ABSTRACT

Earlier, the software industries followed intense traditional software processes to prepare software. But as the time passes by, everything changed. Withstanding the requirements changes or clients requests with the traditional software process is difficult. For this reason, many software industries have moved from traditional to agile software process. Agile has the ability to adapt to frequently changing requirements in which prioritization of these requirements plays a major role. The analysis aims to fulfil the gaps while prioritizing requirements. The literature survey gave an idea about the existing methods in prioritizing requirements and their gaps. Some of the existing methods are MoSCoW, Validated Learning, Business Value base, Walking Skeleton. The above methods had their own approach for prioritizing the requirements, but they were not able to resolve the Stakeholder Conflict (the stakeholder opinion). The extensive survey ended up in discovering approaches which can include Stakeholder Conflict. The work is done in four different contexts. They are: WhaleRank optimization based Ranking, Improved Scrum through Staging priority and Cyclomatic Complexity, Apriori Technique, Multi-voting technique and Binary Search. These four have four different methods to prioritize the requirements. Each of these has a different method of prioritization. The WhaleRank method proceeds with four different ranking functions depending on dictionary words, similarity measure, the perception of the manager, and the newly updated requirements that are joined to form a linear rank using the ranking constants. Improved Scrum gives a framework which is perfectly refined in addition to the introduction of a new term called RScrum which is the extension of Scrum which will greatly help us to overcome the glitches. Apriori algorithm has two functions, join and prune that are performed continuously to find the frequent item set and is designed to operate on a database containing transactions, which can be effectively used for prioritizing requirements and finding the relation between the prioritized requirements. Multi-voting technique and binary search tree proposed a framework model for e-service development to prioritize requirements with a systematic probability sample selection of stakeholders. Relative weighting method was adopted to perform prioritization in iteration process which helps the stakeholders to maximize their Returns of
Investment (ROI). Finally, the work contribution is summarized as follows:

- To study the factors that influence requirements prioritization and elicit information on the order of preference of using these factors.

- To Formulate Mathematical models for practical usage of proposed Framework.

- To compare the proposed framework with different significant Requirements Prioritization methods.

**Keywords:** Agile, Apriori, Association Rules, Similarity matrix, Staging Prioritization, E-Governance, Requirements Prioritization, Database, Frequent Item sets, Systematic Probability Sampling Multi-voting, Binary Search Tree, Iteration with Relative Weighting, Response rate estimation, WhaleRank Whale Rank Optimization, Weighted ranking constants, Cyclomatic Complexity, Product Backlog Item, Requirement updates.