

UNIVERSITI TEKNOLOGI MARA

**A FRAMEWORK OF
COORDINATION FACTORS
AFFECTING DESIGN AND BUILD
PROJECTS' PERFORMANCE IN
MALAYSIA**

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ABSTRACT

The design and build projects (DB) have increased in numbers in the last few decades. DB method is replacing the traditional method, which is becoming more popular in Malaysia, especially in the national projects such as Kuala Lumpur International Airport, Twin Petronas Tower, Penang Bridge, Malaysia North-South Highway. This rapid increase in the DB contracts derived from the urge to avoid the unnecessary cost of traditional projects and to have one team responsible for construction works and designs. However, design-build projects may suffer from a significant number of problems such as conflicts between the project parties (designers, contractors, and owners) resulting poor performance and poor quality. One common cause of project failure of conventional projects is poor coordination and communication process. The DB projects also require proper coordination among stakeholders and in project processes to improve the performance, even though the contractor is responsible for the designs and construction works. It has been found that no such study has been found to identify the coordination factors that might affect the project success. To fill this gap, the aim of this research is to establish a framework of coordination factors affecting DB projects' performance in Malaysia. In this study, a mixed methodology approach has been utilized to identify critical coordination factors by a comprehensive review of the literature. Additionally, interviews have been conducted to verify and find additional factors from practitioners. The identified factors were then categorized, ranked, and prioritized according to their influence on project performance using a quantitative approach. A Partial Least Square of Structured Equation Modelling (PLS-based SEM) approach has been applied to identify and estimate the impact of coordination factors on the performance of construction projects in Malaysia. It is found that Scheduling and Planning, Human Resource Coordination, Documentation & Records Coordination, Contract Implementation Coordination, Value Engineering and Quality Assurance, Technical Coordination, Design Coordination, Management Coordination and External Coordination are the major factors of coordination that may affect the performance of construction projects. This study provides empirical evidence by correlating the identified coordination factors with DB project performance. Identification of coordination factors will help in enhancing and improving the performance of design and build projects.

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CHAPTER ONE

INTRODUCTION

This chapter illustrates the research background and study justification. It also shows the overall structure of the research. It consists of the research background, the problem statement, the research objectives, the research aim, the research questions, methodology, the research objectives, the significance of the research, scope, and expected findings.

1.1 Research Background

During the last few decades, the construction industry faced a rapid increase of large-scale construction projects with complex and complicated activities (Endut et al., 2005; Luo et al., 2017). The nature and fragmentation of construction projects led to a significant influence on project cost, time, and quality performance (Endut et al., 2005; Nawi et al., 2014). In any country, the economy can be influenced dramatically by the construction industry. The construction industry contributes to the economy and the gross domestic product of any country. Construction as an essential industry contributes from 6-10% of the Gross Domestic Product (GDP) of developed countries, and 3-6% to the GDP of developing countries (Ajayi & Oyedele, 2018b; Razak Bin Ibrahim et al., 2010; Yap et al., 2019). The construction industry may result in rapid growth in the economy. However, the construction industry may be hindered by many problems that can affect performance.

In the construction industry, there are different types of delivery methods such as the traditional delivery method – design bid built (DBB) and design and built (DB) delivery method. In the traditional delivery method, the works are divided into two stages, the design stage, and the construction stage. After completing a full package of designs, the bid process starts, and the contractor is selected based on the technical and financial offers submitted and the owner requirement. In this type of delivery method, the contractor is not responsible for the designs and the owner has a contract with the contractor and he/she can appoint a consultant to supervise the construction activities. However, DBB projects suffered from many problems such as time overruns, extra costs, and conflicts between the owner, contractor, and consultant (Chang et al., 2010) DB project came into existence to solve some problems in traditional projects (Adnan,