

CHAPTER 2

LITERATURE SURVEY

The literature available on software complexity, usability aspects, software deliverability issues, soft computing and evolutionary multi-objective optimization has been rigorously viewed and presented in this chapter.

The paper [1] analyse what implications of software usability has for development phase, giving particular concentration to the impact of the software quality attribute.

The Usability-Supporting Architectural Patterns (USAPs) helps to bridge the gap between software engineers and User Interface designers to develop the software architecture solution that fruitfully fulfils the usability requirements is discussed in [3]. Besides that the formulation of an idea on usability engineering, the concept on FRBS helps in deriving the trade-off relationship between complexity and usability.

The usability of open source software is often regarded as one reason for the restricted distribution. There is a review of the active facts of the software usability of open source software and examine how the features of open source development manipulate the usability of the software in [3].

The influence of ease in the development of software application is very well explained in [9]. This paper also highlights some points on the earlier software development process.

The constraints of interoperability in the field of fuzzy systems modelling using the concept of granularity of information are discussed in detail in [13]. This also describes the extension of the model in developing enterprise level applications.

The major focus on various factors on which usability of software is dependent, is provided in the work [14]. This provides the summary of various complexity models of software quality.

Some of the impediments have been used. The paper by Dia, Y. et al [37] also discusses some prominent issues on quantifying the complexity of IT service and management processes by highlighting some issues relating to the complexity of services quantification and its impact on user psychology. The Complexity issues relating to the usability engineering is very well discussed in [38]. This paper highlighted the quantitative approach to software usability engineering.

For the adaptation of the fuzzy rule systems through an on-line clustering are given in [44] that gives the basic idea about the fuzzy rule based systems and its adaptation on real life case scenarios. Another paper highlights the comparison of existing frameworks and others developed over a decade [45].

Another important contribution is there by the work of Hoffmann, F. et al that focuses on the study of classification rules and their applications using evolutionary algorithms [47].

The various applications in the framework of imbalanced data-sets that focus on the classification systems is given in [49]. This paper highlights expert systems and its applications that are being used to give the real time case study on the analysis of stock market using Neuro based fuzzy inference system [50].

A paper by Cordon, O. et al gives a detailed description and theoretical knowledge on genetic fuzzy systems [52]. The detailed description of design of evolutionary multi-objective systems using fuzzy systems based on rule based criteria is discussed in [53].

The detail description of the application of fuzzy rules and interpolative system reasoning for applications is [53]. The highlights on the kernel based granulation using fuzzy rule based system are given in [55].

The paper [56] highlights the issues of usability issues of ERP systems the common usability criteria's (Navigation, Learnability, Task Support, Customization and Presentation). The basic idea about the role of usability experts in finding the usability aspects and a real life case study on the two processes of ERP (SAP business one) of adding a customer in process a sales order is given.

The parameters of testing as well as quantifying the ERP Usability are described in [57]. It also gives the detailed idea about the research involves testing users as they worked with PeopleSoft on various usability aspects. Also, this paper enhances the usability criteria's on GOMS-KLM are found out as Usefulness, Ease of use, Acceptance and Satisfaction. A user based study was performed on studying the effects of the cellular phones and their prototypes as well as the task complexities on the usability and focuses on a case study based report [58].

The research work is highly motivated by the paper [59] which describes the promise as well as the performance measures of enterprise systems in higher education. It focuses on Ranking of potential obstacles and identifies the potential obstacles of system performance. Another study reveals the quality parameters of software and its metrics for the software quality evaluation [39, 60]. This gives the software quality parameters like Capability, Usability, Performance, Reliability, Installability, Maintainability, Durability, Availability, Structuredness and Efficiency.

The paper [61] has identifies the CFF's (Critical Failure Factors) of ERP and gives the EFA (Exploratory Factor Analysis) on three results (Total Failures, Partial Failure and Success). A quantitative approach to Usability Engineering highlights the issues of complexity analysis [62]. It also describes the latest version of the complexity analysis from the user's point of view. Also, this paper gives the basic idea the complexity analysis that involves breaking down a user task into a set of constituent steps and then calculating a complexity metric for each step in the task relevant to the type of user. This paper also highlights the complexity analysis as well as describes the latest version of the complexity analysis.

On the usability side, the white paper by Microsoft deals with the usability engineering aspect of software design by highlighting a framework for checking the usability component of any software [63].

The philosophy of user centered design with respect to the usability in software design is given in [64]. The examination of some decisive causes of the software

complexity and its impact on user experience and in order to push the product in market, software firms are focusing on usability.