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**AN INVESTIGATION OF REQUIREMENTS TRACEABILITY
PRACTICES IN SOFTWARE COMPANIES IN MALAYSIA**

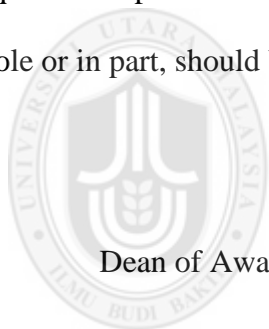


**MASTER OF SCIENCE (INFORMATION TECHNOLOGY)
SCHOOL OF COMPUTING
UUM COLLEGE OF ARTS AND SCIENCES
UNIVERSITI UTARA MALAYSIA
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Abstrak

Keupayaan mengesan keperluan (RT) merupakan salah satu aktiviti yang kritikal dalam menguruskan keperluan dengan baik dan bahagian yang penting dalam pembangunan projek. Pada masa yang sama, RT dapat meningkatkan kualiti produk perisian. Walau bagaimanapun, pengamal industri sukar melaksanakannya memandangkan kekurangan garis panduan atau hasil yang dapat memberi panduan kepada mereka dalam melaksanakan RT dalam projek mereka secara berkesan. Ini menunjukkan pengamal industri kekurangan maklumat tentang cara yang terbaik atau paling berkesan dalam melaksanakan tugas mereka, seperti di syarikat perisian. Walaupun begitu, terdapat beberapa amalan umum yang diterima pakai yang dapat memberi panduan kepada pengamal industri dalam menjejaki keperluan projek mereka. Kajian ini bertujuan untuk menentukan amalan RT melalui sorotan kajian sistematik. Selain itu, kajian ini telah menjalankan soal selidik untuk mengkaji penggunaan amalan RT di syarikat-syarikat perisian di kawasan utara Malaysia. Akhir sekali, satu siri temu bual dengan pengamal industri telah dijalankan untuk mengetahui sebab-sebab yang mempengaruhi kepada penggunaan amalan ini dalam pembangunan perisian. Dapatan kajian menunjukkan bahawa majoriti syarikat perisian tidak menggunakan amalan RT untuk mengesan keperluan kerana isu kewangan dan kekurangan pengetahuan tentang amalan RT ini. Kajian ini membentangkan bukti empirikal berkaitan penggunaan amalan RT antara syarikat perisian. Di samping itu, kajian ini membolehkan pengamal industri untuk mencari kaedah yang sesuai untuk mengesan keperluan, dan juga membolehkan penyelidik untuk mencari jurang dan petunjuk untuk kajian masa hadapan dalam kajian domain ini.

Kata kunci: Amalan Keupayaan Mengesan Keperluan, Teknik Keupayaan Mengesan, Alatan Keupayaan Mengesan, Sorotan Kajian Sistematik

Abstract

Requirement traceability (RT) is one of the critical activity of good requirements management and an important part of development projects. At the same time, it improves the quality of software products. Nevertheless, industrial practitioners are challenged by this lack of guidance or results which serve as a rule or guide in establishing effective traceability in their projects. The outcome of this is that practitioners are ill-informed as to the best or most efficient means of accomplishing their tasks, such as found in software companies. Notwithstanding the lack of guidance, there are a number of commonly accepted practices which can guide industrial practitioners with respect to trace the requirements in their projects. This study aims to determine the practices of RT through conducting a systematic literature review. Also, this study conducted a survey for investigating the use of RT practices in the software companies at northern region of Malaysia. Finally, a series of interviews with practitioners were carried out to know the reasons that influence on the use of these practices in software development. The findings showed that majority software companies do not use traceability practices for tracing requirements due to financial issues and the lack of knowledge of these practices. This study presented empirical evidence about the use of RT practices among software companies. Thus, the findings of this study can assist practitioners to select RT practices, and also enables researchers to find gaps and pointers for future study in this study domain.

Keywords: Requirements Traceability Practices, Traceability Techniques, Traceability tools, Systematic Literature Review

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter starts by explaining the background of traceability. It then highlights the problem statement related to the study. The research objectives, research question, scope of the study, as well as the significance of the research, are also highlighted.

1.2 Background of the Study

Lately, there is a rising interest in software systems which are capable of adapting to modifications in their requirements for the purpose of continuity in fulfilling their software's goals (Silva Souza, Lapouchnian, Robinson & Mylopoulos, 2011). According to Zainol and Mansoor (2011), requirements have a propensity to be modified during software development and these modifications must be managed. Also, according to the study's by Attarha and Modiri (2011), requirements are regarded as a challenging part in the software project because the requirements accurately determine what is to be produced. Requirements as defined by Zhou (2014), is a statement that recognizes a process or product's functional, operational, or design characteristic or limitations, which is unambiguous, measurable or testable, and mandatory for a process or product's acceptability by consumers or internal quality assurance guidelines. Similarly, Wen, Luo and Liang (2012) defined requirements as formal pronouncement of user's needs.

The root of requirements traceability is requirements engineering (RE). RE is considered as the initial phase of software engineering. According to Attarha and Modiri (2011), RE is a method for defining, modeling, recognizing, linking, documenting and maintaining or preserving software requirements in software life cycle

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