, objects that are not clickable must not appear clickable. This means that if a link appears like a button the entire button should be clickable, not just the text.

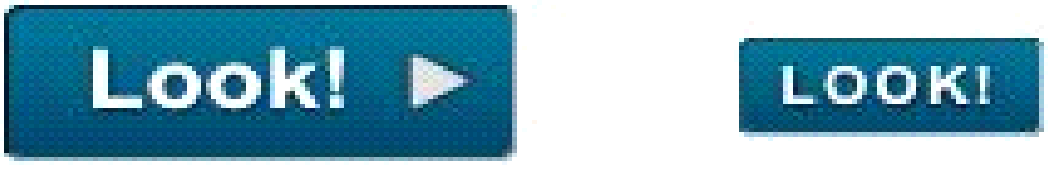

Figure 10 Clickable objects

- **Web usability best practices**

- Preserve navigation reliable all over the site. People should eternally be intelligent to back without complexity to your homepage.
- Consider the navigation constantly on the top level of the pages, if you generate a lot of navigation bars, the user will be confused.
- To create the design and approach of your website must be using the CSS (Cascading Style Sheets).
- The links to the pages should be created using text, for instance, keep away from the click here. This is the major point where the users must be satisfied.

3.16 Guideline for improve usability

There are a lot of ways to develop the usability

- **Good-looking page design**

Designing a good-looking layout for your website would make easy you a large number as it interests visitors further to search your website, which creates them to keep on more on your website. So the layout of the website must be comprising the horizontal navigation bar, suitable font size, proper images and color of the site, and the visitors will suit the design as well enhance the usability the website design.

- **Fine structured html**

Forever maintain your website code clean and merely readable and go after it as a ritual. A badly coded website will not just direct into an upset user but will besides verify to be a difficulty to search engine. So the validate your website code with the assisted of html validate and preserves your code clean.

- **Create your website load quicker**

The visitors who use the web are in a quick way; they require the entire things rapidly they would not wait for your own time, and must optimize your web site to load quicker. With slight tweaks and a little effort, you can get a website which is quick and easily available.

- Optimizing images to load quicker will in addition facilitate you lessen your user's time to entrée your website.
- Optimizing your CSS and JavaScript files and merging them would also facilitate you acquire a faster website.

3.17 Website usability testing

The commencement of a website, it is tremendously important to test its usability. Usability testing comprises assessing the functionality and working on your website and effort it out the users. Some of the things you need to be appeared for when testing enclosed navigation functionality, reaction and cross browser compatibility (Steve Krug). Require to test five basic things:

- **Cross Browsing Testing**

Building your website cross browsing compatible is a essential function that cannot be hidden as every one you're selling hard work are consequent upon how you maintain your digital business.

Browser Compatible Check

Website does not emerge the same on every browser waiting it is well-matched with them. Any slight or key improvements to coding can adjust the existing of the web pages. The web configuration appears well in one browser but is substandard in others. I coded an easy HTML with small encoded CSS styles.

```
<html>
<head>
<tile>
Boras school
</title>
</head>
<body>
<div style="width:400px; height:400px; float:left; background:#ffffff; border:solid 1px #333333;">
<div style="width:400px; background:#666666; float:left; margin-top:45%; color:#ffffff;">
different Browsers check
</div>
</body>
</html>
```

Table 3 Browser compatible testing code

Screen Resolution

As said by Stat Counter, 1366×768 pixels overtook 1024×768 but suddenly in April 2013 1024×768 rose to 18.22% from 14.64%. These days, the basically well-known screen resolution global is 1366×768, for computers. This new prevailing screen resolution is a generally vital statistic for web designers, as they can at present produce their designs more optimized for 1366 pixels-wide screens from the beginning. The page should work each resolution from minute pixel such as 800×600 or enormous pixel and beyond.

Check:

- **Readability:** If the content is solid to read, the users can by no means recognize everything and bounce back.
- **Aesthetics:** How the aspects of your website emerge when users observe it from different screen resolutions. The whole factor must be level appropriately, exact in size and aligned accurately.

- **Functionality Testing**

Forms Validations

Each form has own requirements that are. Registration form, login form, payment form and so on. Every form should work along with their terms as this is one of the shortest techniques that created users attached with the website.

Check:

- Message revealed as a compulsory field is left empty.
- Error messages must be appropriate and helpful.
- Form fields must allow only applicable design.
- Test the form a number of times, all with dissimilar values either its work or not.

Link Action

First test each links of the web site for the accurate link targeting. Either internal links or external links to make sure a better user experience.

Check:

- Links are obtainable to their related pages.
- Links are reliable and simple to identify.
- Easy to access and must link to the basic navigation.
- Test to make sure if there are some orphan pages.

- **Technical Testing**

Content Checking

The content must have these.

- Cut out unnecessary information.
- Generate blue link text user-friendly.
- Discourage from extended sentences; make use of language that is easy to know everyone.

- **Accessibility Testing**

Page Performance

Every page when added on the website must pass during the page speed test in order that the page opens quick and more speedily.

- **Mobile Testing**

Users expect websites to be optimized and functional suitably for their various mobile procedures therefore they can entrée the website where they need to. Seem at these regions for mobile testing from a simulator and physical device. Such as, test each page and vision all function and test your website on the basically current and aged iPhone versions to make sure that your website will work well for each user.

To check these five usability testing make sure that develop the usability of a website.

3.18 Summary of theoretical findings

After, the speculative study I have created the answers for the research questions, I will sum up the theoretical findings to answer the research questions. In the theoretical study, I discovered the principle of usability human-computer interaction; in this principle the human being at all times main issue for visiting with websites. I found the psychology behind usability, in the psychology, I make clear the baby-duck-syndrome, banner blindness, eye-tracking, gestalt principles this is the area where the users face difficulty during the use of the website. In a thesis report one of the highly significant usability rules and principles of web design will use a lot of parts. I found the role of usability attributes during human and computer interaction using the usability rules. To enhance the usability of a website, I found web usability, an instructions for improve usability, website usability testing, principles of web design and also. I found to enhance usability with Fitts' law is that outlines can facilitate designers produce a knowledgeable result in user interfaces and web page outlines. I have created a theoretical framework, which guides to an empirical study, where the usability flaws are found and develop the usability of a website using the theoretical framework.

3.19 Arguments for an empirical study

With the help of theoretical study, I have produced the knowledge of thoughtful usability attributes, web usability and usability rules and principles of web design has answered some of the research questions and also facilities the visitors to use any website, but the improvement of the usability of the website a lot of methods used in the theoretical study above, but still requires little bit development of the usability. Therefore, I will have reliance that empirical study could provide extra distant arguments and proof for the research questions. In this thesis I will emphasize semi-structured interview and also generate the questionnaire as supplementary research.

4. EMPIRICAL SURVEY

In this section I will clarify the empirical survey. The empirical data used in this section are mostly collected through interviews and a questionnaire.

4.1 Purpose

The purpose of the empirical study is to find out the essential usability parts, which should being enhanced the usability of the any website design. As the usability of the website and the empirical survey are generally dependent, I believe an efficient empirical study is needed which might verify the result. Thus, the empirical survey is needed to get the usability errors which concern the current website design. Likewise, the collected date is established to the theoretical framework to respond the key research question. The basic goal of the empirical survey in the thesis is for sending the query of the professional respondents where they are previously working the usability of the website design.

4.2 Interviews

There are a lot of interviews in this paper such as face-to-face interview, online interview (through by email) and Skype interview.

4.2.1 Face-to-face interviews

Using face-to-face interviews as a mode of data collection has a lot of advantages.

- The existence of an interviewer enable for complicated questions to be explained, if necessary to the interviewed.
- Face-to face interviews, there are many possibilities to inquire the open questions as the users are not required to write in their outcomes and the interviewer can increase up on non verbal trace that identify. What is appropriate to the interviewees and how they are responding to different questions? At the final part of the face-to-face interview I obtained the usability point where, I intend to argue it at the first interview and the second interviews.

4.2.2 Online interview

Online interview comprises sending question in the text of social network and Email, also an attachment Ms Word file, which the users viewed the document few of the users fill and send back. Several of the users face aggravation through the question; we organize the Skye meeting and resolve the difficulty. These surveys are typically highly efficient and very fast. Many users have an email address then have absolute Internet access. To perform the Skype interview, the users have examined the questions of the interview. During the interview some of the users want to alter the questions.

4.2.3 Semi-structured interview

- Semi-structured interviews are found appropriate for research question, especially in the case studies.
- Complicated questions and problem can be talked about or explained.

- The interviewee has freedom in reply but the interviewer retains control (Drever, 1995).
- Provide freedom in the sequencing and wording of questions as an effect of interviewee responses (Robson).
- In the semi-structured interviews the interviewer has option to alter the questions.
- Semi-structured interviews the questions have previously organized before the interviews.

4.3 First interview

Q. What do you think which element website design can easily be enhanced?

A. Interviewers said to create clicked links to modify the color. This point is extremely vital to the usability of any website. Clicked links that adjust the color facilitates the visitors to get further simplicity in the region of the website, creating sure that the users will not wind up visiting the similar pages. Clicked links will enhance the website and improve the rank of the pages. A few of the IT users hint that do not utilize animated GIF, as they create a website appear unethical and detract the attention from the comfort. While reducing the GIF size the website efficiency will get better.
After the interviews I was conducting the focus group they agreed to create links visible: the respondent's idea that the users must be proficient to identify what is the clickable area and what is the not clickable area. Confirm that the website links have a blue color.

Q. How to reduce the long loading time of the any sites? How to get better website efficiency?

A. During the interviews most of the interviewers have own idea to reduce the long time of the any websites. Such as professional web designers suggests that the task of compressing your site delightedly could have an immense impact on reducing load times. They are also given benefit hint for instance to decrease the loading time you could experience. Moreover optimize and reduce the CSS and the JavaScript files by joining them. During the discussion the IT users prefers a few tips to improve the efficiency of the any websites. To decrease the image size, most of the pages use text; do not use music and so on.
After the interviews the focus group has a different view, if the website has bigger content region of text then you could say that it will get less time to load. Enhancing content region not just reducing loading time but it also improves readability and advantage of websites which is essential to be a focus for users.

Q. How the web site navigation can be enhanced to ensure better usability?

A. interviewer said the navigation is very important part of the usability. Navigation menus and links must be simply specific in the web pages and further significant, visitors must be capable to obtain to further pages instantly. The navigation labels must be logical, small and brief. Such as, about page is enhanced than click here to learn more regarding the company. Likewise, the second factor is maintaining it short. When to create the website should be short navigation links or else the users will get it difficult to navigate all through this disarray.

Q. Are you satisfied the four facts of any website: Learnability, Memorability, Efficiency and Satisfaction?

A. The proficient users were agreeing the satisfaction and the efficiency of the any site. During the interview ask a question why you agree? They consider having many of the websites already good efficiency and satisfaction of the site.
The general IT users do not satisfy the memorability and learn ability. Quite reverse of the professional users are entirely satisfying these four facts of the any website. In focus group we are arranging another gathering and explain the four facts, in this gathering we favor some phase for example to build the website should use the proper navigation bar not more than eight. Proper images of the entire website, appropriate text use, use various languages (Swedish, English) etc. These are the aspects where the users are absolutely satisfied the entirely website.

Q. What do you think about a lot of websites already improved usability in the use of position?

A. These users think some parts will be enhancing the any website. For example, utilize background textures and colours for sufficient contrast, display suitable on-screen success or failure message throughout the site, use the huge informative footer, for example newsletter sign-up, contact details with vital links are some types of information you could also hold, utilize social login instead of visitor registrations on the site.

4.4 Second interviews

Q. How many times do you visit any website? Do you think every website interface easily memorize?

A. Most of IT students visit numerous sites, so with the passage of time they become familiar with the usability of website. Often, a lot of users with each of the site interface simply to memorize. While a few users do not agree with this situation, these users consider that each interface designs are different so it is hard to memorize it.

Q. What is the best method to test the usability of a website?

A. Browser testing ensures the web pages on all combinations of browser and the operating system that you could find it. Similarly eye tracking has become a fundamental way to test the usability of a website. Eye tracking is furthermore utilized to study the user interaction with mobile devices and so on. During the site and test the different links. Test equally the internal and external links.

Q. What are the best tips to enhance the any sites of usability?

A. While the third interviewer's the idea to resize images and ready for web utilize before uploading to the web will be highly supportive in this regard. Ensure your homepage has an understandable statement of who the site is for and what users must imagine to get. The inter link comprises creating links to other pages within the website and also enhance the search engine optimization.

Q. What are the general usability inaccuracies in web design?

A. There are different views the usability of incorrectness such as lengthy registration form, extra functionality that needs registration, no method to search.
Most of the visitors are not familiar with to click the any links, to avoid mistake create any images clickable of the site and create the title of the pages clickable. Proficient user's idea is that the most of the web designers create the clickable areas smaller.

4.5 Questionnaire

The questionnaire is a research tool comprising of a sequence of questions and more quick for the aim of collecting details from users. Even though they are frequently designed for statistical analysis of the reply, this is not forever the case said Sir Francis Galton. To prepare the questionnaire, I can find the problem of the usability of the website design.

4.5.1 Question types

Usually, a questionnaire comprises of a different number of questions that the users are required to answer in a set design. The questions are created involving open-ended and closed-ended questions. In this paper two types of the questions are provided; first, open-ended question is asked and the users are to build their individualized answer. In contrast closed-ended question has the users to recognize an answer from an agreed number of selections. The majority of the user participate the closed-ended question as the users differentiate the preference of the questions. They agree a large number of questions about enhancing usability of the website.

4.5.2 Questionnaire administration modes

According to Mellenbergh, G.J. (2008) the basic approaches of the questionnaire are:

- Face-to-face questionnaire administration, according to which an interviewer attends the items verbally. He/she describe the questions face-to-face and give the best answer of the questions.
- Computerized questionnaire, which reveal the objects are accessible on the computer.
- Survey questionnaire administration, according to that Ms Word file will be sent to the users and they are required returning back with collection of data.

4.5.3 Guideline for writing questions

- Write questions that are simple and important.
- Use such words having comprehensible meanings.
- In a multiple choice question (MCQ); cover each of the options without overlapping.

4.5.4 Selecting questions structure

Structured questions on the thesis specify the set of reply option and the response format. The structure questions may be of the following types:

- Multiple choice questions.
- Open-ended questions.

- Closed-ended questions.

4.5.5 Testing the questionnaire

4.5.5.1 Pre-testing

The final step in questionnaire design is to test a questionnaire with little number, of the interview earlier than conducting your highly significant interviews. The reason for having such kind of questions is that the competitors will be sharing earlier skills to improve the usability of a website. So, I would like to find the earlier skill of the users to develop the usability of a websites, appointment by the respondents and the factual error faced while creates the website. Likewise, I sent the questionnaire to various types of users and gathered data for the basic study. Pre-testing could ease the users to view if the interviewers recognize your question and given helpful answers.

- **Presentation open-ended and closed-ended questionnaire**

- Do you think to create a search field or search box it is usable for the visitors to search menu for a website easily?
  Agree o Disagree o I do not know o
- Do you agree that the bigger target of the click will make easily communication of the interface design?
  Strongly agree oAgree o Disagreeo Strongly Disagree o
- Have you satisfied the interface design of any website, in which component do you like the interface design?
- How easy was it to understand each of the navigation links on the website?
  Very easy o Easy o Complicated o Very Complicated o
- Have you satisfied the search engines that the website can easily be searched in Google, Yahoo?
  100% easily searches o 90% easily searches o Bad searches o
- Does the web site load quickly in Google?
  8 second o 4 second o 2 second o Bad o
- Which two things you like the majority of the website usability have?
- Do you agree that there is no issue with page loading efficiency of a website?
  Yes o No o I do not know o

In the above questionnaire, answers will be displayed in the diagram and the text in the chapter # five.

4.6 Empirical research results

4.6.1 Statistical summary

The contributors in this questionnaire belonged to an unusual background i.e. Web developers and users belonging to various countries. Entire questionnaires in the paper are 24 being distributing throughout the social network and email address. Total participants were 50 and I got a different questionnaire; although some of the participants did not fill the entire questionnaire yet they discussed with me. Many participants have given the most excellent results; I got 40 responses approximately.

4.6.2 Closed-ended questionnaire

According to Dillman D, Smyth J, & Christioan LM. (2009) a closed-ended questionnaire is a question layout that most users participate along with a list of answers options from which they must choose to answer the question. These kinds of questions are regarded as the type of multiple options; the user decides his/her own choices. Many of the respondent's participants in the closed-ended questions, they satisfy with the questionnaire of the multiple choices.

- **Open-ended questionnaire**

An open-ended question is one that requires a user to volunteer further information. Open ended questions are questions that guide for a more discussion. Out of 50 respondents a few of the user's participants, they are given questionnaire but did not have an easy answer.

- **Empirical finding and research results**

The questionnaire was drafted to the answer of the research question.

Research question

What are the most important or basic rules that will help to improve the usability of any website?

A few webpage has included needless information where the key attributes of the page are mislead. Big size of images utilize throughout the whole website design and the user's experience complexity. When the users search the website on Google, they will annoy the efficiency of the website, as the web developers used some huge images for the website design. To reduce the size of the images is good for efficiency as well for simply available to search engines.

The font size of the any website is not suitably kept which is essential for dynamic website. When the visitors searched for required information they did not get the vital information, as the font size must be tested previous to uploading the website.

Web site load time is steadily an essential problem to enhance when creating a website. If the websites is gradually loaded, the users are disappearing to wait on your page extra time. Each second must analyze as it appears to be loading a website. To enhance the load time must use the text in place of images.

The bigger target of the website design will produce easily communication on the site, accordingly to enhance the usability of the website. The majority of the users have decided to generate a big button on the any site

The search tool on your storefront is an enormous method for users to get accuracy what they are becoming visible for. When you are creating your search attributes, you must know the functionality of the tool to create confidence it's being used to its entire prospective. Search results could be arranged by price, title of the product, and more, building it easy for your users to get accurately the correct item.

The first page of the website is extra essential as comparable to other pages. The first page of the any site you will look is frequently called the Index of the site. The index is named index.html, or index.php, or index. Asp, etc. still though this could be worked around. The first page of the website that explains upon opening a web browser program, which is also occasionally called the opening page/ landing page. This first page could be a website or else it could be a page with dissimilar browser functions for instance the visual display of websites that is frequently visited in the web browser.

How do I find on the first page of search engines?
Challenging on the World Wide Web has risen rapidly and struggling to sustain your space is getting harder. Search engines for instance, Google use problematical algorithms to rank your page that are continuously irregular.
Several small companies are regularly approached by organizations and experts that present themselves to get them on the first page of Google. Some have such systems that do work, quite a lot of do not, and some can basically damage your ranking. The researches results are revealing some guidelines on things you can tackle with your website to easiness; enhance your ranking as well as enhance the site.

5. ANALYSIS

5.1.1 Search field or Search box

A search field is generally individual line text box with the contributed function to allow the users input words to be searched in a record on the database. To create a website, first appear at a search box or search field as a part in facilitating site user-friendliness and navigation. The function of the navigation system is not easy to predict and react to what a user could look for; it is to guide users all through your website. A search box offers a choice method for users to get things on your website. Search boxes are an extra expandable, open method to allow access to your site with comfort.

According to the survey, 55 percentages of the respondents were comfortable to use a website, because of creating search box or search field on any websites; they considered the better usability of the site. Most of the respondents thought the search field was one of the vital factors to manage the entire website. However, 35 percentages of the respondents did not agree to utilize the search box, and they considered the search box was not only one way to improving usability. Similarly, approximately 12 percentages of the respondents absolutely disagreed about the search box or search field. They also thought that the search box just created, but they did not know this kind of search will more facilitate to enhance the site e.g. particularly the e-commerce website have many navigation links.

In the usability theory, about 50% of the web users are searching control, demonstrating that they will commonly go straight to the search box when they visit a website. So, the home pages require a significantly represented search box or search field. To make a search box it is usable for the visitors to search menu for a website that is easily accessible.

According to the usability rules and principles of web design, you must confirm 3-click rules: in this rule, the visitors do not come across what they look for in few second and they will search accurate product on search field or the search box. Or else they will leave the website.

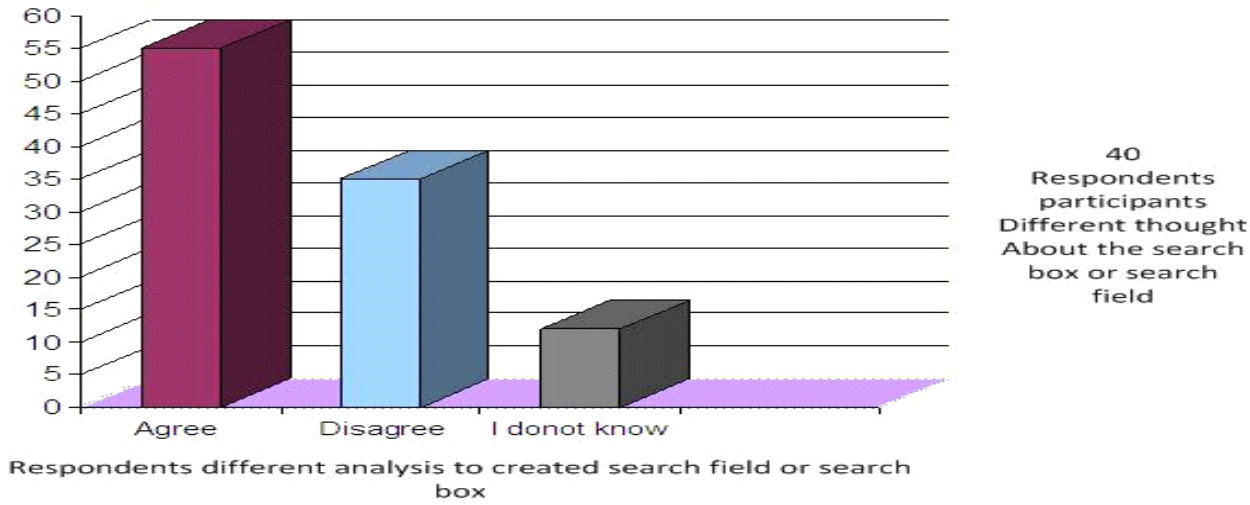

Figure 11 User view search field or search box

5.1.2 Websites load quickly

The mostly acknowledged websites on the internet nowadays are to perform their loading quickly. Such as, Google which includes easy text and only some tiny images load on regularly in 2 seconds which is marvelous. Web site load time is constantly a vital issue to improve when creating a website. If the website is gradually loaded, the users are not satisfied to stay on your page for too much time. Therefore, sue to the slow speed of the website, the users will be irritated. The users may leave your website immediately, and they can probably never reappear. Each second should be calculated when it appears to be loading a website. So, according to the survey, 46 percentages of the respondents were satisfied with the efficiency of the website. They considered the 4 second duration as adequate to load a website; 30 percentages of the respondents did not observed loading the website quickly. The respondents were of the view that the website had taken 8 second, that is why, they did not agree the efficiency of the website. While 13 percentages of the respondents absolutely satisfied to use the website load rapidly. The respondent's idea was about 2 seconds which is also marvelous to load within a few seconds. On the other hand, 10 percentages of the respondents did not agree that loading of a website within a few second; they instantly start looking for another option. Because the bad load of the website was too much frustrating of any users.
According to the usability theory, some issues can alter the page load time including the usage of big resolution images and flash animation. If you use these factors then make sure that a message is displayed instantaneously showing how long the users may have to stay on the page to load a website on Google. Therefore, while creating a website, rapidness and efficiency must be kept in mind. The users who use the website are in a hurry; they need all things quickly done, they would not wait for much time. There are a few procedures to improve the website to load quickly for example, optimizing your CSS, JavaScript files and merging them would also facilitate you getting a faster website.
According to the usability rules and principles of web design, the 2 second duration is taken as the best time for the usability, in these rules the users are not required to wait more than 2 seconds for something to load. The users will leave the website immediately due to slow loading duration. To make the website effective, maintenance and efficiency must be maintained.

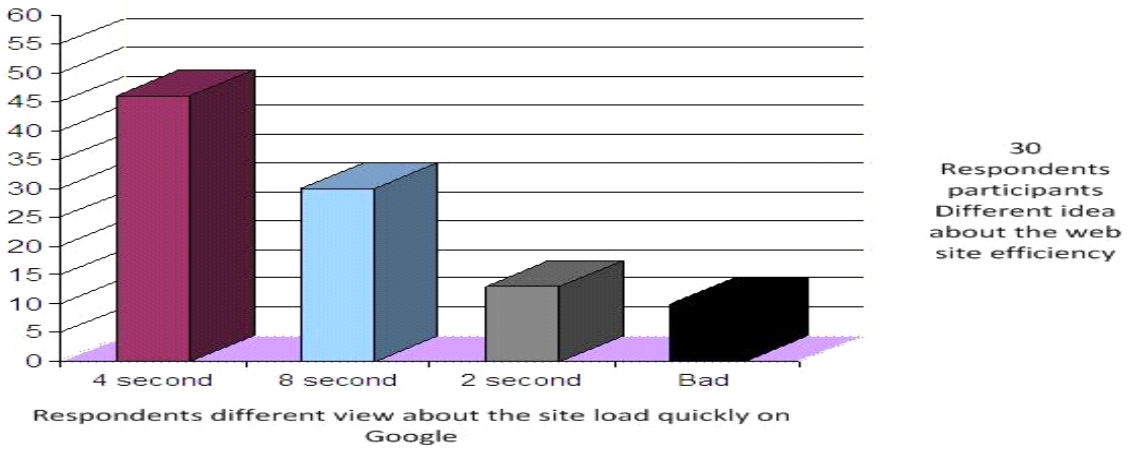

Figure 12 User prospective website loading

5.1.3 Navigation Links

Website navigation is the essential aspect to consider when designing a website. The major objective for successful navigation is obtaining your users for maintenance of your website and for users to simply get what they are looking for in a rapid way. The users intend to know their destination with regard to website navigation while clicking on a particular link. So, make sure that your links are logical and you are going to click on your required links, which will hit the aim of designing an excellent navigation system.

Take care that your links are efficient consistent with the order of significance. The users must be purely able to get what they look for under different situations, for example, the most important links are originated at the top of pages such as contact us, about us and product menu etc. They required links are created on the left and right of the pages. These are general and consistent with all over the website design.

According to the surveyed 33 percentages of the respondents are convinced due to the availability of navigation links easily on the many websites. They consider the navigation is the basic role of the any websites and the users will utilize the website easily and rapidly. So, 23 percentages of the users entirely agree with the navigation links. These respondents identify about the navigation links and recognize significance of the navigation layout of the any websites. The users will search the links easily.

However, 26 percentages of the users were to utilize the navigation links as they faced a complex navigation system of the some websites. Similarly, 16 percentages of the respondents did not agree they look the navigation system too much irritated.

In the usability theory, it has been recommended the website navigation must have an appropriate gloss word. In this gloss word, it can provide the hints and the abstract details on functions of the links and the landing pages of the visitors once they are clicked.

From the usability viewpoint, the visitors would like to have the entire power in general that is visible on the web site, for example supported by sound anchor text could be improved with the usability of a web site.

According to the usability rules and principles of web design, must verify 7±2 rules in the navigation. According to this rule, when you generate many navigation links, the users will extremely be puzzled.

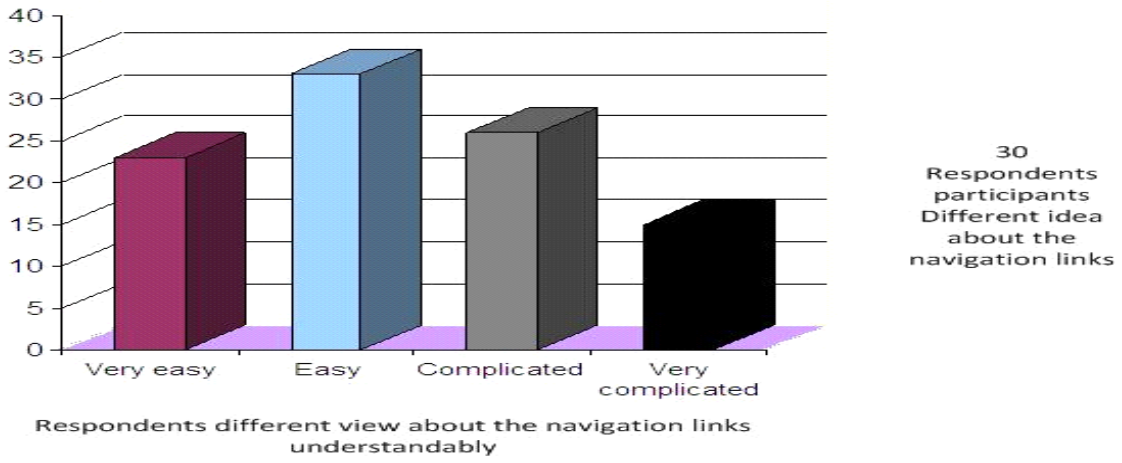

Figure 13 Navigation understanbility

5.1.4 Physical Consistency

As a requirement of physical consistency, the website must perform well like all other websites. The physical consistency begins with a navigation system, and sets it in the parallel position on each page. For links only use underline text that the users recognize it or else the users are not sure to design them in an excellent way.
According to the surveyed, 37 percentages of the respondents satisfied that the website is reliable and the web designer created simple but attractive design to follow and there is no complexity in the website. On the other hand, 50 percentages of the respondents did not have the similar opinion and they completely disagree with the above statements. A lot of the respondent's viewpoint was that the website layout was not made appropriately, and they judge the navigation system, logo position and use of images, it is needed to change it. Approximately 12 percentages of the respondents did not identify the physical consistency? Moreover they did not recognize how to use the consistency of web site design.
In line with the usability theory, the physical consistency clarifies the reliable external view of a website, for example, logo position of web pages, navigation system and use of images on exact places. As research result of usability, it could be declared that the physical consistency is significant for improving orientation and successful site navigation. Make sure that the navigation links certainly explain what users will get by clicking on them, such as, maintaining information of your company on the Home page.
According to the usability rules and principles of a web design 80/20 rule, it is an awful result as if the contestants do not get what they seem for the usability is influenced on the user.

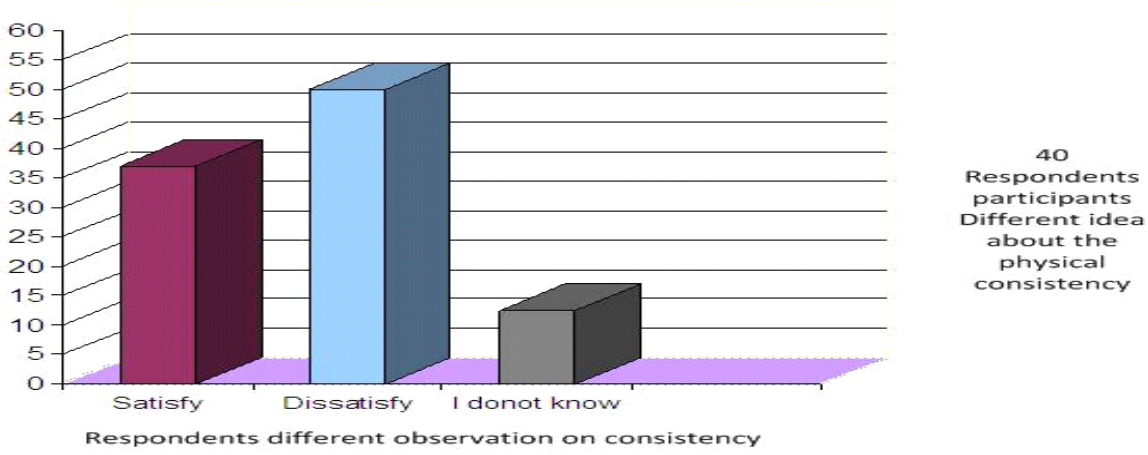

Figure 14 User respondent layouts

5.1.5 Search engine

Users were questioning on the search engine and the ease of access of the information they seem to. Yet, this is the basically contradictory element in the any web site. Search engines are the basically programs that search for the documents for a testing keywords and the users revisit of the website where the keywords were accessible.

There are many search engines on the Internet for example Google and Yahoo etc. The users will use a search engine and observe that it is easily accessible or not, therefore, a search engine that facilitates users to seek the documents according to their internet is good. The Google search is the mostly used search engine in the world. According to the surveyed 33 percentages of the respondents found the website keywords on the Google and Yahoo Search Engine are easily available. Most of the respondents are using the search engine and they search using different keywords for websites on Google. They found the keywords for required websites easily working on many search engines.

Therefore, 46 percentages of the respondents did not console about the website accessible on the Google. They search the website with various keywords on different search engines and consequently they get the website. The participants thought the websites keywords are available 90% on search engines. However, 20 percentages of the respondents completed the discreditable search for the website on the Google and other search engines. The respondents searched many keywords but in some cases they were discouraged for the usability. Hence, to generate a website one should focus the users to search the site with the help of many keywords using different search engines. The user will struggle to achieve the website as soon as possible.

According to the usability theory, a few instructions to improve the search engine such as the logo and footer of the website. The key improvement of the logo links will be improving the search engine ultimately. Similarly, in the footer links, search engine will also be improved, and it's easy for the users if something is missing in the required website design, it should be included in the footer.

According to the usability rules and principles of web design 80/20 rules, it is a shocking result because if the users do not get what they are searching for the usability is affecting about the user.

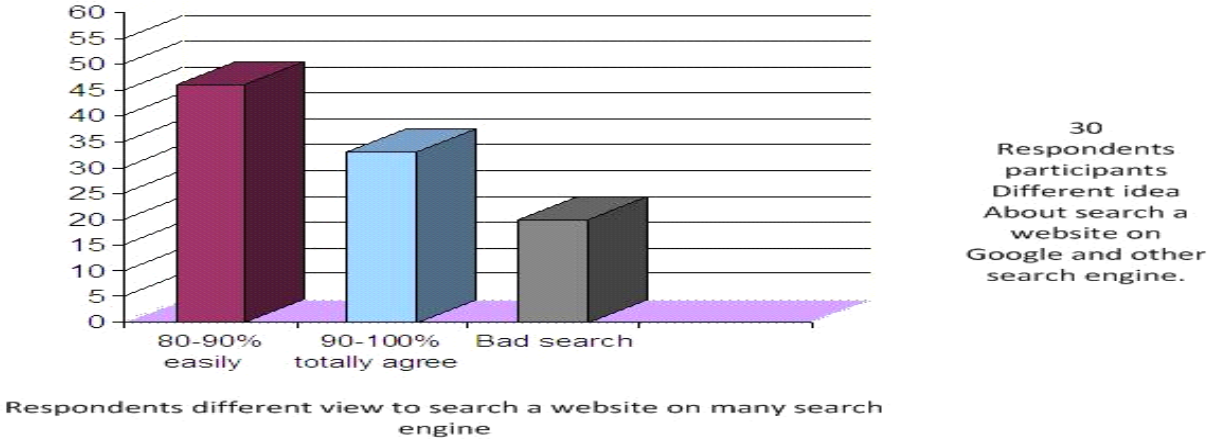

Figure 15 Users view of search engine

5.2 Research Result

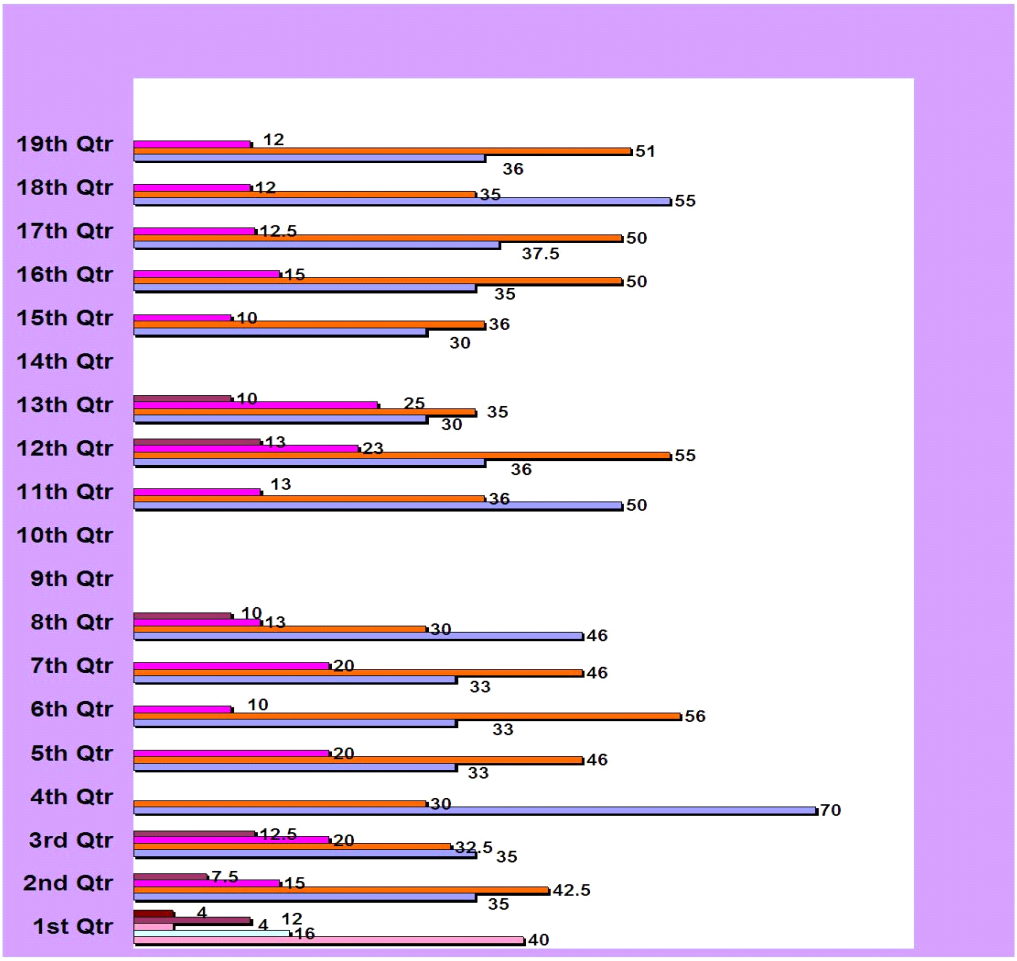

Figure 16 User surveyed diagram

According to the survey conducted, there are 19 quarters in the above figure. The 1st quarter indicates the question was; what do you think about the website? The respondents were entirely satisfied with the surface, easy to use and further impression about the interface design of the websites. In contrast in these Qtr 16 percentages the participants memorized any website design easily and rapidly, where 4 percentages of the participants did not remember the site, their appearance complexity of the website design. Therefore, minimum respondents recognized the entire website design.

In the 2nd quarter, 35% of the respondents were extremely satisfied with the first page of the any website, where approximately 43% of the respondents were also convinced by the first page. Similarly, 15% and 8% of the respondents completely opposed the above respondents. These users considered the first page was not really vital page of the site.
In the 3rd quarter, the question was "what do you think the website efficiency reply time is suitable"? According to the survey, 35% and almost 33% were completely contented with the efficiency of the website; while 20% and 13% of the respondents did not cheer up the website efficiency. These respondents' were frustrated on the website's speed.
In the 4th quarter, 70% of the respondents were satisfied with the download time of the website's efficiency. On the other hand 30% of the respondents were not convinced by the download time.

In the 5th quarter, there were concerns about the "page loading and page buffering" as 33% of the respondents agreed that there was no issue with page buffering and loading. While 46% of the users were not glad and they considered that there was huge buffering of the any website. Likewise, 20% of the participants did not identify regarding the page buffering.

In the 6th quarter, the question was especially on "efficiency of the any website design level". According to the survey, 33% of the respondents' confirmed that the efficiency of the website design was extremely at excellent standard. While, 56% of the respondents just accepted the website exactness design level efficiency. 10 % of the user's idea was towards bad efficiency of the website designs.

In the 7th quarter, the question was" Have you satisfied the search engine that the website can easily be searched in Google or/and Yahoo? According to the survey, 33% of the participants were fully delighted that the website could be easily searched on various search engines. So, 46% of the participants did not agree the above absolutely, these users considered 80 to 90% websites were accessible on various search engines. 20% of the participants had full conflict on the above statement.

In the 8th quarter, the question was "Does the site load quickly on Google"? According to the survey, 46% and 13% of the users were fully contented on the website loading on Google, because of 4 seconds and 2 seconds which are wonderful to any users. On the other hand 10% and 30% of the users did not agree completely regarding the website loading time.

In the 9th and 10th quarters, no graph the above figure the question was there, the question was, "which two things you like with the most of the websites"? A lot of respondents presented the best answers to the question. The respondents liked the search engines and contact page of the websites. The second question was "what are the names of things you dislike in the many sites"? According to the survey, a lot of respondents had answered as the efficiency of the sites and navigation bar.

In the 11th quarter, 50% of the users attracted towards the navigation of the website to fully understand: while 36% of the users disagreed entirely about the above statement. Similarly 13% of the users did not know the navigation system.

In the 12th quarter, according to the survey 36% of the respondents were completely easy to understand the navigation links: while the 55% of the respondents also fully understood the navigation links of any websites. On the other side, 23% and 13% of the respondents faced much complexity regarding the navigation links.
In the 13th quarter, 35% and 30% of the users understood the links of the entire websites and they utilized the links easily: while 25% and 10% of the users were differing from the above users, they did not understand the navigation links.

In the 14th quarter, the question was "To modify the website design, in which region you would like the change in the website"? The respondents answered that navigation section and footer section was the solution. These two are most vital aspects in the usability point of observation.

In the 15th quarter, 30% of the respondents were contented with the horizontal navigation bar properly structured, while 36% of the respondents were fully disappointed about the horizontal navigation bar. So, 10% of the respondents did not know the navigation bar.

In the 16th quarter, 50% of the respondents agreed that the larger target of the click will make easily communication of the websites, while 35% of the respondents absolutely agreed on the above statement. So, 15% of the users were fully disagreed on the whole statements.
In the 17th quarter, almost 38% of the users fulfilled the physical consistency, while most of the others were not convinced to the consistency.
In the 18th quarter, 55% of the respondents were fully satisfied to make a search box or search field, it is usable for the users to search menu easily, whereas 35% of the respondents totally disagreed the above users.
In the 19th quarter, 51% of the respondents declared that it was easy to read a text on the any sites, whereas 36% of the respondents had the different idea that it was solid to read a text. A few respondents did not know the readability.

- What are the most important or basic rules that will help to improve the usability of any website?

There are many tips to get better usability of the any website. Usability is a word used to explain that how easy a website is to navigate. Users will often go away from a website in a few seconds if the usability is not attractive for them. The following are some methods about largely vital areas that must be considered when creating a fresh website and a live website to enhance usability.

o Appropriate Heading <H1>

There are many headings in HTML code, one of the most vital is them is heading <H1>: when generating a new website, should be used <H1>. For improving the usability of the <H1> tags is the key role of the web pages. For example, the <H1> University</H1> the users recognize its heading. If the developers do not use the <H1> tags, it is often an upset for both the search engine optimization and the usability of the any websites. The most important use of <H1> tags is for search engine optimization and that will be improving the high rank of the usability. The <H1> tags are the basic tips to enhance the usability of the sites.

o Proper title tag <title>

After the heading, <H1> tags are the second most vital element on web pages as it is title tags <title> tags. The title tags performed the main role of the sites and also improved the usability of the search engines such as Google, Yahoo and Bing etc. The users will get many keywords on Google because of proper title <title> tags utilize. 65 or 70 characters are the highest numbers, of the characters that will demonstrate in the many search engines otherwise, it had huge impact on the websites and also Google results. To use the ALT tags of a title will be improving your website accessibility and also improved the user experience. To create a link title text must support further page view.

o Correct choice of images

Correct position of images is also very important in improving usability. If the images are not placed properly, they could confuse the users, and may be negative impression about the website. How to improve the images of the website? The font color must have enough

contrast therefore that it's simple to distinguish the text from the background. The images should be tiny size; if use small size of the images, it will improve the SEO and also users satisfy of the website efficiency. Persistently add the ALT attribute to the image tag; it's the further vital image attribute to search engines. Including the ALT attribute offers search engines with further information about what the image is and facilitates that image and page rank for special keywords.

Code example

<img src="http://www.abcd.se/images/P101019633.jpg" alt="img-border" title="img-border" width="177" height="111">.

- **Enhance the site usability links**

Links are how users navigate the Internet therefore, creating them simply to use will enhance the usability of any website. Any Links that suit highlighted (underlined links) when the mouse remains close over them. A further useful feature is changing the color of earlier visited links.

- **Descriptive links**

In the descriptive links, the text of the website must be descriptive enough to make it understandable or what the page it will go to. Possibly it will be the title of the main page. In the descriptive links, one should go away by the use of click here. Particularly if the site text is blue and also underlined the visitors are conscious that they are to click links.

- **Descriptive tags**

Each page of the any website requires a unique description tag that includes the keywords for the page. Ensure to maintain your descriptions less than 250 characters, and remove the non-alphanumeric characters. The descriptive tags will be improving the usability of the site and also enhance the search engines.

Code example

<Meta name="description" content=" characters.">

- **Create every link label unique**

This enables user to quickly navigate throughout several pages and get what they look for. Actually it does not find fellow to have several titled links of the same pages of the website: however the users will be puzzled with the same title of each page. All pages should have unique title of the links.

- **Maintain links fresh**

Its importance is about the reviews of the links on the any website frequently fresh each five or six months to guarantee that the objective pages are still live.

- **How to enhance the proper coding links of the entire website**

<img src="http://www.abcd.se/images/0300.jpg" alt="img-border" title="img-border" width="177" height="111">

<ahref="http://www.facebook.com/pages/school-Thall/285641568205653?ref=stream"><img src="images/fb.jpg" alt="" width="170" height="66">

Any links of the website should use the “http//”link; the http link will enhance the usability of the website and also improve the search rank of the website on Google. However, to create a website one should use the company’s URL of the any links.

- **Make your page accessible (External Link)**

It is very important that all of the website pages link with each other. External links may definitely impact how search engines evaluate your site. The example of external link code is below:

http://abcde.se/about.php

http://abcde.se/department/kids

http://abcde.se/department/Man

When analyzing your website's external links to websites, search engines will attempt to resolve the relative significance of the originating sites. Hence, the external links will improve the rank of the site.

- **Engaging content**

All of the pages of the website must include enough unique content, preferably as a minimum 300 words for the users and Google to appreciate what they are about. Each page content must be well written in paragraphs and applicable to the website theme and easily available the keywords of many search engines.

Code example

 paragraph at least 300 words

- The page’s content should be updated regularly every few weeks.
- Include a unique material that is not used across several pages.

- **How to enhance that the site works in all browsers**

To create a CSS for one site to maintain for every browser in dissimilar version is really hard. It requires having different browsers set up. Only one tip to improve the CSS is marvelous to ensure that it works with every browser with no open each browser and checking the design that it is absolutely working.

Code example

```
<meta  charset=utf-8" />
<title>div</title>
<style>
div#container{
backgroung-color: red;
padding:20px;
width:900;
margin:0px auto;
}
h1
{
background-color: orange;
text-align: center;
}
div#content
{
background-color: pink;
text-align:center;
width:60%;
margin:0px auto;
}
</style>
</head>
<div id="container">
<h1>site work all the browsers</h1>
<div id="content">
|Home|About|Barn|Rea|Contact page|
</div>
</div>
```

- To enhance the screen resolution, the above code will be suitable for every screen.
- To enhance the horizontal menu bar of the any website design, the above code will work accurately.

6 DISCUSSION

6.1 Conclusion

Considerations on usability problems are tremendously important. Only outlook or view of any website is not everything regarding a website but there are many other factors which are important as well. It is more significant to create a website usable and advantages to users than to make it more attractive. Usability is more than anything else to encourage people to come back and visit a website repeatedly.

This paper concludes the comprehensive guideline for website design to create a user friendly interface. I observed that usability is more essential to develop a website. I should have followed some guidelines to improve the website; there are so many problems that happen during the violation of guidelines for usability. In the above lines, I have pointed out a lot of deficiencies in website design. There are still some major issues about creating a website design such as browser compatibility, unfriendly screen resolution, problem of poor readability and legibility, page loading issues and broken links or not memorized links, which unavoidably carried out closely to create the website design and further reasonable to the users and website designer. Even though the website is flexible and easy to use, the website's design application should provide an agreeable view to the users.

Similarly, majority of the respondents in this research have shown a general positive consent on enhancing the usability of a website design related to the physical consistency, search engines, website load rapidly, navigation links, readability and search field. However there was different proportion of respondents for the analysis of a search engine: 46% of the respondents did not feel comfort about the website accessible on the Google and yahoo etc. According to the usability theory, a few instructions to enhance the search engine such as the logo and footer of the website. On the contrary; 46% of the respondents showed satisfaction on the effectiveness of the website. Website navigation is the fundamental aspect to consider when designing a web site. So, 33% of the respondents persuade navigation links easily available on the many websites. In contrast about the physical consistency: most of the respondents have not the same view and they entirely disagreed with the physical consistency. According to the usability theory, the physical consistency illuminates the dependable external look of a website. Such as, logo position of web pages, navigation system and the use of images on accurate places. As a research outcome of usability, it could be declared that the physical consistency is vital for improving orientation and successful site navigation. A search box or search field is a usually individual line text box with the contributed function of allowing to the users input words to be searched for a record in the database. Most of the respondents thought that the search box is the vital factor to manage the entire website. In the usability theory, about 50% of the web users are searching control, demonstrating that they will frequently go direct to the search box or search field when they visit a web site.

The usability rules and principles of web design suggest in the theoretical segments were confirmed in the analysis portion. Even though, the important idea of the usability of website design, usability rules and principles of web design has been used accurately; some points of usability standards have already been mentioned in chapter three of this thesis are essential to be enhanced here as well. The analysis recommends numerous features to improve the website design. According to the usability theory, each of the basic usability principles is carried out on the website design; for example, improving usability with Fitts' law, 8 golden rules of interface design, principles of web design, web usability and usability attributes.

Prior to the usability theory, empirical survey and the analysis data, the four basic facts are as follows: Satisfaction, Learnability, Memorability, and Efficiency can suitably be communicated. But, I can just say that the frustration portion must be developed to facilitate verify the four basic factors.
A few features are important to enhance the usability of website design and also to improve the rank of the search engines; such as to improve the proper coding links on the website, external links on the site, engaging contents, enhance the site usability links, proper heading H1, and exact choice of images and so on. In accordance with the above features, one will be improving the website design and the website will be ranked easily on the top of the Google page.
Finally, usability is essential to encourage a user to revisit the website repeatedly. If users are not proficient to use the website, they will leave the site. The main well-organized key is to verify usability problems which can turn the site to reachable and easily usable for the visitors.

6.2 Implications for Informatics

The informative part in this thesis is possibly considering a dialectical connection between the user and the developer practices. The implication of the research result can influence the existing user interface deigns of any site. The aim of the user interface designs are to create the user's interaction as easy and proficient as possible in terms of completing user aims. Consequently, the website will offer a fine user-friendly communication with producing higher point of usability.

6.3 Method evaluation

The aim of the statistical text analysis is to get considerable assets of special subject areas and relate these circumstances to user interface design concepts. In this way, it has been made feasible relating the research question to previous research and accessible theories. To ensure the features recognized in the theoretical study, I have conducted interviews competently to record the practical practices of the participants in the user position. Similarly, to keep the collection of the data face-to-face interview and online interview; these interviews had been divided into two segments to answer. The first one is face-to-face interview, the continuance of an interviewer allows for complicated questions to be clarified, if compulsory to the interviewee. The purpose of this type of interview was to record the user’s previous experiences, while regarding the second type i.e. online interview, these surveys are in general well-organized and very quick. Several users have an email address then has complete internet access. The selection of the interview is the vital role of the empirical data. According to the research issues, I had several solutions anywhere there were no troubles facing throughout the questionnaire research for performing and I got lots of information as compared to my expectations.

6.4 Result evaluation

I have used hermeneutic theory in the thesis as I want to create understanding, knowledge, and a hermeneutic perspective that is most amazing for the research. The goal of the hermeneutic analysis is working hard to cause a sense of the comprehension and the admirable connection among people, the organizations and information technology (Michael

D. Myers, 1997). The aim of this perspective is to gain a wide-ranging understanding of the dissimilar elements to make the better picture.

6.4.1 Validity of result and research

Validity of result and research are too much significant in evaluating a research. Validity of result is usually considered by means of three aspects: reliability, internal validity and external validity

The internal validity is the first aspect to evaluate, it is clarified as the threat was; as a result, I would have questioned to improve the website usability that that no more present and therefore the forthcoming questions would not be accurately answered. But, the knowledge was gained as I together secondary data through standard principles used to evaluate usability. I realized how to guess the questions, and to whom they must be inquired for, in order to concentrate in entirely to the difficulty. As well, responses of interviews and questionnaires represent what website usability study I truly assumed to evaluate. Therefore, I argue that elements were proficient to evaluate what I basically required to show. I speak in confidence that the thesis has a high level of internal validity and the result equal to the reality. In contrast, the external validity of a research, questions whether the empirical findings can be comprehensive or not; I utilized moderately a number of sources to enhance the external validity. The entire external sources used in this thesis are of standard and general sources applied to user interface design. Therefore, for some websites design considering the mentioned difficulty requires following the same pattern that has been drawn in this thesis in order to make firm it with the implementation of a website usability principle. Alternatively, the reliability is concerned, I did not consider that the usability faults of the many websites are active; therefore I believe that the usability study of it will be important as well in the upcoming times. I expect that the thesis will simplify to enhance the website to get to a high level of usability with the conclusion. Two vital things that can improve reliability are utilizing case protocol and the development of a case study database (Chisnall, 1997). To increase the reliability I have prepared some open-ended questions, I got frequent useful answers to improve the usability of a website.

6.5 Possibilities to generalize

I have carried out the research into two segments, theoretical and empirical study. Since the research topic is “guideline the usability of website design issue”, so the interview is the key resource for the research. The interviewees are of different stages of the users and the interview questions cover so many phases, which will create the research unique and professional. The research paper provides the vital information for the web developers and the users within informatics area and offers the idea to improve the website design.

6.6 Ideas for continued research

For expectations of the research, I agree with improvement the usability of the website will become further helpful due to the improvement of the site and knowledge based. While empirical study originated well on the user interface design with case studies. So, a few aspects will be unusual for the solutions given by the decision of the website. Such as, the site maps are the method for informing the search engines about pages on the any website. Generating and submitting a site map simplifies, ensuring that Google exposes each of the pages on your website. The site map should develop the usability of the website design and enhance the search engines performance of said criterion.

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University of Borås is a modern university in the city center. We give courses in business administration and informatics, library and information science, fashion and textiles, behavioral sciences and teacher education, engineering and health sciences.

In the **School of Business and Informatics (IDA),** we have focused on the students' future needs. Therefore we have created programs in which employability is a key word. Subject integration and contextualization are other important concepts. The department has a closeness, both between students and teachers as well as between industry and education.

Our **courses in business administration** give students the opportunity to learn more about different businesses and governments and how governance and organization of these activities take place. They may also learn about society development and organizations' adaptation to the outside world. They have the opportunity to improve their ability to analyze, develop and control activities, whether they want to engage in auditing, management or marketing.

Among our **IT courses**, there's always something for those who want to design the future of IT-based communications, analyze the needs and demands on organizations' information to design their content structures, integrating IT and business development, developing their ability to analyze and design business processes or focus on programming and development of good use of IT in enterprises and organizations.

The **research** in the school is well recognized and oriented towards professionalism as well as design and development. The overall research profile is Business-IT-Services which combine knowledge and skills in informatics as well as in business administration. The research is profession-oriented, which is reflected in the research, in many cases conducted on action research-based grounds, with businesses and government organizations at local, national and international arenas. The research design and professional orientation is manifested also in InnovationLab, which is the department's and university's unit for research-supporting system development.

UNIVERSITY OF BORÅS
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