

UNIVERSITI TEKNOLOGI MARA

**INVESTIGATING THE
DETERMINANTS AND IMPACTS
OF SOFTWARE REUSE PRACTICES
AMONG MALAYSIAN FREELANCE
DEVELOPERS**

MOHD AKMAL FAIZ OSMAN

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ABSTRACT

The benefits of deploying software reuse practices have been well documented in the literature. Software reuse practices have been proved to positively impact software quality and development quality. Examples of software reuse assets that can be reused to develop new software are the source codes, design, libraries, modules, requirements analysis, and the testing method. The high dependency of business organizations on software usage has put software development method under the spotlight in which software is demanded to be quickly developed, high quality, with reduced maintenance fee. This situation cause problem to software development in which software development project often incurred more time, more costs, and not meeting the scope. Moreover, in Malaysia, there are reports that 80% of software that has been already delivered needs further modifications. In light to software reuse practice, the emergence of freelance developers, who develop software for individuals or organizations on contract basis that offers much cost and development flexibility that have gained many interests in the literature. As stated in freelancing websites, the number of registered freelancers, number of projects posted, and number of transactions occurred has exponentially growth, thus, made these freelance developers as important players in software development. However, there have been scarcity on studies regarding these freelancers, and there are reports stating that the competition between these freelancers is highly competitive, in which they have to compete with freelancers from other countries for projects. This is due to the nature of software development job can be completed fully online. These freelance developers often grappling to land and completes a project. This study intends to investigate the software reuse practices of these freelance developers to unearth knowledge with regard to this new phenomenon. By studying the determinants and impacts of software reuse practices from these freelance developers, the study would bridge some of the gaps exist in the literature to contribute knowledge in catering software crisis. The determinants to be investigated are individual characteristics, project characteristics, and technological characteristics, while the impacts are quality and achievement goals. A conceptual research model has been developed from the extensive literature reviews. Besides, preliminary study with freelance developers has been conducted to verify some important information gathered from the literature. For the purpose of data collection, a quantitative approach has been employed. Here, the method research has been designed involving pre-test, instrument validity, pilot testing and survey which have been conducted with 413 Malaysia freelance developers to support the research assumption. Structured equation modelling using Partial Least Square was employed to analyse the data and to test the research assumptions. From the findings, it is reported that all determinants proposed in the study have positive influence on software reuse practices, while software reuse practices significantly influence quality and achievement goals. This study has added new knowledge and insights by providing comprehensive theoretical framework to explain and encourage software reuse practices among software development community. Moreover, this study provides a practical tool to measure the determinants and impacts of software reuse practice. Henceforth, the theoretical framework can become a basis for further study to improve the field of software development.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter provides an overview of the research conducted. The contents of this chapter include the background of study, followed by problem statement, research questions, research objectives, mapping of problem statement with research objectives and research questions, overview of research model, context and scope of study, definitions of terms in the title, significance of research, and finally, followed by chapter summary. The following Figure 1.1 outlines the chapter:

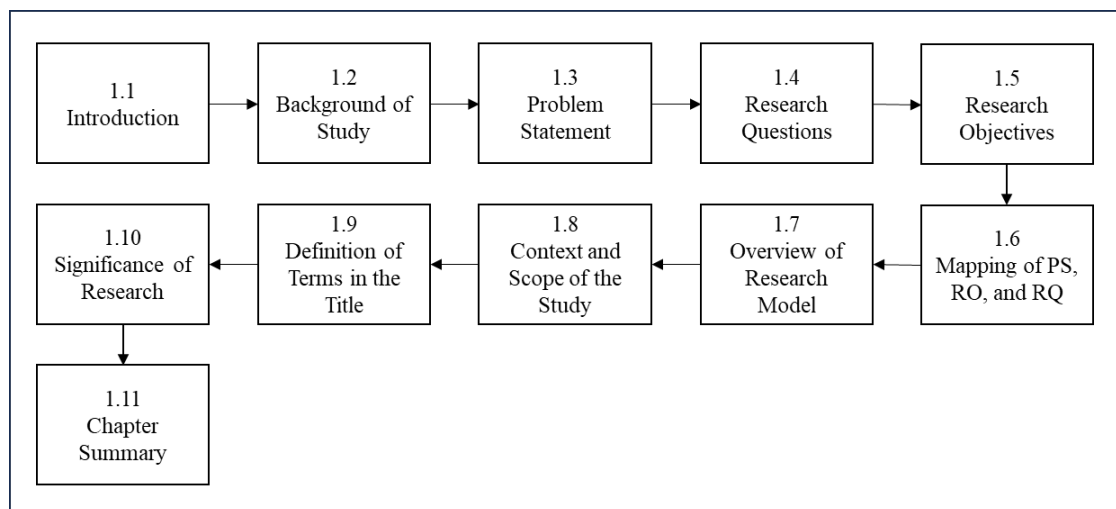


Figure 1.1 Overview of Chapter One

1.2 Background of Study

Software reuse is an approach in software engineering that focuses on utilising pre-existing software during the development process (Chen et al., 2024). Although software reuse was first coined by McIlroy in 1968, it is at the start of the year 2000 software reuse becomes a dominant paradigm for software development (Barros-Justo et al., 2019). Currently, software reuse is the prevailing development approach for web-based information systems and corporate systems (Kapitsaki, 2024). This phenomenon occurs due to the overwhelming availability of the reusable software assets (Makitalo et al., 2020).