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Barriers and Motivation of the Solid Waste Management among Manufacturing
Companies in Malaysia

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Barriers and Motivation of the Solid Waste Management among Manufacturing
Companies in Malaysia

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Report submitted in fulfilment of the requirement for the degree of Bachelor of
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DECLARATION OF ORIGINAL WORK

I, NAJIAH ATIRA BINTI ABD RAHMAN

“I hereby declare that the work of this exercise is mine except for the quotations and summaries that have been duly acknowledge.”

Signature :

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Date :

DEDICATION

I dedicate this thesis to my family especially to my lovely mother, Puan Sawiah Binti Osman, who constantly support and always give source of aspiration in my studies. My lecturer at UTeM especially for my supervisor Puan Nor Ratna Binti Masrom, friends and those people who have guided and inspired me throughout my journey of education.

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ABSTRACT

Solid waste management refers to the process of production, storage, source separation, collection, transportation, processing, recycling and disposal of both organic and inorganic solid waste. The objective of this study are (1) to analyse the practice of solid waste management that implemented by manufacturing company, (2) to investigate the barriers in manufacturing company to implement solid waste management effectively and (3) to identify a factor that can be the catalyst to execution solid waste management in manufacturing company. As a solid waste management in manufacturing company in Malaysia, this research is an exploratory and qualitative method. The qualitative method through semi-structured interview method with five respondents and the location of this study conduct at Malacca. Other than that, in this research also using the observation of the manufacturing company area in Malacca. After interview session with the five respondents. The researcher found that two type of solid waste management practice that implement by the manufacturing company in Malaysia. There six factor of barriers of the solid waste management among manufacturing company in Malaysia and six factor of the motivation solid waste management among manufacturing in Malaysia. In this research, two there new finding that has been founded which is size of the company had an impact on the barriers and motivation of solid waste management among manufacturing company in Malaysia. Second, maintenance factor are one of the barriers to manufacturing company to implement solid waste management. The recommendations for future research is the researcher need explore the solution of the awareness problem in the society about environmental issue.

Keyword: Solid waste management, practice, barriers, motivation

ABSTRAK

Pengurusan sisa pepejal merujuk kepada proses pengeluaran, penyimpanan, pengasingan sumber, pemungutan, pengangkutan, pemprosesan, kitar semula dan pelupusan kedua-dua sisa pepejal organik dan bukan organik. Objektif kajian ini ialah (1) untuk menganalisis amalan pengurusan sisa pepejal yang telah dilaksanakan oleh syarikat pembuatan, (2) untuk menyiasat halangan syarikat pembuatan untuk melaksanakan pengurusan sisa pepejal yang efektif dan (3) untuk mengenal pasti faktor yang menjadi pemangkin untuk melaksanakan pengurusan sisa pepejal di dalam syarikat pembuatan. Sebagai pengurusan sisa pepejal dalam syarikat pembuatan di Malaysia, kajian ini merupakan kaedah penerokaan dan kualitatif. Kaedah kualitatif melalui kaedah temu bual separa berstruktur dengan lima orang responden dan lokasi kajian ini dijalankan di Melaka. Di samping itu, dalam kajian ini juga menggunakan kaedah pemerhatian kawasan syarikat pembuatan di Melaka. Selepas sesi temu bual dijalankan dengan lima orang responden. Penyelidik mendapati bahawa dua jenis amalan pengurusan sisa pepejal yang telah dilaksanakan oleh syarikat pembuatan di Malaysia. Terdapat enam faktor halangan dalam pengurusan sisa pepejal di kalangan syarikat pembuatan di Malaysia dan enam faktor motivasi pengurusan sisa pepejal di dalam kalangan syarikat pembuatan di Malaysia. Dalam kajian ini, terdapat dua penemuan baru iaitu saiz syarikat boleh memberi kesan kepada halangan dan motivasi pengurusan sisa pepejal di dalam kalangan syarikat pembuatan di Malaysia. Kedua, faktor penyelenggaraan adalah salah satu halangan syarikat pembuatan untuk melaksanakan pengurusan sisa pepejal. Cadangan untuk penyelidikan masa depan adalah penyelidik perlu meneroka penyelesaian masalah kesedaran dalam masyarakat tentang isu dalam sekitar.

Kata Kunci: Pengurusan sisa pepejal, amalan, halangan, motivasi

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

The increase of solid waste is a big problem faced by global. This was due because of the increase in the population of Malaysia at the rate of 2.4% or 600, 000 people on yearly basis. This has also led to an increase in Malaysia industry to fulfil need and waste of the Malaysia population. According to Jalil (2010), solid waste produced from both industrial and household sector in the capital of Malaysia was 3500 metric ton each day (Mallak *et al*, 2014). Solid waste can be categorized into eight categories which are imported solid waste, commercial waste, garden waste, construction and demolition waste, household waste, industrial waste, institutional solid waste, public solid waste and solid waste may be prescribed from time to time (Abd Hamid *et al*, 2015). This proves that the industry is also one of the major contributors to increasing of solid waste in Malaysia. The quantities and type of industrial waste usually depend on the characteristic of industrial activity.

If solid waste management is not well-managed, it can cause pollution, resource degradation and health problem for humans and animals (Abd Hamid *et al*, 2015). Example of environmental impacts is the loss of recreational facilities, damage or loss of biodiversity, air, water, land and noise pollution, loss of aesthetic landscapes and scenery and burst hazards (Abd Hamid *et al*, 2015). To solve this problem, the government implements a landfill and recycling method of solid waste generated. However, the landfill method also has problems and weakness such as difficult to implement and it cause environmental pollution. Meanwhile, recycling method is difficult to implement because not all waste can be recycled. The implementation of solid waste management in manufacturing companies can help the government effort to reduce industrial solid waste problem. This is because effective waste management within the company can contribute to minimize and control the solid waste generated by manufacturing companies

1.2 Problem Statement

Malaysia has experienced the increase of solid waste. In 2012, Malaysians generated 33,000 tonnes of solid waste daily and will exceed the projected production of 30,000 tonnes by 2020 (Wahidah and Ghafar, 2017). According to Moh and Abd Manaf (2014), the overall waste composition in Malaysia is monopolized by municipal solid waste (MSW) (64%), followed by industrial waste (25%), commercial waste (8%) and construction waste (3%) (Wahidah and Ghafar, 2017). In Asia, the management of waste material has needed immediate attention especially in countries such as China, Malaysia and South Korea which have been categorized as emerging industrialized country (Badgie *et al.*, 2012). This can be proved that industrial waste is one of the contributors to increased waste in Malaysia. Malaysia is a developing country also face problem in an aspect of technology, manpower, land scarcity and lack of infrastructure to accommodate and manage the increase of waste (Badgie *et al.*, 2012). This problem is expected to increase in a few years while corresponding to economic development, population growth, and urbanization as Malaysia's population

is expected to achieve 33.4 million by the year 2020 and 37.4 million by the year 2030 (Wahidah and Ghafar, 2017).

The government uses landfill as the method of waste disposal (80% usage) in Malaysia (Wahidah and Ghafar, 2017). The solid wastes will send to landfill sites for disposal in Malaysia are the mixture of industrial and municipal solid wastes which include plastic, textile, iron, food wastes, metal, glass, rubber, cardboard, paper, aluminium and miscellaneous (Agamuthu & Fauziah, 2011; Desa et al., 2011; Saeed et al., 2009) (Mallak *et al*, 2014). Ali (2009) saw that Malaysia has about 289 landfills out of which only 7 are sanitary landfills. There are 95% of waste is sent to landfill sites and most of this is dumped in sites that are open areas without proper control (Mallak *et al*, 2014). However, this method also has its own problems and weakness such as difficulty to implement and can cause environmental pollution. This is because, landfill method brings to a various environmental problem such as leachate, groundwater, contamination, the potential release of toxic gas and odor (Wahidah and Ghafar, 2017). Most landfills in Malaysia are in bad conditions and operated without proper protective measures, such as lining systems, leachate treatment and gas venting (Ismail & Manaf, 2013) (Wahidah and Ghafar, 2017). To solve the problem, it is responsibility for Malaysian to implement solid waste management including manufacturers. Therefore this research is to explore the implementation of solid waste management in their company.

1.3 Research Question

Research question has been constructed to assist the researcher to achieve research objective and also research question that needs to be answered.

1. What is the practice of solid waste management that implemented by manufacturing company
2. What is the factor of barriers faced by manufacturing companies to implement solid waste management?
3. What is the motivation that influenced manufacturing company to implement solid waste management effectively?

1.4 Research Objective

To achieve objective of the study, the researcher should list down the objective of the study based on the requirement of the study:

1. To analyse the practice of solid waste management that implemented by manufacturing company.
2. To investigate the barriers in manufacturing company to implement solid waste management effectively.
3. To identify factor that can be the catalyst to execution solid waste management in manufacturing company.

1.5 The Purpose of Study

The purpose of this study is to examine implementation of solid waste management among manufacturing company in Malaysia and the factors of barriers among manufacturing companies to implement waste management in their organization and operation. The study also about motivation that influence manufacture to implement solid waste management effectively in their company.

1.6 Scope, Limitation and Key Assumption

1.6.1 Scope

The scope of the study is focusing on the implementation of solid waste management in manufacturing company in Malaysia. This study was conducted at entire Malacca. The researcher will make a case studies on this research by using the interview method to five manufacturing companies. Next, the researcher could collect the data from respondents who have knowledge of waste management at their company. This can help the researcher to know the significant type of solid waste management practice, factor of barriers and motivation that influence the solid waste

management in manufacturing company. This is because manufacturing companies were among the contributors to increasing solid waste in Malaysia.

1.6.2 Limitation

The limitation of the study is the obstacle faced by the researcher to gain the accurate data. The obstacle of study is the researcher have limited time to collect data from the respondents. Next, the research also difficult to find the suitable respondent that know about this topic. This is because not of all respondent easier to tolerance when want to get the feedback about this study. Moreover, this topic only cover about industrial solid waste in the context of solid waste management except for commercial solid waste, construction solid waste, household solid waste, institutional solid waste, imported solid waste and public solid waste.

1.6.3 Key Assumption

The researcher assumes that respondents provided that data about this study with an honest answer. This will cause the collected data is inaccurate under actual circumstances. Other than that, the researcher also needs assume the respondent knows about this topic. Sometimes the respondents only know basic of knowledge about this topic. This situation can cause the researcher do not gain accurate data regarding this study.

1.7 Research Significant

The importance of this research is to explore the implementation of solid waste management in manufacturing company and to provide exposure to manufacturing companies in Malaysia regarding barriers faced by the manufacturing company in implementing waste management effectively. Next, the factor of motivation that influences the manufacturing company to implement solid waste management in their company. Additionally, this study can also raise awareness among manufacturing companies about the increasing of solid waste in Malaysia can cause environmental pollution and health problem among humans and animals. This study is expected to help manufacturing companies to organize strategies to reducing the increment of solid waste in Malaysia.

1.8 Summary

There are several type of solid waste management practice, factors of barriers and motivation of solid waste management among manufacture companies found by the researcher. This research can provide exposure to new entry companies on the implementation of solid waste management in their company. In addition, waste management is also the one of method to reduce solid industrial waste in Malaysia. This study scope only focuses on manufacturing companies in entire Malacca.

THE CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter illustrate and explain the past study of implementation of solid waste management among manufacturing company in Malaysia. The purpose of this literature review is to figure out the practice of solid waste management, factor of barriers and motivation faced by manufacturing companies to implement solid waste management. In this chapter, the researcher will discuss past studies related to practice, barriers and motivation about solid waste management among manufacturing companies. In the context of the study, the researcher focuses only on industrial solid waste.

According to the bibliometric produced shows in 2017 is the highest production of solid waste management journals where 19 journals have been produced in that year. The first ranking of the country is India because 19 journals have been produced within 9 years from 2010 until 2018.

2.2 Waste

Williams (1998) stated that waste is an unavoidable by-product of human activities (Eusuf *et al.*, 2011). Waste refers to any material or product that has been considered useless by the owner and needs to be discarded or has been throwing away (Mugambi, 2017). In addition, waste also is disposition item that is spoilt, degraded, expended or simply no longer uses to the owner (Programme, 2008). Waste in accordance with 'Basel Convention' is a material of object disposed or intended for disposal or is required by the disposal of national laws. Wastes may be generated during the extraction of raw material, processing of raw materials to middle or final product and other human activities (Faizal, Fatimah & Armi, 2014).

2.2.1 Solid Waste Management

In the context of this research, the researcher only focuses on solid waste management in manufacturing companies. Solid waste management is associated with the control of production, storage, collection, transfer and transport and finally disposal of various solid waste (Eusuf *et al.*, 2011). Based on Kreith (2008), solid waste management refers to the process of production, storage, source separation, collection, transportation, processing, recycling and disposal of both organic and inorganic solid waste (Mugambi, 2017). Tchobanoglous et al (1993) categorize that there are two types of solid waste which are solid waste organic and solid waste inorganic. Organic solid waste is a waste materials that can be burned and decomposed. For example, waste of food, paper and cardboard (Afrizal, 2016). Whereas, inorganic solid waste is non-combustible and decomposed by microorganisms because it has a long and complex carbon chain (Afrizal, 2016). For example, glass, iron, and aluminium. Other than that, this material also can be reconditioned, reused and recycled (Afrizal, 2016). The objective of solid waste management is to improve waste minimization strategy and control (Sreenivasan *et al.*, 2012). According to Birute (2012), solid waste is any organic or inorganic materials generated from various human activities which have been considered unwanted or useful therefore disposed will be treated or untreated (Mugambi, 2017).