UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF SOCIAL SUSTAINABILITY ASSESSMENT TOOL (SocSAT) FOR CONSTRUCTION PROJECT LIFE CYCLE

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ABSTRACT

Sustainability in construction is a process of compliance to the three main pillars of sustainability, which are environmental, economic, and social practices that influences project performance. It is essential for all three dimensions to work in balance to achieve the desired notion of sustainability. Nonetheless, most of the previous studies have focused on the dimensions of environment and economy, due to the clearly defined quantitative indicators, as compared to the social dimension, where the measurement is more subjective in nature. Due to subjectivity, different perceptions exist among different construction stakeholders, creating a gap in the understanding of social sustainability in construction. Additionally, the strong focus on the construction phase, by previous researchers has caused other phases to be side-lined. This creates an imbalance in the fulfilment of social aspects across the construction project life cycle. Therefore, having a common understanding of social in construction is crucial to ensure all stakeholders are aligned with similar thoughts in meeting the objectives and requirements of a project. Hence, there is a need for a standardised concept of social sustainability in construction, which led to the development of a social sustainability assessment tool (SocSAT) that can measure the practices of social sustainability along the different phases of the construction project life cycle. A mixed-methods research approach that relied on a review of literature, semi-structured interviews, focus groups discussion (FGD), and structured interviews with expert panels were utilised to achieve the aim of this study. The study started by the identification of social sustainability attributes at the different phases of the construction project life cycle, followed by the determination of the appropriate measures and associated scales in measuring social sustainability practices in construction projects by providing objective and quantitative measures, for inclusion in the SocSAT. Then, an automated version of the SocSAT was created using proprietary spreadsheet software, which facilitated the collection, retrieval, and graphical presentation of data in managing and monitoring social sustainability practices. With the aid of the expert panels, the demonstration, application and validation of SocSAT was conducted on ten (10) Malaysian construction projects. The establishment of SocSAT as an assessment tool in measuring social sustainability practices across the construction project life cycle enables construction players to monitor and assess the practices and commitment towards social sustainability through a systematic and structured approach. The academic contribution of SocSAT includes the establishment of the scales and measures of social sustainability across the construction project life cycle, as compared to previous, where assessments were rather subjective with an isolated focus on the construction phase of the life cycle. In summary, the practical and theoretical contributions of this study would strengthen the social aspect, alongside the economic and environmental aspects, further enabling a well-balanced triangle of sustainability in construction.

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CHAPTER ONE
INTRODUCTION

1.1 Research Background and Justification of Study

The World Commission on Environment and Development (1987) defined sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their needs". The term 'development' includes various activities across different industry sectors and the construction industry's response to sustainable development is 'sustainable construction' (Chiang et al., 2015). The concept of sustainable construction has started to emerge in the 1970s and has been recognised as one of the main priority by most countries; and often described in terms of the three main pillars, which are economic, environmental, and social practices that influence construction projects' performance (H. Li et al., 2018; Pocock et al., 2016; Sierra et al., 2016). Jafari et al., (2019) defined sustainable construction as "improving the current situation to generate benefits or savings for owners and/or occupants in terms of economic (e.g., reducing operation costs and optimising life cycle economic performance), environment (e.g., reducing greenhouse gas emissions), and social (e.g., enhancing comfort and health of occupants, as well as the creation of job opportunities)". The relation between the construction industry and the sustainable pillars could be attributed to the fact that the sector contributes to industrial growth (economy), waste minimisation (environment), and the production of basic amenities necessary to develop and improve the living standard of a nation (social) (Leje et al., 2020). Thus, sustainable construction should accommodate all the three main pillars of sustainability (economy, environment, and social) without neglecting any one in order to meet the objective of sustainability.

The criticality of balancing the iron triangle of sustainability has been underrated as social sustainability has often been side-lined (Montalbán-Domingo et al., 2019; Marie Stender & Walter, 2019), as compared to the other two dimensions of sustainability. Neglecting one of the sustainable pillars in the construction industry, especially social sustainability, can lead to imbalances in peoples' lifestyles (decent quality of life), such as equity, security, health, and access to the basic needs (Zuo et al., 2012). Among the factors