A STUDY OF REQUIREMENTS ENGINEERING PRACTICES AMONG SOFTWARE DEVELOPERS AT UUM INFORMATION TECHNOLOGY (UUMIT)

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Abstrak

Kejuruteraan Keperluan Perisian (RE) adalah satu proses yang sistematik dan bersepadu untuk mendapatkan, menjelaskan, merundingkan, menentu sahkan dan menguruskan keperluan sistem dalam projek pembangunan perisian. Pengurusan UUM dibantu oleh pelbagai sistem dalam akademik, pentadbiran, urusan pelajar dan lain-lain lagi. Kebanyakan sistem ini dibangunkan dan diselenggarakan oleh Jabatan Teknologi Maklumat (UUMIT). Tujuan kajian ini adalah untuk mengkaji semula amalan kejuruteraan keperluan perisian semasa dan mencadangkan amalan keperluan kejuruteraan yang sepatutnya diamalkan ketika membangunkan perisian di UUMIT. Di samping itu, penggunaan khidmat luar bagi pembangunan perisian makin berkembang kerana manfaatnya yang besar dalam mengatasi masalah sumber-sumber yang terhad di organisasi. Masalah utama yang dibincangkan dalam kajian ini adalah kekurangan kajian yang menyokong aktiviti pembangunan perisian di Jabatan Teknologi Maklumat (UUMIT). Kajian ini menggunakan kaedah kuantitatif dan kajian literatur yang sistematik untuk menjawab persoalan kajian. Kepentingan utama kajian ini adalah ia dapat membantu institusi pendidikan untuk menghasilkan pembangunan perisian yang berkualiti serta menjimatkan kos dan masa dengan melaksanakan amalan kejuruteraan keperluan perisian yang baik. Selain itu, kajian ini memberi sumbangan kepada UUM dengan mengenal pasti aktiviti yang perlu dijalankan untuk pembangunan perisian supaya pihak pengurusan dapat memperuntukkan bajet bagi menyediakan latihan yang mencukupi dan tepat serta seminar untuk pembangun perisian. Penyelidik telah mengkaji tiga pemboleh ubah; *Requirements Description, Requirements Development (Requirements Elicitation, Requirements Analysis and Negotiation, Requirements Validation), and Requirement Management*. Hasil daripada kajian menunjukkan bahawa amalan semasa kejuruteraan keperluan perisian di jabatan UUM IT adalah menggalakkan, tetapi perlu dipertingkatkan kerana kebanyakan amalan RE yang berkaitan dengan perkembangan keperluan dan pengurusan keperluan dijalankan secara biasa dan tidak kerap. Penyelidik mengesyorkan supaya program latihan yang efektif disediakan untuk kakitangan UUMIT tentang amalan RE dan meningkatkan pemahaman mereka mengenai keperluan sistem menggunakan amalan RE untuk membangunkan sistem yang lebih baik untuk universiti. Kajian lanjut diperlukan pada masa akan datang untuk memahami kesan amalan RE lain dalam pembangunan perisian.

Keyword: Kejuruteraan Keperluan Perisian, merundingkan, UUM IT, metodologi kuantitatif, kajian literatur yang sistematik

Abstract

Requirements Engineering (RE) is a systemic and integrated process of eliciting, elaborating, negotiating, validating and managing the requirements of a system in software development project. UUM has been supported by various systems in academic, administrative, students' affair and many others. Most of the current systems are developed and maintained by the Information Technology Department (UUMIT). The aim of this study is to review the current requirements engineering practices and proposing requirements engineering practices during software development at UUMIT. The outsourcing of software development is rapidly growing because of its allied benefits in the limited resources of the organizations. The main problem that is discussed in this research is the lack of studies that support software development activities at the Information Technology department (UUMIT). The study used quantitative methodology and systematic literature review to answer research questions. The main significance of this study is helping educational institutes to produce quality software development and saving cost and time by implementing requirements engineering practices. In addition to that, the study contributes to UUM by identifying the activity needed for software development so that the management is able to allocate budget to provide adequate and precise training as well as seminars for the software developers. The researcher investigated three variables; Requirements Description, Requirements Development (Requirements Elicitation, Requirements Analysis and Negotiation, Requirements Validation), and Requirement Management. The results from the survey showed that the current practice of requirement engineering in IT department of UUM is encouraging, but need for further development because most of RE practices associated with requirement development and requirement management are achieved on a regular basis and not frequently. The researcher recommended providing effective training programs for UUMIT staffs on RE practices and increases their understanding on system requirements using RE practices to develop better systems for the university. Further investigation is required in the future to understand the effect of other RE practices on software development.

Keywords: Requirements engineering practices, negotiating, UUMIT, quantitative methodology, systematic literature review

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To the Memory of My Father and Brother...

To My Mother...

To My Family and Friends...

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Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

RE	Requirements Engineering
RD	Requirements Development
RM	Requirements Management
UUM	Universiti Utara Malaysia
UUMIT	Universiti Utara Malaysia Information Technology
SDLC	Software Development Life Cycle
SREM	Software Requirement Engineering Method
SLR	Systematic Literature Review

CHAPTER ONE
INTRODUCTION

1.1 Background

Nowadays, software applications have considerably supported our work and daily life (Insfran, Chastek, Donohoe, & do Prado Leite, 2013) . Software applications are everywhere, at the work place, in the office, at home, in the car and many other places. Moreover, almost all electrical equipments contain software applications leading to the increase in usage of software in electrical appliances significantly. Today, software is used across various industries, as in education, agriculture, health, financial, economics, entertainment and others.

Certainly, there is an urgent need to develop a standard software that may satisfy the needs of the users without any error (s, Srinivasan, Dravid, kasera, & Sharma, 2014). Requirement of software is fulfilled by the requirements engineering (RE) which is the process of determining requirements (Cheng & Atlee, 2009) Moreover, Cheng and Atlee (2009) mentioned that successful Requirements Engineering (RE) involves understanding of the stakeholders needs; considerate software contexts; modeling, analyzing, negotiating, as well as supporting stakeholders' requirements; assessing documented requirements; and managing the requirements. There are many researches that identify the need of development of a quality software that may meet needs and objectives of the customers and give value to a stakeholder (Khan, Naz'ri bin Mahrin, & bt Chuprat, 2014; K. Wiegers, 2013).

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