ID 305

Investigating the Impact of Software Maintenance Activities on Software Quality: Case Study

VP Pamunuwa[1#], DP Deraniyagala[1], VTB Kulasekara[1], RDAV Thennakoon[1], and BNS Lankasena[2]

[1]Faculty of Computing, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka
[2]Faculty of Technology, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

[#]37-se-0002@kdu.ac.lk

Abstract

Software maintenance is crucial for the reliability, functionality, and satisfaction of software systems. Although it might be expensive to keep software in good condition, it is essential to keep the software maintenance expenditure to a minimum without sacrificing software quality. Based on two leading software development organizations in Sri Lanka, the study examines how software maintenance operations affect software quality and identifies ways to reduce maintenance expenses without compromising quality. A comprehensive literature review was undertaken to discern a compelling research problem that would serve as the focal point for the study. The study was conducted using structured interviews with senior and operational staff from two organizations to quantify the impact of maintenance procedures on software quality preservation and proactively identify effective strategies. Both organizations adopt a proactive approach to software maintenance, encompassing bug fixing, updates, enhancements, and security updates while employing testing, quality assurance, monitoring, user feedback, and defect tracking to measure the impact of maintenance activities. Additionally, they predominantly utilize automated deployment, Continuous Integration/ Continuous Deployment, and cloud-based deployment in their software deployment practices, with some adoption of containerization (e.g., Docker) as well. The findings show that software maintenance is essential, and many tasks are carried out to maintain quality, including testing, monitoring, user input, and defect tracking. Future studies should concentrate on creating more efficient maintenance methods to save expenses while maintaining high-quality software. This evaluation offers knowledge that practitioners may use to create efficient maintenance plans for software systems.

Keywords: *Software maintenance, Software quality, Cost reduction*