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THE RELATIONSHIP BETWEEN RECYCLING BEHAVIOUR AND ENVIRONMENTAL SUSTAINABILITY IN HIGHER EDUCATION INSTITUTION

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Abstract:

In the era of globalization. most of the higher education institution (HEI) still neglect to take care of the sustainability of nature whereas the sustainability of nature is an important aspect in making life better quality. Environmental sustainability of recycling behavior needs to be practiced among higher education institutions (HEI) in Malaysia as developed countries are starting to practice in environmental care. Therefore, this paper to investigated the relationship between recycling behavior and environmental sustainability in HEI. The recycling behavioral factors such as awareness, attitude, subjective norms, perceived behavior control and 3Rs (reduce, reuse, recycle) are most related to environmental sustainability. The valid respondents of 379 sample have been collected and analyzed using SPSS software and found that attitude and 3Rs are highly significantly variables to achieved environmental sustainability in HEI. Its indicated that HEI should emphasized attitude and 3R (recycle, reduce and reuse) program frequently in their institution in matter to achieve environmental sustainability.

Keywords:

Recycling Behabiour, Environmental Sustainability, Higher Education Institution

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Introduction

Recycle behavior has had a considerable impact on environmental sustainability in recent years. Higher education institution (HEI) plays a critical role in motivating recycling behavior approaches since it aspires to develop ethical, competent persons who have the information, skills, and values to contribute to a more environmentally sustainable and growing world (Adomssent, 2012; Corcoran and Wals, 2004; Lozano et al., 2013). Recycle behavior activities contributing to environmental conservation and preservation are called to as environmental sustainability (Dunlap et.al, 1978). On the other hand, recycling, energy conservation, trash reduction, sustainable transportation, and incorporating eco-friendly practices into daily living are examples of these behaviors (Smith et al., 2022). With their different origins and exposure to higher education, HEI students have a unique chance to embrace and encourage the success of environmental sustainability (Smith et al., 2022).

Recently, recycling behavior has been extensively studied in environmental sustainability because environmental issues are linked together (Schwerdtle et al., 2020). Traditionally, recycling behavior is an act people take to prevent the harmful effects of human irresponsibility and encourage good improvements in the environment (Yusliza et al., 2020). In HEI, the growing student population has waste generated daily. As a result, HEI cannot continue to ignore the challenge of managing the campus as a major waste generator (Muniandy et al., 2021).

Table 1: Waste Collection of Tons per Day (Hassan et al, 2021)

YEAR	WASTE COLLECTION (TON/DAY)
2018	36,843
2019	37,462
2020	38,081
2021	38,699
2022	39,936

Table 1 show the waste collection in Malaysia from 2018 to 2022, which is nearly 40,000 tons per day in 2022. On climate, these activities are the primary contributors to global warming, is widely acknowledged as a severe threat to human survival (Donmez-Turan et al. 2021). Moreover, understanding how they behave in environmentally relevant ways is essential for addressing environmental sustainability concerns (Si et al., 2019). Higher education institutions (HEIs) are said to have a moral and ethical obligation to act responsibly toward recycling behavior towards environmental issues. HEI should promote responsible environmental management (Muniandy et al., 2021) especially when attempting to attain sustainability on campus, and begin with environmental management (Muniandy & Anuar,2020). Significantly, fewer studies about relationship recycle behavior and environmental sustainability consist of variables of awareness, attitude, subjective norms, perceived behavior control, and 3Rs (reduce, reuse and recycle).

Literature Review

Environmental sustainability issues are challenging to address appropriately and perfectly since the economic growth (Young, et.al 2020). The individuals have a crucial role, as evidenced by their views and devotion (Adomssent, 2012; Corcoran and Wals, 2004; Lozano et al., 2013). This role is because recycling behavior and environmental sustainability have a significant relationship (Mohd Faizal, 2008). This study investigates the relationship between recycling

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behavior and environmental sustainability. This literature review has identified the most influential factors of recycling behaviors related to environmental sustainability.

Awareness

Several environmentalists have also accepted that environmental awareness can reduce environmental contamination, which may make it easier to consume resources sustainably. Additionally, environmental knowledge significantly influences recycling habits (Al Mamune t al., 2019). Additionally, it has been demonstrated that people's knowledge directly correlates with their readiness to recycle behavior. A well-informed and home-awareness, may make better decisions on how to handle e-waste. A pro-recycling mind has been found to impact recycling behavior in addition to consumer awareness significantly (Delcea et al., 2020).

Attitude

A people's beliefs about the advantages and disadvantages of engaging in a behavior comprise their attitude. Beliefs and a person's subjective assessment of a behavior are explained by attitudes toward that behavior (Sulaiman, Chan, & Ong., 2019). An attitude is a component of a person's belief about and evaluation of a behavior. It has also been discovered that a person's attitude towards an issue is the most important factor in determining the specific behavior towards that issue (Muniandy & Anuar., 2020).

Subjective Norms

Some studies have found that subject norms significantly impact on people's recycling behavior (Tiew et al., 2019). Subjective norms exist when a person is aware of a social norm and prefers to follow that norm. Furthermore, a subjective norm will motivate a person to act by meeting normative and empirical expectations (Juliana et al., 2022). Subjective norms (SN) are an individual's feelings of societal pressure about whether they should do something. People in your life, such as family and friends, can influence your behavior regarding social pressure (Al Mamun et al., 2019).

Perceived Behavior Control

The findings indicate that perceived behavioral control, as opposed to social norms, is the most effective predictor of recycling behaviors (Fang et al., 2021). The term "*perceived behavioral control*" (PBC) refers to one's view and comprehension of one's capacity based on prior experience and perceived barriers or difficulties in carrying out the intended activity. When acting, PBC reveals how well a person believes they can overcome obstacles use of the enablers (Mohamad, Thoo, & Huam, 2022).

3R (Reduce, Recycle and Reuse)

This research looks at behavior by using the 3Rs concept for environmental sustainability. The 3Rs are reduce, reuse, and recycle. These behaviors are a basic waste management practices. The term reduce denotes avoidance of usage. Some Malaysian states ran campaigns to educate, raise awareness, and encourage people to buy products that produce less waste. Reuse can be done by buying, selling, donating, or fixing things; as a result, it can cut down on waste. Waste collection, separation, and processing are all parts of recycling. Materials that can be recycled include paper, plastic, metal, and glass (T'ing et al., 2020). In this study, examines sustainable waste management using the 3R practices, i.e., "Reduce, Reuse, and Recycle," also known as a waste management hierarchy (Muniandy et al., 2021).

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Environmental Sustainability

The fundamental concept of sustainable development is "doing more with less," which means decoupling environmental degradation from economic growth and continuous consumption expansion (Al Mamun et al., 2019). Higher education institutions perform a variety of roles in environmental sustainability as a social change agent. By taking on a high level of responsibility, educating the community about environmental protection, and promoting a healthy social image, colleges and universities are seen as role models for the neighborhoods (Cho, 2019). **Figure 1** show the framework of this research. The independent variables of recycling behavior were awareness, attitude, subjective norms, perceived behavior control and 3R (reduce, recycle and reuse) and the dependent variable was environmental sustainability.

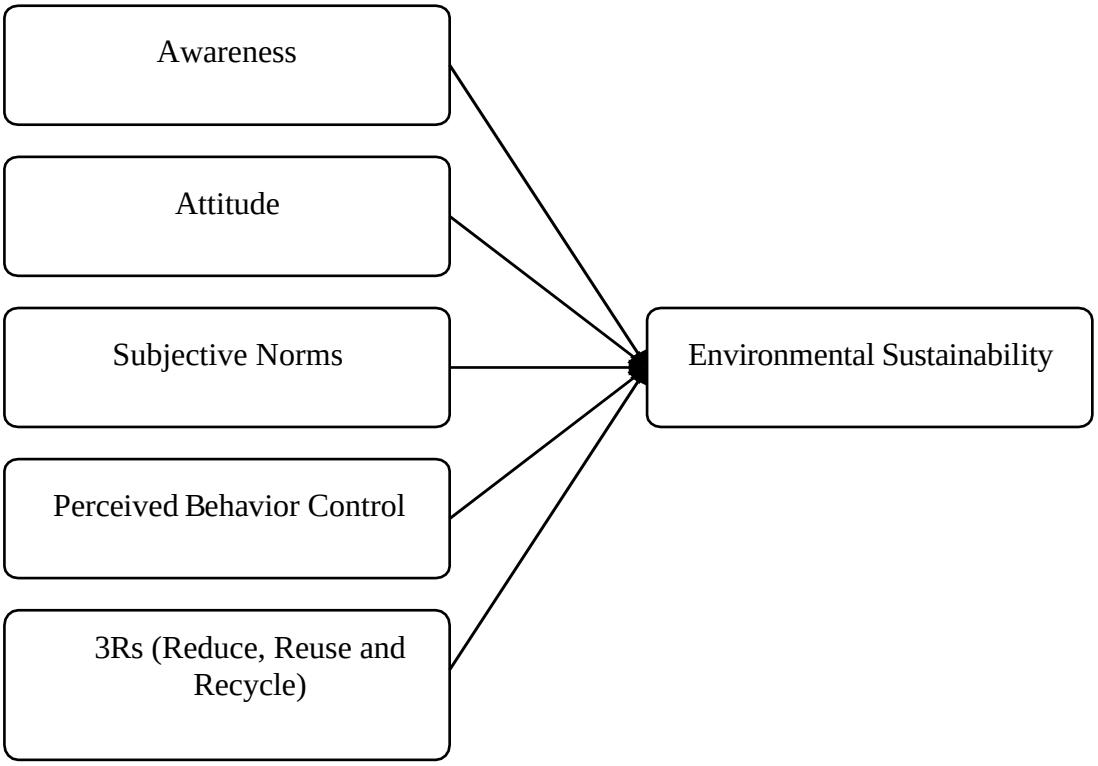

Figure 1: The Research Framework

The following hypotheses are proposed:
H1: Awareness is positively associated with environmental sustainability.
H2: Attitude is positively associated with environmental sustainability.
H3: Subjective norms are positively related to environmental sustainability.
H4: Perceived behavior control is positively associated with environmental sustainability.
H5: 3R (reduce, recycle and reuse) behavior is positively associated with environmental sustainability.

Research Methodology

This study uses quantitative methods to collect the data for analysis. The questionnaire survey has been distributed to the respondents living in the HEI campus. Data were collected from the respondents and the unit of analysis is the individual and Google Forms application used to collect data for this study. Close-ended questions were used in this research with 5 points of

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Likert scale. 30 respondents used pretesting to determine content validity. The questionnaire reliability and validity use are more than 0.70 as Nunnally (1978) recommended, and a Cronbach's Alpha range of 0.70 or higher is regarded as appropriate.

The HEI students that comprise the sample for this research target group are those who regularly applied recycle behavior in their daily lives on campus. Three hundred seventy-nine respondents answered the questionnaires and quantitative analysis was used as a statistical tool consisting of descriptive and inferential statistics. Pearson correlation was used to identify the relationship between recycling behavior of awareness, attitude, subjective norms, perceived behavior control and 3R with the relationship with environmental sustainability. The Statistical Package for the Social Sciences (SPSS) version 25 was used to analyze the data.

Findings

Demographic of Respondents

In the demographic profile of statistics, results showed that, there are 123 male respondents, or 32.5 percent, meanwhile female respondents are 256 or 67.5 percent of the total (**Table 2**). The number of respondents between the ages of 18 and 22 years was 37, 23-25 years old was 267 and the age of 26 years and above was 75 (**Table 3**). Malay has 280 respondents, representing 73.9 percent, Chinese respondents were 54, representing of 14.2 percent, Indian respondents were 26 representing 6.9 percent, meanwhile other respondents were 19 representing 5 percent (**Table 4**).

Table 2: The Respondents Gender

Item	Category	Frequency	Percent
Gender	Male	123	32.5
	Female	256	67.5

Table 3: The Age of Respondents

Item	Range	Frequency	Percent
Age	18-22 years old	37	9.7
	23-25 years old	267	70.4
	26 and above	75	19.9

Table 4: The Race of Respondents

Item	Race	Frequency	Percent
Race	Malay	280	73.9
	Chinese	54	14.2
	Indian	26	6.9
	Other	19	5

Pearson Correlation Analysis

Pearson correlation analysis or correlation coefficient was conducted to determine the relationship between independent variables of recycling behavior (awareness, attitude, subjective norms, perceived behavior and 3R) towards environmental sustainability. Referring to **Table 5**, an analysis of 379 respondents shows that there was a high positive relation between 3R of recycling behavior and environmental sustainability, ($r = 0.632$), ($p<0.001$). The attitude of recycling behavior and environmental sustainability was highly

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positively correlated, (r = 0.606), (p<0.001). The awareness of recycling behavior and environmental behavior moderately positively correlated (r= 0.577), (p<0.001). Perceived behavior control of recycling behavior and environmental sustainability was moderately positively correlated (r= 0.551), (p<0.001) and subjective norms of recycling behavior and environmental sustainability were moderately positively correlated (r=0.461), (p<0.001).

Table 5: Correlation of Coefficient

Variables	Environmental Sustainability
3R (Reduce, Reuse, Recycle)	0.632**
Attitude	0.606**
Awareness	0.577**
Perceived Behavior Control	0.551**
Subjective Norms	0.461**

**. Correlation is significant at the 0.01 level (2-tailed)

ANOVA results indicated that the F distribution value was (F=103.903, Sig <.001) showing that recycling behavior had a significant relationship with environmental sustainability (**Table 6**).

Table 6: Analysis of Variance Result

Model		Sum of Square	df	Mean Square	F	Sig.
1	Regression	82.950	5	16.590	103.903	<.001[b]
	Residual	59.556	373	0.160		
	Total	142.506	378			

Discussion

This study examines the critical success factors of recycling behavior awareness, attitude, subjective norms, perceived behavior control and 3R in HEI in Malaysia whereas data analysis showed a positive relationship with environmental sustainability. The findings suggested that towards the success of environmental sustainability in HEI, the recycling behavior such as 3R (recycle, reduce and reuse), attitude, awareness, perceived behavior control and subjective norms are the most important variables contributing to environmental sustainability.

Implication and Conclusion

The main aim of this study was to investigate the relationship between recycling behavior and environmental sustainability in HEI in Malaysia. This research revealed that the two most important variables (3R and attitude) have a solid and positive relationship between recycling behavior and environmental sustainability. It recommended that HEI emphasize the 3R programme more frequently to student about the recycling behavior that could impact environmental sustainability. Moreover, student attitude towards recycling behavior was an important agenda toward environmental sustainability on campus. This study has demonstrated a statistically significant positive relationshipbetween recycling behavior and environmental sustainability. The study results also offer HEI practical recommendations for encouraging environmental sustainability on campus. In conclusion, this research output can be used in HEI in Malaysia, to implementing recycling behavior (awareness, attitude, subjective norms,

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perceived behavior control, and 3R) as a new milestone for HEI to successes in environmental sustainability.

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