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A Proposal for Improving Sustainability Practice through the Implementations of Reuse and Recycle Technique in Malaysian Construction Industry

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Abstract. Construction and demolition waste is often seen as the major contributor to the solid waste stream that is going to landfill, hence, making it the area of focus for improvement. In the construction industry, reuse and recycle principles have been promoted in order to reduce waste and protect the environment. Construction and demolition waste including demolished concrete, bricks and masonry, wood and other materials such as dry wall, glass, insulation, roofing, wire, pipe, rock and soil constitute a significant component of the total waste. Without proper reuse and recycle policies, these construction and demolition wastes would quickly fill all the remaining landfill space, which has already been growing in scarce around this region. Based on the feedback received, on average, a third of respondents said they currently have a lotto benefit from the use of reduce and reuse. In addition, they also agreed that the existing policies help and support the min carrying out the reduce and reuse practices. Respondents also agreed that other stakeholders in the construction industry currently have an excellent awareness in term of implementation of the reduce and reuse in their practices.

Keywords: Reuse, Recycle, Construction Industry

INTRODUCTION

Previous studies have identified a number of benefits in implementing reuse and recycle (waste management) for construction industry [1]. Pollution prevention, better allocation of resources, better regulatory compliance, evaluation of risks and plans for preventing potential problems are among the various benefits that can be achieved through the improvement of waste management [2]. According to Begum [3], majority of the Malaysian construction stakeholders put low priority on the issues of waste management. Data shows that approximately 40% of the generated waste portion globally originates from construction and demolition of buildings [4]. In general, construction waste is bulky, heavy and is mostly unsuitable for disposal by incineration or composting. Construction waste are related to design changes, leftover material scraps, non-recyclable/re-useable packaging waste, design/detailing errors, and poor weather [5]. Further, a study of attitudes of architects and contractors toward the origins of construction waste indicates that construction waste is related to design, site operation, procurement routes, material handling and sub-contractor's practices [6]. [6] went further to compile and group the main sources of waste factors in terms of construction life cycle stages, comprising contractual, design, procurement, transportation, on-site management and planning, material storage, material handling, site operation, residual, and other.

REDUCE AND REUSE PRINCIPLES IN CONSTRUCTION INDUSTRY

According to IGES (2006), in almost all developing countries, legal system regarding the reuse and recycle policies have yet to be established. Some of the policies exist and the others are still in the process of formulation. For Malaysian construction industry, the development of reuse and reduce principles programme is spearheaded by Construction Industry Development Board (CIDB)[7] in coordination with the government. It also elaborates the insufficient institutional capacity to support the principles and measures of reduce and reused which is a common issue for all developing countries to be addressed.

According to Addis [8], reduce and reuse principles should be addressed by the key parties in the construction industry which include clients, consultants and contractors. Reuse and recycling opportunities for construction and demolition wastes depend on the markets for the individual materials comprising the wastes and the ability to process the commingled waste or separate the individual materials [9].

RESEARCH AIM AND OBJECTIVES

The aim of this research is to study the implementation of reuse and recycle technique among Malaysian contractors. For this research, the objective has been list out according to problem statement that has been identified. This research was conducted to assess the level of reduce and reuse application among local contractors in the aspect of management, application in the organization, reduce and reuse relevant policy, technology and techniques that are being used, awareness of other relevant stakeholders, and reuse and reduce Audit Assessment.

RESEARCH METHODOLOGY

The research methodology part is to achieve the result of research from beginning until finish. There are step are mainly used:

Literature Review

The first phase includes an explanation of the study, to determine the specific research topics and the selection the appropriate samples. The literature review had been conducted from the sources such as journals, previous research, related articles, online databases, publish reports, etc. The data obtained have been used in the beginning of the study

Questionnaires Distribution

Quantitative data collection method will be conducted as part of this research to determine the uptake of reusing and recycling by Malaysian contractors. According to the literature review carried out, the implementations of reusing and recycling management are relatively new in Malaysia and levels of awareness and adoption by contractors are low. The selected contractors will represent the Malaysian construction industry which does not have an official system or guidelines for managing construction wastes on site.

The questionnaires were distributed to grade A contractors that registered with the Contractor Service Centre (PKK). The respondents consist of engineer, technician, technician assistant, resident engineer, project manager, site supervisor and administration division. Most respondents involved in this study are engineers that represent 25.6% of total respondents, while the second highest is the technician (24%) and the least is the project manager which represent 5% of the total respondents. Site supervisors are also involved (19%), the administration represent 9.9%, assistant technicians (9.1%), and resident engineer (7.4%).

DATA ANALYSIS

This stage prepares the basic data processing to transform collected primary data into information, which suitable for the analysis. For the descriptive analysis, based on the data collected from the questionnaire, the mean score are between 2.50 to 3.49. Description below shows the interpretation of overall mean score.

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TABLE 1. Mean Value for Descriptive Research

Mean Value	Description
1.00 to 1.49	Practitioners do not agree with the application of reuse and recycle in local construction industry
1.50 to 2.49	Practitioners neutral with the application of reuse and recycle in local construction industry
2.50 to 3.49	Practitioners agreed with the application of reuse and recycle in local construction industry
3.50 to 4.00	Practitioners strongly agreed with the application of reuse and recycle in local construction industry

Based on the mean value (3.877), in terms of management, respondents indicated that they strongly agreed with the implementation of the reduce and reuse make them obtain benefits in terms of cost, time and efficiency in their construction projects. In terms of implementation of the reduce and reuse within the organization, respondents said that they agreed that they had practiced both of these methods with a mean of 2.977. From the data analysis, more than half of the respondents (62.8%) mentioned that their company is involved with the management policy of reuse and recycling. While 37.2% of the contractors do not have a policy in the reuse and recycling of waste at the construction site.

TABLE 2. Mean Value

Section	Independent Variables	Mean
B	Management	3.877
C	Reduce and reuse application in the organization	2.977
D	Reduce and reuse relevant policy	3.845
E	Technology and techniques that are being used	3.676
F	Awareness of other relevant stakeholders related to reduce and reuse	3.004
G	Reuse and reduce Audit Assessment	2.620

CONCLUSION

Many studies in the past stated that developing countries still face difficulties in improving the implementation of waste management in the construction industry mainly involves reduce and reuse. However, as a developing country, Malaysia currently has improve its waste management practices in the construction industry. This improvement due to the collaboration of all parties as well as the increased of awareness by all stakeholders involved. In addition, the efforts of the authorities are seen very well in raising awareness of all stakeholders in the construction industry to drive the country moving towards sustainable development.

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