

A Proposed Risk Assessment Model for Decision Making in Software Management

Bokolo Anthony Jnr.^{a,*}, Noraini Che Pa^a, Mustafa Salah Khalefa^a, Hamid Ali Abed Alasad^b, Hamzah Zmezm^c

^a Faculty of Computer Science and Information Technology, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia.

^b Computers Sciences Department, University of Basra, Basra, Iraq.

^c Department of Computer and Communication System Engineering, Universiti Putra Malaysia, 43400, Serdang, Malaysia.

* Corresponding author email address: bkanjr@gmail.com

Abstract

Software organization faces operational, technical and strategic risk. Hence, risk assessment is an important part of the decision-making process of software activities. Software management process has gained relevant during the last years, however there is still growing need of developing an innovative models that can support software practitioners in making decision to assess operational, technical and strategic risk. Existing risk assessment models adequately provide valuable insights to software practitioners to identify and measure the magnitude of risks associated in software activities, but they do not provide decision making support to software practitioners in assessing operational, technical and strategic risk. Thus, the aim of this paper is to propose a risk assessment model to support decision making of software practitioners when they assess risk that occurs in software management process. The developed model also provides software practitioners with the required risk assessment process and components, when they assess risk in their organisation. Semi-structured interview was used to collect data using two case studies involving a panel of software experts and software practitioners. Data was collected based on risk assessment practices in their respective software organisations. The case study was analysed using descriptive and narrative analyses. Results from the case studies shows that the current practice of assessing risk in software organisations is not effective due to inadequate decision making support to software practitioners when they measure and quantify identified operational, technical and strategic risk.

Keywords: Risk, Risk Assessment, Decision Making, Software Organisations, Software Management

1. Introduction

Risk is a combination of the probability of an event occurring, and the impact or consequence associated with that event. Risk management aims to manage and control risk effectively. If a risk is not identified it cannot be solved and trying to solve all risks is impossible. Thus, there is need for a risk assessment model to assess and solve risks in software management process (Abbinaya and Senthil, 2015; Feng, 2016). Risk assessment is the process of identifying and analysing the probability and impact of risk. Risk assessment in software based organisations is a summary of information and analyses used to evaluate the components of risk. Thus risk assessment is a systematic process of measuring and quantifying risk. Risk assessment assist in the selection of optimal or the most cost effective strategies for measuring risk, using a transparent decision making process (Sadiq et al., 2010; Omar, 2014). A decision can be defined as the act of reaching a conclusion. Good decision aids software management process to be effective. Software organisation involves the knowledge, techniques, and tools necessary to manage the development

of software services. Software organisations adopt rules and regulations to guides practitioners in accomplishing their aims and objectives. Software organisations policy ensures that all of the project activities follow a certain predefined process. Thus software team members can guard against poor decision making through effective risk assessment strategies. The increasing complexity and dynamics of software process have plagued software practitioners with operational, technical and strategic risk. Therefore, risk assessment will assist software organisations to improve their performance of software projects (Xiaofei et al., 2014).

The assessment of risk is generally implemented by measuring the risk magnitude which may be assessed by considering two parameters: risk likelihood and risk effect. However, there are other risk processes that need to be considered in assessing risk in software organisations. In software organisations operational, technical and strategic risk can lead to failure of software based project and these risks should be considered in the assessment process (Ionita and Patriciu, 2014; Yao et al., 2016). Risk measurement is therefore introduced to structure and evaluate these risk and