Research Paper 1

# A Comprehensive Software Project Management Framework

## Case Study

The case study was on twenty software projects with different size, budget, and duration. These twenty software projects were within the timeframe of the 2018 year and led by eight project managers.

The study participants consisted of software project managers and executive managers. While the software project managers were partaking their project’s data, the executive managers asked to grant project success score for every project based on scope, schedule, budget, customer satisfaction, and business value viewpoints. Software Project Management Effectiveness Evaluator (SPMEV) is an online tool developed to allow the case study participants to evaluate the software project management effectiveness of their software projects. It contains a self-administered PME questionnaire by asking the software project manager a set of closed-form questions during the project life cycle based on the implementation of the 4PTRB framework management areas and practices.

## Conclusion

To conclude, in this research, a comprehensive software project management framework is introduced based on the frameworks and models used in this stream of research. The framework called 4PTRB which includes people, process, product, project, technology, risk, and business management areas. Each main area is decomposed into sub-areas of software management. Twenty-eight software management sub-areas shape the framework over the project lifecycle. The 4PTRB framework offers guidance to the software project manager to less reliance on a specific framework in the direction of increase the chance of delivering a successful software project. The findings of the analysis have been conducted on the data gathered from the survey followed by the case study indicate that the 4PTRB software project management effectiveness framework proposed in this research is intact, valid and appropriate to be used in software projects.

Research Paper 2

# Software Project Management Using Machine Learning Technique—A Review

## Case Study

The article analyses a project, campaign or company's success or failure in using machine learning (ML) techniques in software process management (SPM) development in this section are divided into three categories based on the ML methods used in SPM development. The first category focuses on improving predictability of effort estimation and addressing reporting protocols and expertise. The second category studies the use of Bayesian Networks Algorithm for value estimation and identifying relationships between risk factors and mitigation. The third category focuses on the use of Fuzzy algorithm in parametric modelling of risk influence diagrams to understand the relationship of different factors in IT project risk management.

## Conclusion

This literary analysis found that there has been extensive research done on using machine learning (ML) methods in software project management (SPM). The research can be grouped into four categories: reviews and surveys, case studies, experimental publications, and project analysis. The critical ML methods for automatic effort estimation include ANN, Fuzzy Logic, Genetic, and Regression Algorithms. Despite the amount of research, there is still room for exploration in the use of ML for risk assessment and estimation of effort. The literature review provides preliminary answers to essential questions on SPM estimation based on ML. However, there is still ongoing debate about what reflects the progress of a project and how it should be estimated. Further research is needed to explore the use of standard filtering methods for minimizing the problems in SPM using ML.