ABSTRACT

Measuring website quality has been a major concern since the invention of web. Moreover with the advancement of web technology the dimensions to evaluate quality kept on changing. As such it becomes difficult to analyze and focus upon the critical dimensions which should be paid more attention relative to others. Additionally comparing similar websites on quality front need some quantitative approach. In such a scenario, the necessity to develop a quality system model for web environment arose which could be pursued quantitatively.

The criteria for evaluating website quality to sufficiently assess the quality of a website require assimilation of critical factors in hierarchy of their importance. Since, with the advancement of web technology the website quality metrics has also changed, the evaluation metrics framework need to be developed as a hierarchical tree in order of their criticality. The selection of a website in terms of quality is a complex multi-criteria decision problem. The problem may be solved using systematic and logical approach to assess priorities based on the inputs of internal and external customers of website.

A survey has been conducted to identify key website quality factors. The survey data has been utilized to apply TOPSIS technique for ranking of factors. Thereafter mean value of each factor is calculated and highest and lowest value of mean is taken for deciding an average cut-off value. The factors lying above this average value qualifies as critical web quality factors for further analysis. A web quality model is proposed on the basis of identified critical web quality factors.

Analytic Hierarchy Process (AHP) involves several decision-makers with different conflicting objective to arrive at a consensus decision. In this thesis, a model is proposed based on AHP for website selection in terms of quality. Sensitivity analysis is performed to check the sensitivity of web quality factors on the alternatives i.e. websites.

ISM methodology has been used in combination with MICMAC analysis to portray driving power and dependence diagram of web quality key factors. The ISM model showed the interactions among web quality key factors indicating the phased manner in which they should be implemented.
The unique environment provided by a website in which the customer directly interacts with the constituents of website has to be made in such a way as to let the customer find some usability every time logged in. The thesis explores the concept of web quality in this context, through evaluation of critical web incidents.

The key website quality dimensions affecting the overall website quality are identified and discussed for the underlying factors affecting them. The effect of interaction of these factors among themselves and the resulting overall effect help attain a better managed website.

Application of developed web quality model in the area of e-manufacturing has been discussed. The proposed application will help attain better productivity and efficiency in e-manufacturing sector.

The thesis attempts to represent the overall effect of website quality factors quantitatively by developing a mathematical model using graph theoretic approach. In this approach, interaction among identified website quality factors is represented through digraph, matrix model and a multinomial. The extent of website quality factors affecting a website, representing its popularity among users and indicating total quality concept in website management is represented in terms of the "website quality index". It provides an insight into the website quality factors at system and subsystem level. The developed procedure is useful for self-analysis and comparison among various websites. The key attributes affecting website quality is very difficult to compile as it varies with type of website and its intended users. The thesis considers general factors, which may vary depending on type of website, users of website and website management team. There is a scope of research in factor specific website. The practical implications of this process is to provide a useful methodology for website managers to assess key quality attributes affecting overall website quality and improve upon therein. Procedure for stepwise application of methodology is given with example that may help a website manager to implement it. The thesis attempts to quantify the quality factors through systematic approach and is of value to website managers to improve upon their website environment.

**Keywords:** Web Quality Factors, Web Quality Model, Role of Web Quality in E-manufacturing, Graph Theory, Analytic Hierarchy Process (AHP), Interpretive Structural Modeling (ISM)