

# Software Metrics: Practical Exercise

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## ABSTRACT

*As the internet world grows stronger every day in the 21<sup>st</sup> century the use of websites for information and communication purpose increased. The website development had become integral part of internet business world which need some usability measurement criteria to be met for better costumer or user experience to collect more data very easily. Our Report is a description on Importance of web usability measurement in website development. For this practical exercise we used the literature as our base by selecting 5 articles that concentrate on web usability and website development, we choose these articles and analyzed. The literature is done to understand the importance of web usability measurement criteria whether it is required or not in website development. Different type of methods of usability measurement are analyzed. The critical assessment of the selected 5 articles literature review are synthesized and are reported. Then finally concluded that web usability measurement is important for any website development.*

### Author Keywords

Online website; Website Development; Website design; Web usability measurement; Web usability metrics; Web usability Evaluation.

## 1. INTRODUCTION.

The world we know today is due scouting advances in the field of internet. thousands of websites are coming into existence every day and they are all carrying some sort of information and knowledge in them[1]. These Websites are developed with end users and costumers in mind. The development in the websites help in improvise the communication all over the globe and share the knowledge through all aspects of human life. These Web portals become significant part in the 21<sup>st</sup> century also can be considered a one of the greatest inventions of the era[2]. The internet which is the main channel of communication now a days had made impeccable advances in the recent times. This surfing over the internet is possible due to the website's that are evolving every day to meet the new trends and problem domains.

### 1.1. Definition of web usability:

For any website the costumer or end user is the main center. As the end user is the epicenter for design of websites there are certain important usability measurements to be met.

Before entering into the field of website usability measurement firstly the definition of web usability should be understood. Based on the literature there are several definitions that are given to the web usability.

Starting with the most common definition standardized by ISO is as follows, for any specified context that is in use the usability is the extent to which a particular product can be used in order to achieve specified goals whose results are effective, efficient and also these goals are satisfactory[1][2][3][4]. The usability is a quality attribute which can be classified into 5 quality component categories to understand its importance on website they are learnability, memorability, errors, satisfaction and efficiency[5][3][2]. Usability is an important factor in Human computer Interaction. The way in which usability evaluation should be done for a website is an important in web design[1]. The quality of evaluation does lie in evaluation techniques that are used [1]. For any interactive behavior usability comes into picture, the surfing of internet is interactive so usability comes into picture[1].

For any web development aesthetics and usability are important aspects and the usability concern is about the efficiency, effectiveness and satisfaction whereas the aesthetics concern is to determine satisfaction factor, thus both play an important aspect in web design[4].

Then comes the evaluation of websites which is an important discipline where there are assessment protocols which mainly focus on the content and usability[6]. The usability is an indicator for quality of interactive behavior of a product or system. There are several website usability problems that are present if the site is not good enough 45 % of the first visitors never visit the site again[2]. So first impression is best impression which draw clash between the graphical user interface designers about their argument that is the website should be visually appealing and unique but the usability experts believe the user interface should be

simple and also the tasks should be completed easily[4]. Further sections can be classified as follows: the section 2 comprise of summary of all the 5 articles that is critical assessment of all the 5 articles. Section 3 deals with the importance of Web usability in context of website development. Section 4 contains Conclusion.

## **2. SUMMARY OF THE 5 LITERATURE ARTICLES THAT ARE CHOSEN**

In order to perform critical assessment there is a need of literature. For the literature to be used them in spec database is used to find the articles that are related to web usability. The keywords used are importance, web usability measurement, website design. Then 5 articles are found relevant to the usability measurement out of 87 total articles which are used for the critical assessment purpose.

### **2.1. Summary of article 1:**

The author had conducted six experiments in order to design a framework that help in the web usability measurement. These measurements help to understand the effectiveness of the website. The measurement of any property can be done by adding digits or numerical scale or certain symbols to them to specify and compare the properties with other and assigning the numbers and symbols through clear rules defined[3].

For any website the usability testing help in reducing the difficulty in utilization of a website for an information or solving specific task.

The user's easiness or credibility in the way of utilization of the website can be found out using certain the interaction behavior the user is undergoing through some checklist parameters they are speed, flow, Navigation and content[3].

These checklist also constitute of usability quality attribute components like learnability, memorability, efficiency, usefulness, satisfaction, effectiveness[3]. The metrics can be qualitative or quantitative metrics in recent times both type of metrics are used for better understanding of results.

There are some metrics for measurement of the website they are:

Completion rates: it records the problem occurrence and the user deal with the problem and completion of problem either is success or fail is recorded. It is the most basic usability measurement.

For any website the efficiency and the delivery of the website product to the users that is productivity time it taken that is task time can help in website effectiveness.

Errors that are occurring while performing a task and number of times the same error occurring while

performing the task help the user to understand and change the website to reduce the errors done by the user.

The total number of clicks also help in finding the effectiveness of the website that is number of page clicks are recorded to find the effectiveness of the website.

These common metrics out of very huge bunch of them help in understanding and determining the effectiveness of the websites.

For any website the metrics help in evaluation of the internal core properties of the websites.

### **2.2. Summary of article 2:**

The article mainly focus on the prominence of how to measure usability in the website design[1].

The usability evaluation is the measurement of how the specific task can be performed under specific condition by the user and the collected data help in providing better ways to design the websites that are user demand based instead of other scheme[1].

The author consider different evaluation procedures that are present and at 5 different levels of web design that include the usability evaluation in each level that is at design, requirements construct test and production[1]. All these level need the evaluation of usability.

The gathering of information is an important stage of evaluation in which the user must be always in a natural environment. Gathering of information can also be done from existing websites..

There are several evaluation techniques that are useful at different levels depending on cost, people evaluated, and the depth of the problem and also the areas of problem domain.

The heuristic evaluation helps to identify the usability problem quickly and also easily and which is mainly based on the usability principles that are used as checklist[1].

Cognitive walkthrough in which people from different backgrounds are considered and thus help in solving complex problems[1]. It helps to identify specific problems at starting stage of website design.

Focus group help involve the interview and ask direct complex questions about the user's demands can be easily known.

The questionnaire is a bit difficult evaluation technique to convey right question to the user.

### **2.3. Summary of article 3:**

The author gives importance to both the aesthetics and also the usability of website. Balancing of both of them are needed.

The focus on only functionality of website is inefficient. The author observed that in most cases the web visual aesthetics are considered subjective and are immeasurable.

The usability is the look and feel of the website and also the usability is task and user dependent along with that is how well the task is done and how efficiently it is done is considered.

If the usability is neglected at any of the design phases of the website then it will show bad impact. The usability of the website is successful when the information required by the user or the task that is needed to be performed by the user is finished successfully and efficiently [4].

Philosophical study of art and beauty is termed as aesthetics [4]. The websites are numerous place on the WWW forms then the evaluation measuring criteria usability is needed to elevate these websites. The choice of participants from different backgrounds are needed. There are several evaluation techniques that are explained to measure the usability based on the measure checklist that are reliability, efficiency, learnability, user satisfaction.

An experiment is conducted and found that the aesthetics of the website is given more importance than that of the usability.

But however the balance in between the aesthetics and usability is very much necessary if aesthetics is more than the usability is degradable.

We should pay more attention to the design of the website but it should not affect the content of the website [4].

#### **2.4. Summary of the article 4:**

The choice of the different universities from Dubai is due to the higher education institutions are giving more preference to the website portals and also every university have their own website portals the evaluation of these website portals need some assessment protocols to evaluate them to understand which one of those are better once.

These evaluation is based by considering 5 different university websites and also under these websites the students were selected from final year and are given the task of evaluating four important questionnaire that mainly focus on various criteria of checklist and see how efficient the task can be completed and the information can be retrieved from these five websites.

The categories were information present transparency, overall student satisfaction and web design from these categories the quality evaluation tool for web portals can be measured and it also contain the web design that comprises of techniques or checklist that are individually met to satisfy the end user [6].

#### **2.5. Summary of article 5:**

The usability is the integral part of the website the web based application help the users to interact with each other through the medium of web user interface, now the usability engineering contains several assessment protocols and techniques which are implemented by the designers while designing the websites which makes the websites the user centric [2].

The websites should be user centric rather than toward technology.

The system development is driven based on the user centric and also here the evaluation of websites are considered from various perspective in terms of typography that has to be used for good look and feel and the type of representation can impress the viewer.

The website design the scripting languages that are used should be HTML and also the CSS language help in improve the look of the websites and they have to terminology of the websites had changed to just required to have a good websites [6].

The search design also given more importance that is most frequently visited come on top of the list these parameters while designing help the user to easily go through the website and perform the task and get the required information easily [2].

### **3. IMPORTANCE OF WEB USABILITY IN TERMS OF WEBSITE DEVELOPMENT**

The web usability is very important in context of website development because it helps in various ways like:

**Efficiency:** The usability of a website is efficient can be determined by the use of correct required amount of resources for performing the task.

**Effectiveness:** The correct relevant and accurate search results can be obtained by using the web usability. Thus avoid wasting of time.

**Learnability:** The website should help the user to feel that website can help him easily understand the functionalities used inside the website which can be achieved by the web usability.

**Satisfaction:** The user feedback on the usage of website is the major contribution in the success of any website to achieve them the web usability is required.

Other than these the web usability is also important as its quality assessment protocols also include safety that help in protecting users. The web usability is important as it helps in bring the users from different cultures to come onto one platform and use the websites these can be only

achieved by the designers if they follow the web usability protocols.

#### 4. CRITICAL ASSESMENT OF THE ARTICLES

The web usability is one of the important measurement that is needed to be considered while designing the websites. From various articles it can be understood that the need of web usability measurement is very much necessary in terms of web design.

There are several factors that can be looked into while designing the websites and the website is said to be a good website in terms of user's perspective when all the web usability metrics are achieved.

IF any one of the web usability metric is not considered at any level of website design it will have a negative effect on the user's feedback and the importance towards the usage of website decreases.

The usability metrics that are to be achieved by the designers while designing the website these metrics are useful, measuring the effectiveness of the website and help to improve the design of the website.

The effectiveness of the website can be known by web usability metrics.

The usability evaluation has become an integral part in website measurement. The website can be measured by following steps like prepare, choose technique, evaluate, analyze and apply.

The most influential categories that help in determining the website quality is the Information content, Transactional functionality and the web design.

#### 5. CONCLUSION

The articles that are chosen each of them deal in various ways about the web usability measurement.

The web usability measurement has a very peculiar impact on the website development.

The web usability had become the integral part of website design. The designers should learn these assessment protocols in helping to measure the effectiveness of the websites.

The web usability evaluation is very much important in understanding the quality of the website and these web usability evaluation must be implemented at every level of the website design to find out the missing elements and to improvise the website portals.

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