Exploring Reduce, Recycle and Reuse (3Rs) Awareness, Practice among Oil and Gas Workers and its Influence on Their Productivity

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ABSTRACT

One of the approaches to reduce waste generated is reduce, recycle and reuse (3R) method. The reduction in waste generated or increase in recycling rates reflects the success of both the government and voluntary public participation. Nowadays, developed and developing countries are trying to find out new ways for climate change mitigation and adaptation options. Developing countries like Malaysia must also look for options to lessen the climate change effect and at the same time increase office productivity particularly on the ways the employees managed their supplies, resources and generated waste. This study is conducted on the office employees at Petronas Berhad with regards to how the manage the generated waste. It is aimed to determine the level of employees' awareness and attitude towards 3R and determine its influence on their productivity. It was found that the employees have a high level of awareness on 3R, yet their practices are at the low to moderate levels. The authors believed that this could due to the management's support towards the 3R is not as high as expected by the office employees.

Keywords: Recycle, Reuse, Awareness, Waste Generated, Productivity
JEL Classifications: Q4, Q5

1. BACKGROUND OF STUDY

According to Olson (2008), adopting the green culture in people needs the appropriate tools and training. The awareness of the green environment among employees should be measured on a consistent basis. The concept of green environment in an organization is not widely propagated to the point the employees are not aware of the influence of the environmental awareness toward the productivity.

Moreover, the consequences of the environmental awareness can bring positive impacts towards the employees. Armitage et al. (2011) believed that 100% of Australian employers and employees alike thought that the green building was better than expected with all things considered. They considered that green buildings have much positive impact rather than the non-green buildings. Besides, the productivity of employees is likely to increase as the absenteeism can be reduced due to the conductivity of the work environment.

According to Cole and Fieselman (2013), the benefits from the green environment culture can result in cost, resource and time savings which inevitable create a green office environment. Through the study, the green environment is able to help employees to improve their productivity level.

Agamuthu et al. (2011) suggest that every year about 60% of the allocation given (so far RM70 million or US$18 million) is used to increase awareness among the public on the importance of the reduce, recycle and reuse (3R). Some of the medium

used are posters, pamphlets, bulletins and electronic medium such as television, radio, websites, school buses, light rail transit, billboards, exhibition, carnivals and seminar. According to Agamuthu et al. (2011), based on a survey by the Ministry of Housing and Local Government, there is 100% awareness among the public but only 80% are actually practicing the 3R. One important reason for this is the insufficiency of facilities, including collection centres coupled with the inappropriateness in the location of recycling facilities and the schedule of collection. At present, facilities developed include recycling bins, recycling centers, mobile collection unit (van) and recycling lorry.

The 3Rs principle was established to improve waste management system towards a more sustainable approach and to reduce human ecological footprint. The authors believe that the implementation of 3Rs can boost economic activities, reduce environmental impacts from waste disposal, prevent the loss of resources and lengthen landfills operating life. Though the implementation of 3Rs has been successful in many developed countries, the accomplishment among the developing nation is yet to be seen. Many factors are contributing towards the failure of 3Rs implementation in most developing countries including Malaysia. Among others is the lack of efficient institutional mechanisms in waste management and lack of policy to promote 3Rs. Malaysia launched the first official 3Rs strategies in the late 1980s where the campaigns are focused mainly on the recycling activities. It has initiated the participation of various non-governmental organizations. However, the recycling rate was too low that it did not improve the existing waste management practice.

1.1. Statement of the Problem

The authors observed that implementation of green office environment in an organization in Malaysia has not been fully successful due to the employees' lack of awareness on 3R practices, i.e. some of them are reluctant to follow the policies and procedures. As mentioned earlier, organizations in Malaysia and the government have proposed green environment awareness, i.e. 3R to help the society and people to have a "cleaner" life. In this era of globalization and rapidly changing environment, organizations are clearly facing increase in competition and face regulatory and business pressures. Obviously, the government bodies in Malaysia are providing adequate information regarding green environment issues so as to increase the awareness of and sensitivity towards green environmental issues in organizations. This foregoing discussion leads to the research question regarding 3R awareness, attitude and influence on the productivity among the employees at Petronas Berhad in Petronas Twin Towers, Kuala Lumpur. Petronas Berhad is the biggest Malaysian conglomerate with global businesses and thus is worthy to be researched accordingly.

1.2. Research Questions

The main aim of this research is to answer the following research questions:
1. What are the levels of Green Office Environment awareness and attitude among employees at Petronas Twin Towers, Kuala Lumpur City Centre?
2. What is the relationship between Green Office Environment awareness with employees' productivity?

3. What is the relationship between Green Office Environment attitudes with employees' productivity?

2. AWARENESS OF GREEN OFFICE ENVIRONMENT

According to Harju-Autti et al. (1999), an environmental awareness is a combination of motivation, knowledge and skills. The employees should have the knowledge of green office before they are able to implement the any 3R principle in their work environment. Within the green office, employees are able to experience the environment that comforts them and be productive. Zsolnai (2002) stated that a green business is a business that has adopted the concept of environmentalism across the various functions of the business.

2.1. Attitude

Steve and Noah (2012) indicate attitudes as a reflection of a person's likes and dislikes towards other persons, objects, events and activities in their environment. According to Deal (2011), people at higher level in an organization have higher organizational commitment than employees at the lower level. The attitude of employee mirrors his outcomes which is the productivity level at work. Saari and Judge (2004) stated that employees have different attitudes or viewpoints about many aspects of their jobs, their careers, and their organizations. This explains why employees react differently and could change. With regards to awareness towards the green office, at first the employees might not really care. Then, when they are knowledgeable on the importance of environmental sustainability, they are willing to accept the green office practices. Velnampy (2007) defined that attitudes are the feelings and beliefs that largely determine how employees will perceive their environment, commit themselves to intended actions, and ultimately behave. It is based on the working environment which looks up on what the office has implemented as practice. The practice of green office creates changes in the employee's attitude where it can be either positive or negative. Thus attitudes such as involvement and satisfaction contribute to increase the performance of the employees which as evident by studies by Vroom (1964); Lawler and Porter (1967) and Velnampy (2006). According to Akinyele (2007), a conducive work environment ensures the well-being of employees which will enable them to exert themselves to their roles vigorously that may result in higher productivity. As such, a green office environment can be stated as an office that promotes good environment that will benefit to all parties concerned especially the employees.

2.2. Productivity

According to Kemppila and Lonnqvist (2003), productivity is an important success factor for all organizations. This study stretches on how the employees' awareness can affect their productivities in their working environment. The Royal Institution of Chartered Surveyors (2005) stated that the most significant green building benefits is related to increased occupant productivity and satisfaction, exceeding even the projected environmental benefits. Hughes (2007) reported that 9 out of 10 workers believed that workspace quality affects the attitude of employees and increases

their productivity. Dole and Schroeder (2001) believed that employees who are more satisfied with the physical environment are more likely to produce better work outcomes in the workplace. Mohr (1996), stated that the physical environment is a tool that can be leveraged both to improve business results and employee well-being. According to Lasalle (2011), staff participation in sustainable office practices is a powerful tool in driving engagement, reducing cost and enhancing employee productivity. As such, the green office environment has the possibility to either increase or decrease the employees' productivities.

3. CONCEPTUAL FRAMEWORK

The conceptual framework for this study is shown in Figure 1.

3.1. Research Hypotheses
Based on the aforementioned framework, there are two hypotheses in this study:

H_1: There is a significant relationship between 3R awareness and employee productivity.

H_2: There is a significant relationship between 3R attitude and employee productivity.

3.2. Research Methodology
This is a correlation study looking into the relationship between attitude and awareness of 3R to productivity of the employees at the Petronas Berhad. A sample size of 100 was taken from Human Resource Office. The unit of analysis for this research consists of all employees, i.e. the support staff, junior executive, senior executive, manager and senior manager at the company. The sample was extracted using a simple random sampling technique based on the name list provided by the Human Resource Department.

3.3. Instrument
A set of questionnaire modified from instruments developed by Aminrad et al. (2013) and Gluch et al. (2007) which consists of four sections were used in this study. The Section 1 is about the background information which consists of 6 items which includes the respondent's demographic profile such as gender, age, education level, status, working experience, and position held. The Section 2 includes the implementation of 3R at the organization. It seeks to measure the respondent's awareness of 3R practice at

Figure 1: 3R awareness and attitude influence on Petronas employees' productivity
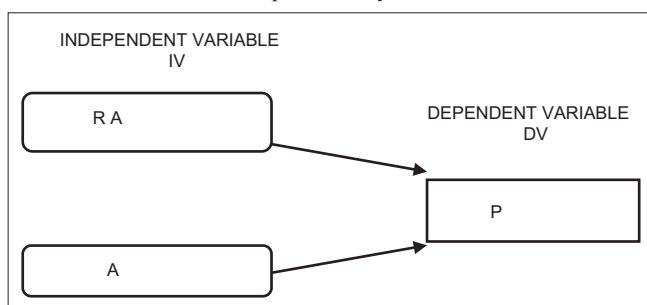
the organization, which consists of 5 items. Section 3 indicates the level of respondents attitudes towards 3R consisting of 10 items. The last part consists of 5 items related to productivity level after the implementation of 3R.

4. DATA FINDINGS

4.1. Demographic Analysis
Table 1 shows the descriptive analysis of the demographic factors of the study.

Table 1 shows that there were 49% male and 51% female who have participated in the survey. About 58% of the respondents are from the age group of 20-29 years old. There were 18% of 30-39 years old and 40-49 years old groups. Finally, 6% of the respondents are more than 50 years old.

Table 1 also indicates that the majority of the respondents are holding post as junior executive (31%). In contrast, the senior managerial position consists of 12% while the rest of the

Table 1: Profile of the respondents

Demographic factor	Frequency	%
Gender		
Male	49	49
Female	51	51
Age group		
20-29 years old	58	58
30-39 years old	18	18
40-49 years old	18	18
50 years old	6	6
Education level		
STPM	9	9
Diploma	22	22
Degree	60	60
Masters	9	9
Marital status		
Single	31	31
Married	60	60
Divorce	9	9
Working experience		
<2 years	17	17
2-4 years	34	34
5-7 years	25	25
8-10 years	12	12
>10 years	12	12
Position		
Support staff	28	28
Junior executive	31	31
Senior executive	14	14
Junior manager	15	15
Senior manager	12	12
Total	100	100

STPM: Sijil Tinggi Persekolahan Malaysia (English: Malaysian Higher School Certificate)

Table 2: Reliability analysis

Variables	Cronbach's alpha	No. of items
3R awareness	0.756	5
Employee attitude	0.965	10
Employee productivity	0.919	5

3R: Reduce, recycle and reuse

respondents comprise of support staff (28%), senior executive (14%) and junior manager (15%).

4.2. Reliability Analysis

Table 2 presents the reliability analysis of each construct in the questionnaire. All of the calculated values indicated high statistical reliability due to the Cronbach's alpha coefficient of greater than 0.7 (Nunnaly, 1978).

RQ1: What is the level of 3R awareness and attitude among employees at Petronas Kuala Lumpur?

Table 3 presents the finding to answer RQ1 that is the levels of 3R awareness and attitude among employees at Petronas.

It is evident that the employees at Petronas Kuala Lumpur have a moderately high level of awareness (mean = 3.794) of the 3R practice. They are aware of the 3R programs and have exposures on the issue related to green environment and its benefits. Based on the finding shown on Table 3, the mean for attitude is 3.147 indicating that the Petronas employees' attitude towards 3R is at the moderately low level. This is evident by the fact that the majority of the employees used recycle paper for taking notes with a mean of 3.72 and the mean for employee preferred to send e-mails instead of written memos and letters on hardcopy/paper is 3.69.

RQ 2-3: What are the relationships of 3R awareness and attitude towards employee productivity?

Table 4 shows the answer to research question 3 which is whether there is a relationship between Petronas employee 3R and productivity.

Based on the results of the correlational analyses, it is evident that

there is a moderately high but positive significant relationship between 3R awareness and employees productivity at Petronas Kuala Lumpur, where the Pearson Correlation value is 0.515 ($p = 0.001$). Thus H_{O1} is rejected. However, 3R attitude has at a moderately low but significant relationship to employees' productivity, i.e. the Pearson Correlation value is at 0.398 ($p = 0.001$). H_{O2} is rejected. These findings indicate that the employees at Petronas Kuala Lumpur are aware of 3R and accept 3R, however, their attitude towards 3R has a weaker relationship with productivity.

5. CONCLUSION AND RECOMMENDATION

The authors conclude that the employees have a moderate level of awareness on 3R, yet their productivity stood between low to moderate. This could be due to the management support towards the 3R is not as high as expected as 3R movement and practices need to have strong support from the top management. Bouten and Sophie (2013) claimed that top management commitment and the presence of an environmental champion are important considerations for improved productivity. Management should also have high awareness of 3R to fully support the movement and to ensure that it 3R will be one of the standard practice in the organization.

One possible recommendation that can be put forward is the management involvement in the green movement. This is supported by a study by Fok et al. (2009) that indicated employees who believe that their organizations are aligned with the green movement are more likely to also see better outcomes in terms of overall performance. Management has to understand that such movement needs to be made a policy so that the 3R spirit among the worker can be part of the organizational culture instead of the flavor of the month approach as practiced by most problematic companies.

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Table 3: 3R awareness and attitude levels

Descriptive statistics					
Factors	No	Minimum	Maximum	Mean	Std. deviation
3R awareness	100	2.20	4.80	3.794	0.50006
Attitude	100	1.30	4.50	3.1470	0.83611
Valid N (listwise)	100				

3R: Reduce, recycle and reuse

Table 4: Corelational analyses between 3R awareness, attitude and productivity

Correlations	Awareness	Attitude	Productivity
Awareness			
Pearson correlation	1	0.334**	0.515**
Sig. (2-tailed)		0.001	0.000
N	100	100	100
Attitude			
Pearson correlation	0.334**	1	0.398**
Sig. (2-tailed)	0.001		0.000
N	100	100	100
Productivity			
Pearson correlation	0.515**	0.398**	1
Sig. (2-tailed)	0.000	0.000	
N	100	100	100

*Correlation is significant at the 0.05 level (1-tailed). **Correlation is significant at the 0.01 level (2-tailed). Sig.: Significant

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