UMP Research Series: Construction Engineering and Management (Vol.1)

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PREFACE

Dear readers,

Welcome to the first issue of UMP Research Series: Construction Engineering and Management (Volume 1). We cover a wide range of research areas in the construction industry, geotechnics and infrastructure, and structure and materials in this issue.

Chapter 1 includes six papers that introduce various recent matters concerning construction management in Malaysia. This chapter describes some of the vital aspects in the construction industry, such as regulations, standards, productivity, competencies, and augmented reality application. Chapter 2 presented seven papers that discuss the current situation in the field of geotechnics and infrastructure. This chapter describes the technical aspects of geotechnics and infrastructures such as RQLASSIC, remote sensing data, digital slope mapping, and traffic and pedestrian facilities assessment. The final section, chapter 3, consists of seven papers that highlighted recent findings in structure and material. This chapter describes several essential elements in the structure and material fields, such as concrete, coal waste bricks, and precast wall panels. It is hoped that readers of this book would benefit from the variety of the themes presented and may provide a current overview of the research area in the construction industry, geotechnics and infrastructure, and structure and materials in Malaysia

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QUALITY AND QUALITY STANDARDS IN CONSTRUCTION: A SYSTEMATIC REVIEW

Nurhidayah Azmy and Lum Wai Wei

Abstract

One of the customers' satisfactory elements identified in construction is quality since the construction industry shifted from production-orientated management to customer-orientated management. However, several issues are identified as a hindrance to achieving overall quality and can be caused due to low-quality construction materials and non-compliance to the standards. Therefore, before any further strategies to improve the quality of construction are determined, it is crucial to establish the fundamental knowledge on quality and its relevant aspects applicable in the construction industry. Hence, this paper seeks the definition of quality and quality standards by using the systematic review based on six-level of procedures. Based on the sources gathered, quality can be defined as the foreseeable degree of standardization and reliability with quality standard suitable to the client's preference and thereby provide client's approval**,** whereas quality standards is defined as to offer a reference in ensuring all construction activities comply to the adequate specifications set by authorized bodies. The definitions found provide practical implications for future work related to quality and project specification.

Keywords Quality Standards, Quality in Construction, Quality Implementation, Systematic Review

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Introduction

As Malaysia enters the Industrial Revolution 4.0 and its way forward, there is a major complex transition that occurs from production-oriented management to consumer-oriented management, which is prioritizing customer satisfaction or stakeholder satisfaction. Customers' satisfaction is also known as clients' satisfaction/ stakeholders' satisfaction, which is one of the key satisfactory elements in construction quality. Based on the statistical review on client satisfaction, Meenakshi (2016) uncovers that quality has emerged as the most determinant of flat buyers' complacency. Quality assurance and quality of assignment materials strongly influence overall customer satisfaction (Kärnä, Junnonen, & Kankainen, 2004). Under these circumstances, quality is one of the critical factors to increase their competitiveness (Song, Lee, & Park, 2017). Hence, as the construction industry undergoes drastic changes and diversifies in construction methodology, management and technologies, there is a need to upgrade in various areas to achieve quality products.

Nevertheless, many construction companies or projects have incorporated quality management that conforms to quality standards to put themselves in the market race. Yet, accident rates and poor-quality buildings still persistently occur till the rise of a quantum era. Social Security Organization (SOCSO) stipulates a total of 7,338 occurred in 2016 throughout the construction industry as compared to 4330 cases in 2011, which resulted in a 69.47% increase (Lam Thye, 2018). Additionally, the National Audit Report states that there are 235 sick projects detected in 2011 and 191 projects in 2013 (Jatarona et al., 2017). According to Chai et al. (2015), when there are delays in the projects, there are named as a sick project because these projects will eventually be abandoned with extensive critical delays. The factors contributing to the problems that persistently occur in Malaysia, such as project delays, poor quality, defects, rework, and accidents, have similar causes. Building defects and failures are due to low-quality construction materials and non-compliance to specification (Ahzahar et al., 2011). This is also supported by Hong (2016) with homogenous research, which deduces the main causes of building defects, namely poor workmanship, improper tasks performed, non-compliance to material specification, and poor supervision. Furthermore, both researchers (Hisham & Yahya, 2016) and (Sambasivan & Soon, 2007) yield similar findings on the causes of project delays due to poor site management. Notwithstanding, the causes of the problem that persistently occurs in Malaysia lie upon the contractors' responsibility. These problems should be rapidly decreasing due to emerging of technological initiatives to counter the problem. Hence, the bottom line of these issues is how current contractors understood quality and implemented quality standards in Malaysia's construction projects.

Before extensive research can be conducted on the said topic, it is crucial to ensure that the fundamental knowledge on quality in construction is well-established. Furthermore, this is necessary to understand further the basic theory on quality and the standards referred to by the practitioners in the industry. Therefore, this paper will explore and examine basic knowledge on quality and its relevant aspects applicable in