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Recycling Practices among Halal Food Producers

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ABSTRACT

Nowadays, the increasing issues of environmental problem which caused by industrial is getting serious. The seriousness of this issue has triggered the action towards implementing sustainable working practices. Among all those practices that can be implemented in the industrial is through recycling practices. However, lack of awareness in industrial landscaped towards recycling practices which led to ignorance. It is a concerned to predict the reason behind ignorance towards recycling practices and spotted the factors that can be highlighted to implemented successful recycling practices at the workplace especially among halal food producer. High demand on halal food supplies all over the world has led Malaysia to become one of the most prominent halal food supplies. The increasing number of food producer become concerns when the issue of waste management is raised. The call for sustainable working practices requires the commitment not only from manager, but also other staff member to ensure the effectiveness of recycling practices. This study is inspired to examine the relationship between motivator, barrier and sustainable attitude towards recycling behavior among Halal Food Producer. Towards the end of this study, the research model is aim to assist from managerial perspective towards implementing recycling practices.

INTRODUCTION

This 21st century was an era of industrialization whereby manufacturing of large quantity of consumer goods, the factory system and demand for different products, the advancement of technology (Shaikh, 2010), put lot of pressure waste generation issue. Recently, Malaysia is known as one of the industrialized countries, whereby the economy mainly depends on the Small and Medium (SME) sector (Tehrani & Manap, 2014). In recent years, environment sustainable practices is among the vital management issues faced by SMEs generally due to the growing awareness in environmental matters among owners/managers, consumers, governments, social groups and employees (Yacob & Munusamy, 2014).

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Malaysia is trying its best to solve the basic problem of municipal solid waste management only and finding the most environmentally friendly solutions which are acceptable by the public. Normally, the most expensive part of waste management is to set up highly advanced facility for recycling, recovery and safe disposal. Meanwhile the least cost is waste prevention and reuse respectively (Abdul Hamid *et al*., 2012). Nevertheless, the most difficult part to implement as it involves more human participation compared to the advanced facility of waste management, waste prevention and reuse. Human attitude and behavior has always been the most difficult part to make change on people's waste prevention habits (Cox *et al*., 2010).

It is undoubtedly that the most difficult part of waste management in Malaysia is to apply waste prevention and reuse to all Malaysians (Abdul Hamid *et al*., 2012). In this light, it is important that recycling behavior strategies followed by SMEs food producer are studied in detail. Mostly, SMEs face problems including finance, technology, lack of knowledge, organizational culture and internal motive in implementing sustainable practices (Pimenova &Van Der Vorst, 2004; Biondi *et al*., 2002; Van Hemel & Cramer, 2002). In the process of achieving recycling practices in the industries, it requires the cooperation of every waste management practitioners involved with suitable method or technology used. In short, a practice in applying recycling practices system has to be integrated into all the industries thus building a promising future (Tey *et al*., 2013).

This paper lists some of the major factors that affect SME food producer in enhancing recycling behavior. The major factors are financial strength, technological expertise, availability of information, policies and legislation, consumer pressures and organizational culture. Based on the barriers and motivators of sustainable practices, a model proposed by Natarajan and Wyrick (2011) was adapted to this study. The model was proposed on how recycling practices is a balance of motivators and barriers. Thus, this paper revises the literature dealing with sustainability in SMEs in Malaysia. By replicating the four forces model of motivators and barriers by Natarajan and Wyrick (2011), this study extend the research to help motivate sustainable practices among SMEs Food Producer in Malaysia. As a result, the purpose of this study is to find out the motivators and barriers that balanced the action of recycling behavior as part of the effort to go for sustainable work practices among employees in SME landscape.

Literature Review:

2.1 Industrial Waste Management Practices in Malaysia:

Industrial waste management in Malaysia has become an important activity that goes along with industrialization process. Previously, most of the industrial in Malaysia was ignore the environmental concerns. However, on 1960s, the Government takes the initiative to focus on environmental concerns among industrialization by introducing the industries treated waste through end-of-pipe solutions controlled by pollution standard. Essentially, the environmental concerns become the national issues that need full commitment especially by industry key people in order to ensure sustainability of industries.

The current practice in managing industrial wastes in Malaysia still maintains "end-of-pipe" approach, focusing on treatment and disposals. This system promotes illegal dumping and increased incidents of environmental degradation. Therefore, legislative framework in managing industrial waste has been established to ensure that industrial waste will be managed better. However, there is no working industrial waste definition available in Malaysia. Hence, in managing industrial waste, it is conducted based on sectoral legislative structures, which focus on type and generator of wastes. The solid wastes generated by industries were non-hazardous waste. Its management falls under the jurisdiction of Local Government Act 1976, Street, Drainage and Building Act 1974 and Town and Country Planning Act. Specific definition of industrial solid waste is not available under the Local Government Act 1976. The key stakeholder in managing solid waste generated by industry were the Ministry of Housing and Local Governments, Department of Local Government, solid wastes contractors companies, industry and solid wastes recyclers. The government agencies lead by the Ministry of Housing and Local Government provide important legislative and guideline in managing industrial waste. This includes how to recycle, treat and disposed the industrial solid wastes. The Local Government Act 1976 provide important legislative and technical requirements as a guide for the local government, waste generator, waste operator, waste recycler and disposal sites operator in conducting daily operation in managing industrial wastes.

Due to the increasing of industrial waste generation and complexity in managing solid wastes, the Malaysian government established the Department of National Solid Waste Management (DNSWM) in 2007, to ensure effective and sustainability in managing solid waste which includes industrial solid waste. DNSWM role was to implement the National Strategic Plan for Solid Waste Management. The policy implementation was supported by legislative tool, the Solid Waste and Public Cleansing Management Act 2007.

2.2 Environmental Impact of Food Manufacturing:

Each year, millions of tons food wastes are being disposed into the environment. The global municipal solid waste generation in 1997 was nearly 0.5 billion tons and the growth trend is 2-3 % for the developing countries (Abd. Manaf *et al*., 2009). In Malaysia, it was reported that up to 5677 tons per day of municipal solid waste materials were generated in the major cities for instance Kuala Lumpur (3100 tons per day), Melaka (632 tons

per day), and Klang (538 tons per day). From the total of municipal solid waste, 44.8 % was organic (Abdul Jalil, 2010). The typical types and composition of waste generated in Malaysia is summarized in Table below (Sivalapan *et al*., 2002; Abdul Jalil 2010)

Table 1: Waste types and composition (%)

No	Types	Kuala Lumpur (Year 2000)	Malaysia (Year 2005)
1.	Organic	68.67	44.8
2.	Paper	6.43	16.0
3.	Plastic	11.45	15.0
4.	Glass	1.41	3.0
5.	Metal	2.71	3.3
6.	Textile	1.50	2.8
7.	Wood	0.70	6.7
8.	Others	7.31	8.4

One of the main issues of the 21st century is the management of municipal solid waste especially in the developing countries. In Malaysia, the total estimated municipal solid waste generation was only 6 million tons in 1998, however it had increased more than 8 million tons in 2010 and by 2020 the amount was estimated to be nearly 10 million tons (Johari *et al*., 2012). Hence, the country needs urgent measures to appropriately manage the waste especially the high value organic fractions (Sulaiman *et al*., 2014).

2.3 Hypothesis development:

2.3.1 Relationship between motivator factors and recycling behavior:

Research by Massoud *et al*., (2010) has found that the organizational factors are the most significant incentives required to motivate employees to adopt environmental management system within the organization. Their study also emphasize on the need of government assistance and also the need of regulation to ensure the successful recycling participation. Study by Raja Ghazilla *et al*., (2015) also encourage seeking for motivation towards green manufacturing practices. Their research has found that the most significant motivation to implemented green manufacturing practices is to improved organizational culture and strategy. Research by Mallak *et al*., (2015) revealed that improvement in internal monitoring within the organization has the higher effectiveness in practicing waste minimization. Apart from that, their research also revealed that the respondent's perception toward approaches regarding awareness, encouragement and cooperation were found significantly impacted waste minimization in the organization.

2.3.2 Relationship between barrier factors and recycling behavior:

Study by Raja Ghazilla *et al*. (2015) revealed that the top critical barriers which hinder the implementation of green manufacturing process are weak organizational structure and inadequate research and development (R&D). From their view, SMEs are primarily focuses on daily business operations and exhibit the tendency to respond only to critical situations. Their study reflects the need of knowledge and sufficient knowledge that explains the beneficial of sustainable work practices in the organization. Their study also revealed the need of structured environmental management by hiring expertise in controlling waste minimization within the organization as a whole.

2.3.3 Relationship between sustainable attitude and recycling behavior:

Understanding individuals' waste recycling attitudes and behavior, therefore, has been identified by waste management practitioners and academics as an effective strategy in addressing the issues of waste production (Oke, 2015). Numerous studies have been conducted on recycling behavior including the effect of knowledge and attitude on recycling (Vining and Ebreo 1990; Oskamp *et al*., 1991; Ebreo and Vining, 2001; Akil & Ho, 2014). Study by Oke (2015) showed that attitude towards workplace waste recycling behavior defines a social actor's feelings (positive and negative) towards behavior and is determined by individual's evaluation of the target behavior (Ajzen, 1991; Ajzen, 2002).

Theoretical framework:

3.1 Motivators:

Motivating factors are conceived to be factors that could activate and/or influence individual's conscious a deliberate decisions to recycle. Oke (2015) suggests that some of the predicting factors may also motivate an individual to engage in waste recycling scheme. These factors are observed to form a bridge between predicting factors and barriers to waste recycling behaviors. As identified from the reviewed studies, these factors include internal motivators and external motivators (Natarajan & Wyrick, 2011). Whilst most of these factors are mainly extraneous in nature, the endurance of such internal and external factors in reinforcing recycling behaviors over a long period of time is another challenge.

3.2 Barriers:

Behavioral barriers are conceived to be factors that could prevent social actors from participating effectively in waste recycling. Different authors have identified and established various factors that may inhibit waste recycling behaviors in their studies (Oke, 2015). According to this study, most of these factors are attributed to the effects of situational factors (Oke, 2015). These factors include internal barriers and external barriers (Natarajan & Wyrick, 2011). As a result, any intervention approach aiming at enhancing recycling should be designed to remove/reduce recycling barriers in order to be effective. Notwithstanding, to practically reduce recycling barriers, conflicts in situational factors should be addressed through strategic recycling design (Oke, 2015).

3.3 Sustainable Attitude:

Ajzen (1991) described attitude as "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question". A person could possess positive attitude or negative attitude towards certain thing which affect's one's intention. Sustainable attitudes and behaviors are considered positive dispositions toward practicing, in daily life, actions that demonstrate care for the environment and the needs of present and future generations such as recycling (Zain *et al*., 2012). It was found as a factor that influenced behavioral intention in Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB). In addition previous study also suggests that attitude was also a solid factor in affecting pro-environment intention (Tonglet *et al*., 2004). Thus, individual's attitude affected a person's propensity to perform a particular behavior.

3.4 Recycling Behavior:

According to Ministry of Housing and Local Government (2012), Malaysia still low in the recycling rate (5%) compared to developed countries like German (74%), Belgium (71%), Austria (67%) and Netherland (66%). As mentioned by Mavropoulos (2009), recycling behavior is defined as "enclosed by situational conditions, social-environmental values and personal attitude". Referring to Mavropoulos (2009), it depicted that the problems may derived from the three set of barriers identified by Nixon and Saphores (2009) which are individuality, responsibility and practicality.

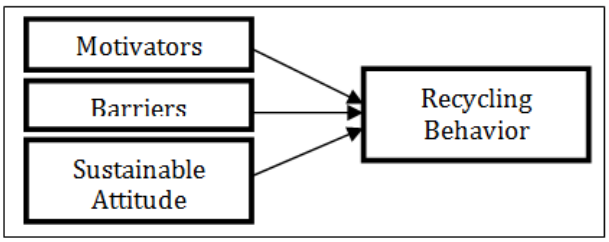

Fig. 1: Research Framework

Methodology:

4.1 Measures:

Research items used in this study were developed by considering prior studies with similar concepts and was measured using a 5 likert scale with items ranging from "strongly disagree" to "strongly agree". This study introduced three variables to investigate recycling behavior among Halal Food Producer: Motivator Factor, Barrier Factor and Sustainable Attitude. These variables were measured by using previous empirical studies (Natarajan & Wyrick, 2011; Van Hemel & Cramer, 2002; Tsaur, 2014; Oke, 2015; Raja Ghazilla *et al*., 2015; Massoud *et al*., 2010).

This study also introduced Sustainable Attitude as a third variable to examine the relationship towards recycling behavior. The measures were developed by revising the instruments of Koe, Omar and Sa'ari (2009). Finally, the survey instrument to measure the recycling behavior were derived from Black, Stern and Elworth (1985), Kallgren and Wood (1986) and Martin and Siminitras (1995).

4.2 Data collection and sample characteristics:

Pilot study was conducted before the main survey. First, the initial version of the questionnaire was pre-tested by staff members in SME Food Producer in order to improve the content and construct validities. The population of this study was the SMEs Food Manufacturing and the sample was selected using stratified sampling method. The selected SMEs were represented by their owner-managers and staff members. A total of 100 questionnaires were distributed and only 69 responses were successfully collected. Therefore, this paper obtained a response rate of 69% with 69 usable responses. The demographic profiles of the respondents are respected to respondent's age, gender, tenurement and education background from the staff member in Halal

Food Producer in Malaysia. Most of the respondents are represented by male 57.1% with the range of age between 20-30 years old for 60%. Most of them are having their tertiary education which is degree level. 40% of them have been working for more than 7 years.

Four major Food Producers in Malaysia were selected based on Malaysia Halal Directory in Malaysia External Trade Development Corporation (MATRADE) that represent the Malaysian Halal Food Producer. The research model and variables were refined using results from the pilot testing results and reliability testing and convergent validity results were reported in Table 2. For the main survey, 200 questionnaires were distributed to four Halal Food Producers. The process of sampling data for the Halal Food Producer was administered by the owner/manager of the firms to ensure randomness of the samples. Of the 200 distributed surveys, 130 responses were received, representing a 52.6 % response rate. Out of the returned questionnaires, 25 had discarded due to incompleteness and central tendency. Thus, 105 questionnaires could be used in final analysis.

Data analysis and results:

5.1 Reliability and validity of the measures:

This study adopted a two-stage analysis for structural equation modeling in which the measurement model was first estimated. Subsequently, a process much like factor analysis was used, with the measurement model fixed in the second stage when the structural model was estimated (Anderson & Gerbing, 1988). Confirmatory factor analysis was first conducted on each construct independently to validate the scale, since each variable was measured by multi-item constructs. Second, an overall confirmatory factor analysis was conducted on all items. To validate the measurement model, three types of validity were assessed: content validity, convergent validity and discriminant validity of the instrument.

For initial analysis, the value of composite reliability ranged from 0.911 to 0.960 as shown in Table 2. It is higher than the 0.7 threshold commonly used for acceptable reliability. The AVE is ranged from 0.394 to 0.537 as shown in Table 2 while the threshold for acceptable convergent validity is 0.5. It is shows that only Recycling Behavior depicted the appropriate value.

Table 2: Convergent validity

Variable	Average Variance Extracted (AVE)	Composite Reliability	Cronbachs Alpha
Barrier	0.444	0.943	0.936
Motivator	0.406	0.962	0.962
Sustainable Attitude	0.393	0.951	0.947
Recycling Behavior	0.518	0.904	0.883

Next is to assess the outer loadings. A rule of thumb for the outer loadings should be 0.7 and above (Hair *et al*., 2010) and apparently, after the deletion of inappropriate outer loadings value, the AVE value of Barrier Factors, Motivator Factors, Sustainable Attitude and Recycling Behavior are increase as shown in Table 3.

Table 3:

Variable	Average Variance Extracted (AVE)	Composite Reliability	Cronbachs Alpha
Barrier	0.819	0.964	0.956
Motivator	0.616	0.906	0.876
Sustainable Attitude	0.578	0.932	0.922
Recycling Behavior	0.601	0.913	0.888

Finally, discriminant validity was assessed by calculating the square root of the AVE for each construct. The rule of thumb in assessing discriminant validity is the square root of AVE value must be greater than the correlation between all other constructs. Table 4 indicates the square root of AVE value, shows in bolded font. All values are greater than correlation of other constructs.

Table 4: Discriminant Validity

	Barrier	Motivator	Recycling Behavior	Sustainable Attitude
Barrier	0.904			
Motivator	0.646	0.784		
Recycling Behavior	0.200	0.464	0.784	
Sustainable Attitude	0.532	0.641	0.469	0.760

Hypothesis Testing:

Second approach from the two-stage analysis for structural equation modeling is to estimated structural model. Structural model estimation is carried out to specify the relationships between the independent and dependent latent variables (Wong, 2013). The hypothesis testing in PLS is generated using the means of bootstrapping analysis through indicator's weight and loadings. The hypothesis was estimated by calculating the significance of the path coefficient (t-value). A significance level of $p < 0.05$ ($t > 1.96$) was used.

Results in Table 5 indicated that a barrier factors is positively significant related to recycling behavior whereby the t-value is 2.06 at $p < 0.05$ ($t > 1.96$), meanwhile motivator factors is positively influenced the recycling behavior with t-value 3.17 at $p < 0.05$ ($t > 1.96$). Lastly, the sustainable attitude is positively influenced recycling behavior with t- value 3.01 at $p < 0.05$ ($t > 1.96$).

Table 5: Total Effects (Mean, STDEV & T-values

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/ STERR|)
Barrier -> Recycling Behavior	-0.24	-0.23	0.12	0.12	2.06
Motivator -> Recycling Behavior	0.40	0.41	0.13	0.13	3.17
Sustainable Attitude -> Recycling Behavior	0.34	0.35	0.11	0.11	3.01

Discussion and implication:

This study contributed to the development of the relationship model that encompasses the effect of motivator factors, barrier factors and sustainable attitude towards recycling behavior. By adopting TPB model, the motivator factors, barrier factors and sustainable attitude regarding recycling behavior was evaluated. The model provided a paradigm for understanding recycling behavior and how the organization could be nurtured and managed to ensure the recycling participation among employees within the organization. In determining the factors that influenced recycling behavior, the statistical analyses revealed that motivator factors and sustainable attitude were significantly influenced recycling behavior. However, barrier factors were not influential.

Results indicated that there is significant relationship between barrier factors and recycling behavior. This explains the need of the manager to find the solution towards the factors that discourage recycling participation among employee within organization. Moreover, barrier factors that lead to discouragement of recycling behavior is detected and it's proven to be influential towards cultivating recycling behavior among employees. Essentially, the significant of barrier factors explains the need of an organization to employed experts in order to provide recycling training and information. Hiring expertise become barrier when it is included high cost due to increase in manpower and labor cost. However, this study has proven that the crucial need of expertise to educate employees about recycling practices at the workplace. For a long term, expertise is expected to implement zone cleaning system at the workplace. As a result, each member of the organization would see recycling as part of overall workplace cleanliness, upkeep and job success.

Secondly, results indicated that there is significant relationship between motivation factors and recycling behavior. It translates the need of internal and external attributes to encourage employees to participate in the recycling activity in the organization. In terms of internal motivation, this study has examined the influence of organizational culture towards recycling behavior. The analysis also predicts the necessity of employer to improvise the organizational structure and developed particular position to handle the recycling activity within the organization.

Next, results also indicated that there is significant relationship between sustainable attitude and recycling behavior. Sustainable attitude is plays a major role in influencing the recycling participation among individual in demonstrating care for the environment.

Conclusion and recommendation:

As sustainable work practices have become a commonly accepted and growing practice, its scope and extent are continuously expanding. While the literature on recycling behavior reveals the social and psychological aspects of the recycling behavior, the managerial need to exploit these relationship attributes that has been little explored. The result indicated that motivator factors and sustainable attitude positively influenced the recycling behavior. This study has added to knowledge of the recycling behavior by extending the Theory of Planned Behavior. The resulting framework is useful in providing a better understanding of how to develop a successful recycling behavior among employees from a managerial perspective.

This paper possessed several limitations. For instance, it only examined the direct influences of motivator, barrier and sustainable attitude factors on recycling behavior. However, behavioral intention is a complex process which could take place through several stages. In addition, the industrial landscaped nowadays has gone for unbounded concept which has changed the concept of business. With the development of innovative products and services along with environmental concerns nowadays, it is essentially for the organization to emphasize the sustainability concept within the organization. It is essential not only to conserve the resources but also to gain in organizational image and brand. Thus, future researchers are suggested to expand the research framework by integrating mediating or moderating effects.

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