

Organizational Factors that Affect the Software Quality A Case Study at the Engineering Division of a Selected Software Development Organization in Sri Lanka

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Abstract—The objective of this study is to identify the critical factors affecting the software quality at the engineering division of a selected software development organization in Sri Lanka. The purpose of the study is to identify the critical organizational factors that affect the software quality in the selected organization, determine the relationship and impact of those factors to software quality and provide recommendations and strategies to improve software quality. Having conducted a critical literature review, four independent variables have been identified which are staff training & development, co-worker relationships, diversity of the team and knowledge sharing. A quantitative survey was carried out with a population of 110 and sample size of 86 senior engineers. The data analysis has been conducted using SPSS 19.0 tool and hypothesis validation was carried out using Pearson correlation, regression and significance values. The research findings showcase that, knowledge sharing has the strongest relationship towards software quality. Staff training and development and co-worker relationships also hold a relationship on software quality whereas diversity of the team does not claim a relationship on software quality. This research would help the software organizations to uplift the software quality by various strategies such as improving existing knowledge management systems with new features, introducing certification process for staff trainings and team building activities. This research could be further enhanced with a larger sample size with the use of other qualitative survey techniques.

Keywords—component; software quality, organizational factors; co-worker relationships; staff training and development; culture; diversity; knowledge

I. INTRODUCTION

In this modern competitive world, IT industry has rapidly expanded over the past few decades. Similarly, the competition in IT industry has been significantly increased. Therefore, IT organizations follow various types of business strategies including technological and organizational to maintain a sustainable competitive advantage among its competitors. Among them, introduction of faster release cycles and new technologies, cost reductions, process improvements and delivery of flawless software are prominent. Mahoto, Shaikh and Khuhawar [1] claims that, quality software improves the efficiency of functional

operations within an organization which are equipped with Information Technological Solutions and it should work like a backbone of such organizations. Further, they emphasize that, quality software reduces the time and cost and enhances the customer trust while poor quality software sometimes causes the failure of the entire project effort spent on the development. Hassan, Umair and Ali [2] have claimed that, quality software is the primary factor in defining the capability of a software. Further, Wong et al. [3] have claimed in their studies that improving software quality is one of the major concerns of IT executives. In addition to that, a remarkable relationship between information systems quality and organizational impact have been identified in their studies. Similarly, Imreh and S. Raisinghani [4] mentioned that, quality and importance on quality are essential elements for any IT organization to be successful. Further, Hassan, Umair and Ali [2] show that improving the factors, such as, software security, performance and development speed would increase the software quality. It is proven that, there are many researchers conducted highlighting the importance of best software quality and the factors affecting the software quality. This study is based on a renowned software company in Sri Lanka. The main goal of this study is to examine the critical factors contribute to the software quality aiming the senior engineers at the engineering division of the selected company.

II. PROBLEM BACKGROUND AND PROBLEM OF THE STUDY

The selected company is a private limited software development company established in the year of 1999 which employees' more than 500 staff including highly skilled IT Professionals, Accountants, HR specialists and R&D Engineers and architects. In this modern world context, Sri Lankan software development industry has become one of the fast-growing industries in past few decades which has made a significant impact on the growth of the Sri Lankan Economy.

According to the statistics by Sri Lanka Export Development Board [5], ICT export revenue has grown from US\$ 166 million in 2006 to reach US\$, 968 million in 2017 with a work force of 85,000 having a 90% of value addition. As a result, there is an extreme competition between