Chapter 15
The State of Art in Website Usability Evaluation Methods

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ABSTRACT
Measuring the usability of the website is a key metric which all designers always try to maximize. Compared to other software, it is very difficult to estimate the website usability as each website has many objectives and a wide range of visitors with different learnability. The objective of this study is summarizing different approaches used to measure the usability of a website. The current study includes the different approaches proposed in literature in the last two decades. Approaches are classified in six broad categories and a comparison between them is done. Trends in web usability evaluation approaches are understood in light of changing needs of websites.

INTRODUCTION
Designing a technology or any system it is always a demand to consider capabilities and characteristics of the person who is going to use it. A lot of research had been carried out to study how to improve the interaction of human (Saeed & Bajwa 2014) with the system. These studies are categorized under different heads namely User Centered Systems Design, User Experience, User-Centered Design, Interaction Design and Human-Computer Interaction. Websites are platforms which bring the world to the organization. Designing a user-centric website that will provide the easy retrieval of information available on the website is a big challenge. Usability studies are related to designing and measuring the user satisfaction of the system. The website has a wide range of visitors and understanding their needs and designing a system satisfying the requirement can be interpreted in term of usability of websites.

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Usability is one of the key metrics used to identify the extent to which a computer system enables users to achieve the intended goals in effective and efficient manner for a given context. The prime objective is that to measure the level of satisfaction user feels using the system. Usability evaluation (UE) for any software consists of methodologies for measuring the usability aspects of a system’s user interface (UI) and identifying specific problems. The website is designed with an objective to let the information move to the all possible end user. Thus usability study is key indication to the success of e-presence of the organization.

A wide variety of Usability Evaluation Method (UEM) are proposed in literature. 250 research paper of different journals of repute and conference paper were reviewed to investigate these approaches. A number of research paper focus of understanding the usability concept and used existing approaches in evaluating the website. Several papers discussed the factors (Saeed et. al. (2013), Saeed & Shabbir (2014), Hasan (2009)) affecting the usability of website. these studies range on websites for different sectors. Need of website may differ and hence the factor and evaluation approach may also differ. Approximately 90 research papers are considered in this study of which mostly discuss on the new approaches for usability evaluation of website. The focus of the study is on understanding various methods used to evaluate the usability of the website.

Before discussing them in detail in section 2 a brief introduction to various definitions and standards are discussed. In section3 approaches proposed in literature are discussed. These approaches are broadly classified in six categories namely evaluator based, user based, tool based, model based, MCDM approaches and soft computing approaches which are further clubbed as subjective and objective approach. Subjective approach focused mainly on the judgement of the people which van be an expert, end user, developer, manager etc. These approaches centers on the human judgment and hence uncertainty and collecting the data is a major concern. Objective approach focuses on collecting the crisp value and applying different models available. Subjective approach is usually performed manually where computer aided software is used to evaluate the task performed by the human evaluators. Objective approach usually is automated where tools are used evaluation and experts are used for interpreting the result. In section 4 comparative analysis of these approaches is done and need of combined approach is justified. In section 5 the study is concluded and future scope for the UEM’s is discussed.

**BACK GROUND OF WEBSITE USABILITY**

A large number of researchers proposes a wide range of definitions of usability and standards.

**Definition of Usability**

The fundamental of any website design is usability or “ease of use”. Nielsen (1993) defines usability in terms of five characteristics:

- Learnability
- Efficiency
- Memorability
- Errors
- Satisfaction.
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