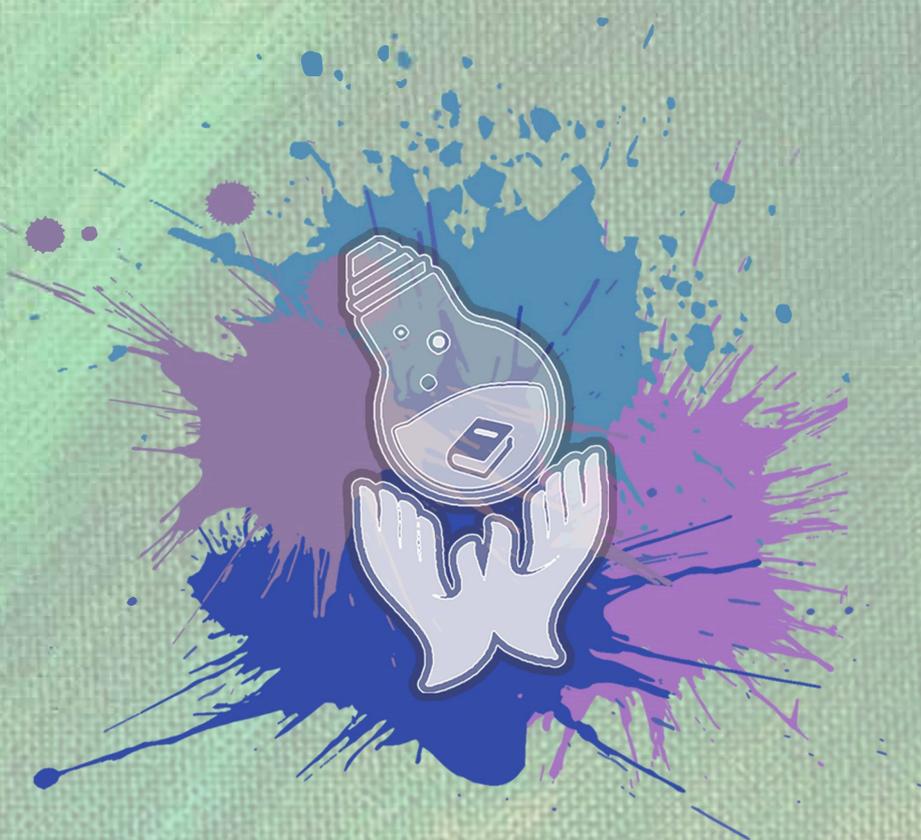




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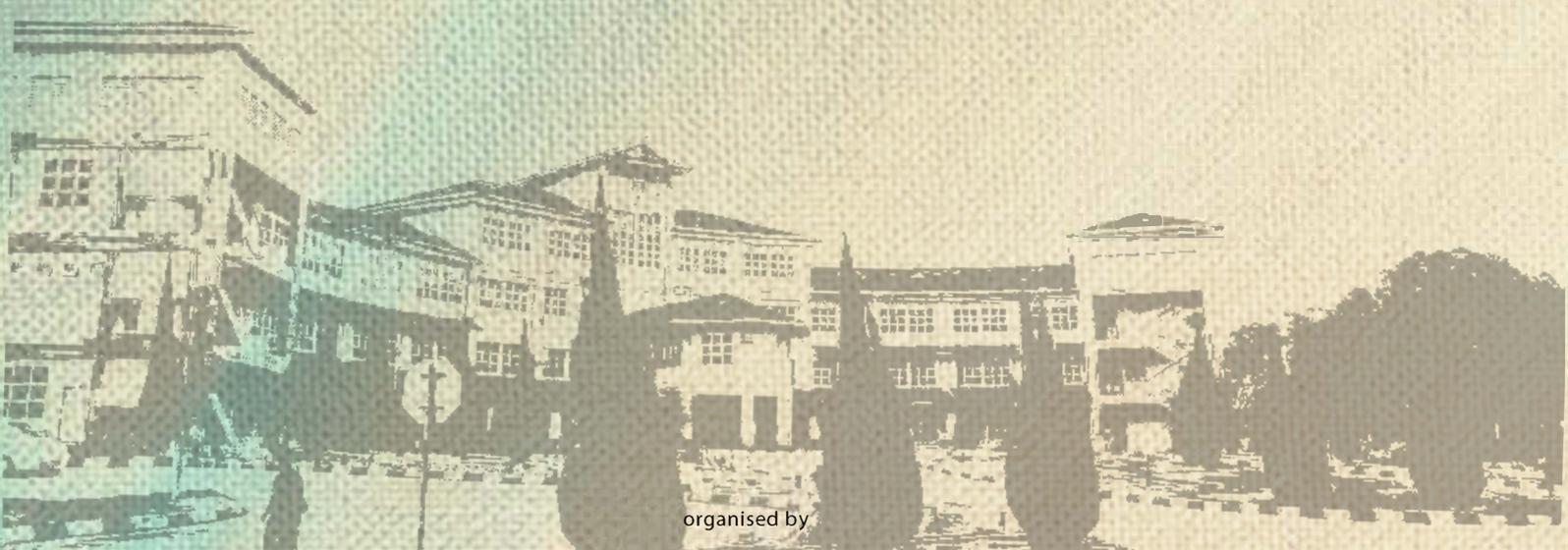


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AWARENESS LEVEL OF CONTRACTORS IN PERAK TOWARDS THE SUSTAINABLE PRACTICE OF CONSTRUCTION WASTE ON SITE

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Abstract:

Nowadays, construction waste management in construction industry has become very demanding in Malaysia. As the construction waste produced by the construction activities are increasing on landfill, this problem may lead to shorter the life span of landfill. Waste reduction through Reduce, Reuse and Recycle (3R) practices have been encouraged in construction industry towards sustainable waste management since couple of decades ago. However, waste reduction through 3R are still at its infancy in construction industry. The aim of this study is to recommend ways to improve contractors' awareness towards sustainable practice on site. The findings reported are based on feedbacks from construction contractors in Perak. Based on questionnaire surveys, recommendations identified are form specific law, organize awareness campaign, enforce the legislations, organize training sessions and provide guidelines. Therefore, these recommendations should be held by local authorities in order to improve the level of awareness of contractors towards sustainable practice on site.

Keywords:

Construction waste; Awareness of contractors; Sustainable practice

1.0 INTRODUCTION

According to Noor and Wrohayu, (2015), construction waste is a material of waste or excess building materials that are not used either in the original or debris from construction, structural repair, and improvement work, house demolishing, buildings and other structures. National Solid Waste Management Department (2012) stated solid waste reduction through 3R is one of the thrusts of National Solid Waste Management (SWM) Policy. The 3R approach refers to reduction, reuse, and recycling, which is a three classification of waste management strategies (Yuan, et al, 2011) and waste resources will be fully utilized before it is send to disposal (Hezri 2010).

As mentioned by Sasitharan et al, (2012), dumping of waste at illegal dumping sites is a common practice in Malaysia and this matter are not be taken seriously. Effective construction waste management can reduce the risk of environmental issues and make the construction operation more resource-efficient. However, lack of communication and discussion between contractors and workers could lead to misunderstanding and the generation of more waste.

2.0 LITERATURE REVIEW

2.1 Construction waste

According to Wang (2010), waste is defined as a substance or object which is disposed of or is intended for disposal or is required to be disposed of by the provisions of laws. All the construction waste was generated by human activities will contribute to the environmental problems, (Seow 2016). In Malaysia, construction waste generation is becoming an important issue. According to Begum et al, (2010), the high quantity of construction waste generated in the country is due to the rapid development of the construction industry. From the same authors, they studied the economic feasibility of waste minimization in Malaysian construction project and concluded that by adopting waste minimization strategy like recycling and reusing material can save 2.5% of the total budget.

2.2 Awareness of contractors

The factors of contributing waste are the serious lack of awareness and attention amongst management and supervisory staff concerning the utilization of materials and equipment, and inaccurate scheduling, accounting, packaging, delivery and improper storage of materials (Siti et al, 2010). Other related factor that caused the production of waste which occur in stages that precede production, such as inadequate design, lack of planning, and flaws in the material supply system (Soibelman, 1993). Lee et al, (2018) concluded that most contractors tend to take a simpler approach. For example, the contractors manage the waste without recycling unless it is enforced by law.

2.2 Sustainable practices

Sustainable practices in this research study is refers to the method of managing the construction waste towards environment sustainability by implement the 3R which are re-use, re-duce and re-cycle. Unlike the traditional method for managing construction waste is to dispose of waste at a disposal site, or to burn or bury them, Lee et al, (2018). According to Ahmad et al, (2004), a study conducted at 30 construction sites in Malaysia identified six types of waste materials which includes concrete (12.32%), metals (9.62%), bricks (6.54%), plastics (0.43%), timber (69.10%) and other wastes (2%). Based on a study, none of the interviewed contractors have targets with regards to waste management on site, which shows that contractors still lack knowledge and awareness on encouraging sustainable practices, (Effie et al, 2014). Hence, contractors should be aware in this matter and adopt a systematic and efficient waste management strategy which would minimize the generation of waste. In addition, the advanced techniques that can help in reducing waste at source and can minimized the waste produced during the operation by re-using and re-cycling.

3.0 METHODOLOGY

In this study, non-probability method which is purposive sampling is used to determine the sample of the contractors. The technique used is to select a specific sample in a large group. In this study, total of contractors in Perak that registered with CIDB are 4118 and the sample selected are all contractors in Perak that manage the construction waste on site. Quantitative approach is used in this study. A total of 150 questionnaires were distributed to construction contractors in Perak and about 73 questionnaires received from the contractors. The questionnaires were distributed via face-to-face and using online method. The data is analysed in descriptive analysis presentation involving frequency, percentage and mean rank by using Statistical Package for Social Science (SPSS) software version 23.0.

4.0 ANALYSIS AND FINDINGS

Table 1: Rank order of the poor level awareness of the contractor
AWARENESS LEVEL OF CONTRACTORS (Percentage%)

	Poor	Average	Good	Excellent	Mean	Rank
Apply in recycle waste practice on site	22	47	25	6	3.53	1
Make sure the waste sent to provided landfill	18	47	21	14	3.47	2
Participation 3R program	15	38	27	20	3.36	3
Technology in waste management	7	25	41	27	3.27	4
Waste management is applicable on site	3	20	45	32	3.23	5

Table 1 shows the highest mean for the awareness level with 3.53 is the contractors apply the recycle waste practice on site. 22% of the contractors are poor in applying recycle waste on site and 47% are in the average where they seldomly recycle the waste on site. Based on the findings, the data of mean value for the poor level of awareness of the contractors is being measured to meet the objective. The mean for the value recorded for the level awareness of contractors is 3.37.

Table 2: Strategies to Improve Awareness of Contractors

IMPROVE AWARENESS OF CONTRACTORS	AUTHOR(S) /SOURCES
Develop specific law for sustainable waste management on site	Moh and Manaf (2014) Rodriguez et al, (2007)
Organize awareness campaign	Lee et al, (2018)
Enforcement the legislation for sustainable practice on site	Yacob et al, (2013)
Organizing training sessions	Florence and Dinh (2013)
Local Authority and CIDB Malaysia should propose guidelines for contractors.	Lee et al, (2018)

Table 2 shows the strategies that are recommended by the previous researchers to improve the level awareness of the contractors.

5.0 CONCLUSION

The weakness in managing construction waste reduction through sustainable practices including 3R (reduce, recycle, re-use) among contractors is because of the limited awareness of the contractors. Through this research, it is proved that the contractors are poor in apply the recycle waste practice on site, make sure the waste sent to the provided landfill and participation in 3R (reduce, recycle, re-use) program. The strategies to improve contractors' awareness are develop specific law for sustainable waste management on site, organize awareness campaign, enforcement the legislations, organize training sessions and propose guideline for contractors. Thus, governing bodies need to emphasize enforcement by charge the contractors in a huge amount if they failed to apply the recycle practice and waste management on site. Apart from that, local authority and CIDB have to take the responsibility in order to accomplish the strategies to enhance the contractor's knowledge and also important for the contractors to participate in all programs and improve their performance in managing the construction waste.

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