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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING

Judul Artikel	:	Proposed SDI equations to improve the effectiveness in evaluating crack damage on the road pavement		
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Status Pengusul	:	Penulis tunggal		
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		c. Thn Terbit, Tempat Pelaks.	:	2019, Jakarta 16 Juli 2019
		d. Penerbit/Organiser	:	IOP Publishing
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Semarang, Desember 2021

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Prof. Dr. Ir. Han Ay Lie, M. Eng.
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Reviewer 2

Prof. Ir. Mochamad Teguh, MSCE, Ph.D
NIP. 195808051987031001
Unit Kerja: Prodi Teknik Sipil, Universitas Islam Indonesia

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Semarang, Desember 2021
Reviewer I

Prof. Dr. Ir. Han Ay Lie, M. Eng.
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Unit Kerja: Departemen Teknik Sipil FT UNDIP

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Yogyakarta, Oktober 2021
Reviewer 2

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Proposed SDI equations to improve the effectiveness in evaluating crack damage on the road pavement

Setiadji B.H.

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Department of Civil Engineering, Faculty of Engineering, Diponegoro University, Jl. Prof. Soedarto, SH., Tembalang, Semarang, 50275, Indonesia

Abstract

Road pavement has a life-cycle, where the age of the road pavement starts from design to the end of service life, so that maintenance works are one of the most important stages. To enable carrying out maintenance works, a process of assessment of road conditions, both from structural and functional, is required. At present, one of the evaluations of the functional condition of the road is using surface distress index/SDI. The SDI method used today has a simple procedure and is easy to use. However, in the term of accuracy in estimating the functional condition, it will be seen that the SDI parameter is far from satisfying. In this study, an effort to increase the effectiveness of SDI parameters especially for crack damage was carried out. The improvement of SDI parameter was conducted by developing a non-linear equation for each type of crack damage based on the deduct value curve of the PCI method, with a coefficient of determination R^2 of at least 0.99. The proposed SDI equations have been calibrated and produced an error less than 6.2%. A comparison between the value of the proposed and the existing SDI also was presented and the results showed that the similarities between the two SDI values were only 19.86%. The rest of the existing SDI value was under-estimate proposed SDI, but there was also an existing SDI value over-estimated proposed SDI, especially in the road segment which was only found one type of crack damage with low/medium severity and low density. © Published under licence by IOP Publishing Ltd.

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IOP Conf. Series: Materials Science and Engineering **650** (2019) 012002 doi:10.1088/1757-899X/650/1/012002

Strategic factor analysis of innovation adoption in Thai architects: A case study of Building Information Modeling

Grit Ngowtanasuwan

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Abstract. Inspiring competition and enhancing standards of living as the foundation of a progressive knowledge-based society, innovation has been acknowledged as having an indispensable influence on the economic development of nations for a long time. Currently being implemented in nations throughout the world for the design and application of design projects, building information modeling (BIM) involves computer technology in the structure and facility design industry. BIM's adaptive design technology is presently being distinguished and embraced by the Thai architectural design industry. Exploratory factor analysis (EFA) statistical approaches have been employed to examine, categorize and evaluate the factors associated with BIM adoption behavior in the industry. A total of 199 Thai architects with familiarity in the utilization of BIM were employed to accumulate the empirical data. Using EFA, factors were categorized into four major clusters including (1) adopter characteristics, (2) BIM characteristics, and (3) vendor characteristics, as well as (4) environmental characteristics. In order to articulate, exhibit, and deliberate an approach to develop BIM implementation by the Thai architectural design industry, the outcomes were applied.

1. Introduction

For a variety of research fields such as economics, business, engineering, science and sociology, the topic of innovation has gained increasing interest. In spite of this, similar words and concepts including change, invention, design and creativity have often been misunderstood to mean the same as 'innovation'. As precision by its very features restricts inventiveness, the characterization of innovation covers a wide range of conceptions. By completely altering the data input procedure from traditional coordination (x, y-axis) in computer-aided design (CAD) to 3-dimensional object orientation, resulting in significantly improved potential, recent enhancements in design technology have led to a new approach called 'Building Information Modelling' (BIM) [1]. For the execution of projects in numerous nations globally, BIM is computer technology being implemented in the building and facility design industry. The design technology of BIM is also being utilized by the Thai architectural design industry, though prevalent application throughout the nation remains somewhat limited by a lack of comprehension and awareness by architects. Therefore, the objective of this research is to study the factors related to BIM adoption in the Thai architects using exploratory factor analysis (EFA). This paper is an extension of from previous research [2], [3] that studied the factors related to BIM adoption behaviors of Thai architects and engineers (including civil, mechanical, electrical, sanitary engineers, etc.). In this research, Thai architects working in Thailand would be

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Proposed SDI equations to improve the effectiveness in evaluating crack damage on the road pavement

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Abstract. Road pavement has a life-cycle, where the age of the road pavement starts from design to the end of service life, so that maintenance works are one of the most important stages. To enable carrying out maintenance works, a process of assessment of road conditions, both from structural and functional, is required. At present, one of the evaluations of the functional condition of the road is using surface distress index/SDI. The SDI method used today has a simple procedure and is easy to use. However, in the term of accuracy in estimating the functional condition, it will be seen that the SDI parameter is far from satisfying. In this study, an effort to increase the effectiveness of SDI parameters especially for crack damage was carried out. The improvement of SDI parameter was conducted by developing a non-linear equation for each type of crack damage based on the deduct value curve of the PCI method, with a coefficient of determination R^2 of at least 0.99. The proposed SDI equations have been calibrated and produced an error less than 6.2%. A comparison between the value of the proposed and the existing SDI also was presented and the results showed that the similarities between the two SDI values were only 19.86%. The rest of the existing SDI value was under- estimate proposed SDI, but there was also an existing SDI value over-estimated proposed SDI, especially in the road segment which was only found one type of crack damage with low/medium severity and low density.

1. Introduction

Road pavement has a repetitive life cycle, starting from planning, construction, operational, maintenance/rehabilitation, reconstruction and then this process returns to the operational stage and so on. Of all these processes, maintenance/rehabilitation (M & R) is a stage that has the longest period compared to the other stages, and together with operational and reconstruction stages, M & R will last until the end of the service life of the road pavement.

To determine the type of maintenance work required, the road agency will conduct a process of evaluating road conditions, to ensure that the proposed maintenance work is appropriate. This is important due to the limit amount of the available budget so that only the most effective and efficient one should be processed. This underlines how important the process of road condition evaluation is. Two kinds of condition evaluation that are usually conducted namely functional and structural condition evaluations.

Functional condition evaluation is performed to find out whether the road pavement still has an adequate level of performance to be able to carry out its functions. This evaluation on a flexible pavement usually consists of 3 types, i.e. evaluation of road deterioration, roughness, and skid

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Benefits and implications of the different types of quality management in the Malaysian construction industry

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Abstract. The quality management system (QMS) is defined in terms of quality assurance, quality control, and quality planning. It is necessary for the construction field to confirm the projects will to be finished with success and without any obstacles for the best quality, explicit amount and at a minimum attainable value. The aim of this article is to produce a crucial and constructive analysis through a revision of five revealed works of literature that relate to QMS in the construction field based on Malaysian research setting. Relevant articles associated with the QMS in Malaysia has been studied. The main findings at those researches indicated that the satisfaction of the owner or the client, improved management and work capacity of the company, and facilitate the project management team to expeditiously manage the development activities for the project life cycle. More studies can use constant performance indicators at the project to check the efficacy of QMS in many samples to enhance the findings.

1. Introduction

The issue of quality has become a heavy concern inside the development of the construction industry. There are several advantages that can be gained by International Organization for Standardization (ISO). ISO is an international organization that promotes a standard for various type of companies and products. However, this does not mean that if a company has succeeded in obtaining certification, they will be ready to expertise all the useful results. Kiev [1] stated in his study that the benefits obtained by construction companies as a result of the ISO implementation were small and indicated that the level of improvement was in line with their original expectations. That is why most construction companies are reluctant to implement the system because they are uncertain whether or not the enforced system is worth it particularly once an enormous outlay was invested with in implementing the system [1].

According to researchers, the Quality Assessment System in Construction (QLASSIC), the ISO 9001 quality management system (QMS), the quality assurance (QA) system, and the quality control (QC) system are among the many types of standards which provide a number of indicators on the way to establishing a high-quality process management system to manage the processes that affect their products or services. It was initially developed in 1987 to improve the service and merchandise standards provided by completely different business sectors [2]. QLASSIC is an important tool used to assess the degree of quality of a building work supported by the quality standards. QLASSIC score is considered One of QLASSIC's key

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Multi-storey Modular Cold-Formed Steel Building in Hong Kong: Challenges & Opportunities

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Abstract. Modular building construction has become widely popular across the continents, such as in America, Europe (United Kingdom), Asia (Singapore), and more recently in Australia. Promoting sustainability in construction, the application of modular construction has been successfully implemented in very broad range building functionalities. These include student residences, private housings, hotels, commercial buildings, military accommodation, health facilities, as well as other services units attached to the main buildings. Several low-rise buildings (6 to 10 stories) as well as high-rise buildings (20 to 30 stories) have used this type prefabricated off-site building system as an alternative construction method. Among those existing projects, modular steel building brings significant advantage on the manufacturing process and erection speed. These will be beneficial for Hong Kong which has very high pressure on housing demands. Due to its excellence on strength and durability, the modular integrated construction (MiC) in Hong Kong is looking to the direction of using cold-formed steel as structural component. Some challenges and opportunities are exist and these will be discussed in this paper.

1. Introduction

A modular building is constructed from stacks of building blocks. The blocks are fabricated in the workshop and they are delivered to the site as a 3D volumetric module [1]. Each module is assembled by prefabricated elements, such as floors, walls, roofs, mechanical services, and electrical fittings. Together with structural elements, one module may contain single unit or even more than one unit [2]. By obtaining 3D volumetric buildings, it will minimize the amount of on-site works such as large volume of concrete casting, steel erections, and major architectural and installation works [3]. Moreover, modular volumetric building is also suitable for projects which has limited construction space.

Among the existing construction material, steel structure gives relatively more benefit on this prefabricated off-site construction technique. The primary advantage of modular steel building is on the weight and flexibility which ease manufacturing process such that enhance the construction speed [4]. Technical issues and challenges together with proposed solutions along modular steel building fabricated by hot-rolled sections have been assessed in the technical note [5]. Nevertheless, there are some questions remaining on the durability (corrosive resistance and fire resistance) on this steel type.

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