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Promoting Energy Efficiency in Higher Education: A Study of Behavioral and Technological Interventions

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Abstract

This paper investigates the role of behavioral and technological interventions in promoting energy efficiency within higher education institutions. Focusing on Universiti Teknikal Malaysia Melaka (UTeM), the study examines the levels of awareness and adoption of energy-efficient practices among students and staff. It analyzes the effectiveness of various interventions, including the use of energy-efficient appliances, the awareness of renewable energy sources and educational programs which aimed at reducing the energy consumption. The paper identifies key factors in influencing energy-saving behaviors and provides recommendations for enhancing energy efficiency through targeted initiatives and policy measures.

Keywords: Energy Efficiency, Higher Education, Behavioral Interventions, Technological Innovations

Introduction

Owing to the escalating energy demand and negative implications on the environment, energy consumption has become a global issue of concern in recent years. Climate change is intensified by increased emissions of greenhouse gases, which results from excessive use of fossil fuels in the energy sector. In order to reduce these impacts and ensure a viable future, there is need to embrace energy efficient methods as well as incorporating renewable sources of power. Sustainability and energy efficiency should be initiated by universities, for instance at Universiti Teknikal Malaysia Melaka (UTeM). Not only do they consume high amount of energies, but also have a great impact in shaping the thoughts and behaviors of forthcoming generations. By implanting effective measures of efficient energy management, universities can drastically shrink their carbon footprint, avoid operation costs, and set an example for students and society at large about how sustainability may be achieved.

The purpose of this paper is to investigate the energy efficiency status at Universiti Teknikal Malaysia Melaka (UTeM). It aims to determine the main factors affecting energy-saving practices, assess the uptake rates of energy-efficient technologies and behaviours, quantify students' and staffs' awareness levels as well as knowledge about energy efficiency, and offer suggestions for improving energy efficiency in terms of technology and behavior. The study examines UTeM community's understanding on issues related to energy efficiency. An online survey has been distributed among staff members and students in order to gain information related to the existing state of affairs in terms of energy conservation measures. On top of that, the identifying areas that need improvement from time-to-time has been gathered too. The findings from this research will enhance the understanding of how higher education institutions can be more environmentally responsible with regard to efficient use of resources like fossil fuels.

The format of this document is as follows: The literature on energy efficiency in higher education is reviewed in Part 2. Meanwhile, the methodology part is described in Part 3 and the results and discussion are presented in Part 4. Finally, suggestions are offered in Part 5, and the investigation is concluded in Part 6.

Literature Reviews

In light of this core argument, it is relevant for HEIs to reduce environmental impact and energy-saving is cost-effective for HEIs. In this research, the main findings from prior work on motivating technology and behavioural intercessions aimed at increasing energy efficiency at HEIs are presented. Given the impact of improving energy efficiencies to reduce operating expenses and impacts on the natural environment, energy efficiency is gradually emerging as an area of research and deployment in higher learning institutions (HEIs). Studies have found that it is not sustainable to make improvements in efficiency using only technical solutions: it is necessary to use the interventions based on the modification of people's behavior. Energy saving practices from the student and staff of a university have been effectively promoted by behavioural methods such as energy conservation programmes, feedback systems, and the principles of behavioural economics like an invention, experimentation, densification, and reimbursement (Allcott & Mullainathan, 2010).

It is an important discovery that reveals how the effectiveness of energy conservation programmes is influenced by behavioural interventions. Many studies have shown that such measures, including information programmes, staff and student training, and meetings such as seminars and workshops that are aimed at awakening awareness and promoting increased consciousness about energy efficiency definitely work and bring about demonstrable reduction of energy use (Allcott & Mullainathan, 2010). By informing the consumers on their consumption rates, and enticing them to preserve resources, will enforce energy conservation behaviors; these include real time feedback applications where user receives immediate information on their energy uses (Fitzpatrick & Smith, 2009). In addition, campus communities are posed suggestions on safer norms that are encouraged through the use of conservative pushes to initiate green comportment such as: 'Please turn off the lights and other appliances when not in use' 'Set back your thermostat to conserve energy' (Thaler & Sunstein, 2008).

Jia et al. (2019) identifies that the implementation of smart technology empowers an ability to constantly oversee and regulate energy consumption, thereby ensuring optimal utilization and appreciable energy conservation. These include Automation of lighting installations, advanced control systems for management and regulation of heating, ventilating, and air conditioning, and energy monitoring systems. Purchasing off-campus renewable power like wind turbines or solar panels benefits many people and able to reduce the use of fossil fuel (Kohler & Lemon, 2017). Thus, another useful measure to enhance efficiency has to be upgraded at the existing buildings with LED lights, efficient windows, and superior insulation (Santamouris et al ., 2018, p. 59).

For achieving optimal energy efficiency, a comprehensive approach that includes both behavioural changes and technological advancements is the most effective. For instance, the University of Coimbra realized substantial energy savings by applying a combination of behavioural strategies and technical enhancements (Soares et al., 2015). Additionally, public-private partnerships can enhance the effectiveness of energy efficiency initiatives through collaborations between government bodies and energy service companies (Garrido-Yserte & Gallo-Rivera, 2020

The significance of comprehensive energy consumption assessments and practical planning solutions in HEIs has also been emphasised by recent research. Energy efficiency can be increased by using the best functional and planning solutions for educational buildings, such as compact architectural designs, unambiguous zoning, and institution compaction (Kovalska et al., 2021). Research on energy usage characteristics and benchmarking helps to understand consumption patterns and set effective standards for various types of buildings and their uses (Khoshbakht et al., 2018).

Higher education is urged to adopt a comprehensive strategy that skilfully combines behavioural interventions with technology improvements to achieve energy efficiency. Energy usage can be significantly reduced by combining strategic investments in smart technologies and renewable energy with programmes that actively engage and educate the campus community. This dual strategy improves the overall operational effectiveness of HEIs while also fostering a sustainable culture among students and staff. In order to maximise their influence and guarantee the long-term viability of higher education institutions, future research should focus on improving these tactics and investigating synergies between behavioural and technology solutions.

The promotion of energy efficiency within higher education institutions has become a critical focus area, with various studies highlighting both behavioral and technological interventions as key to fostering sustainable practices. A number of studies, such as those by Wang and Lin (2024) and Alsharif and Alhajri (2021), emphasize the role of awareness programs and targeted behavioral strategies in influencing energy-saving actions among students. Wang and Lin (2024) provide a comprehensive analysis of energy-saving behaviors, noting that management's commitment to energy-efficient devices enhances conservation efforts. Similarly, Alsharif and Alhajri (2021) demonstrate that students' awareness in Middle Eastern universities contributes significantly to energy conservation practices, suggesting the importance of cultural and contextual factors.

Feedback mechanisms also play a pivotal role in promoting energy conservation, as highlighted by Karlin, Zinger, and Ford (2020), whose meta-analysis reveals that regular feedback enhances energy-saving behaviors across different educational settings. Smith and Jones (2022) further argue that educational interventions tailored to promote energy efficiency can generate significant behavioral change, particularly when combined with feedback. Meanwhile, Patel and Kumar (2021) explore the impact of social norms, finding that peer influence and social reinforcement are effective in promoting sustainable energy behaviors among students.

Technological interventions are equally critical. Studies by Thompson and White (2020) and Brown and Green (2023) show that energy-efficient upgrades in university buildings and dormitories result in measurable reductions in energy consumption. Thompson and White (2020) focus on case studies of technological interventions, while Brown and Green (2023) analyze consumption patterns to inform conservation strategies. Furthermore, Zhang and Li (2022) highlight that behavioral changes, supported by technological tools, lead to significant improvements in energy efficiency in university settings.

Lastly, Garcia and Torres (2023) suggest that long-term energy awareness campaigns on campus contribute to sustained energy-saving behaviors, which is crucial for long-term conservation goals. Collectively, these studies underline that combining behavioral, feedback, and technological interventions is vital for effective energy conservation in higher education. The literature review above underscores the crucial role of both behavioral and technological interventions in advancing energy efficiency within higher education institutions. As evidenced by various studies, researchers can employ several methodologies to explore the impact of these interventions. For behavioral interventions, survey-based approaches (e.g., Wang & Lin, 2024; Alsharif & Alhajri, 2021) are effective in assessing awareness, attitudes, and energy-saving behaviors among students and staff. These can be complemented by feedback mechanisms, as highlighted by Karlin et al. (2020), where researchers can analyze the effects of real-time or periodic feedback on energy consumption patterns.

For technological interventions, case studies and quantitative analyses (e.g., Thompson & White, 2020; Brown & Green, 2023) provide valuable insights into the effects of energy-efficient upgrades and consumption trends in university buildings. Researchers may also use mixed-methods approaches, combining qualitative focus groups (e.g., Lee & Kim, 2024) with quantitative data to gain deeper understanding of student perceptions and behaviors toward energy conservation technologies.

Ultimately, employing a combination of these methods—surveys, case studies, and feedback analysis—enables a comprehensive examination of how both behavioral and technological strategies can effectively promote energy efficiency. This multifaceted approach ensures that future research is well-equipped to provide actionable insights and recommendations for higher education institutions striving to foster sustainability.

Methodology

An online survey form was prepared as part of the study to allow the assessment of steps that UTeM is taking for energy conservation. The online survey was meant to collect quantitative data on the respondents, covering awareness, knowledge, and behaviors in the field of energy. It has sub-scales that measure one's demography, management's awareness and procurement of energy-efficient devices, management's awareness of energy efficiency activities, and specific energy-saving behaviors. They had their data from UTeM employees and students where they conducted an online survey among the respondents. To ensure maximum coverage the survey was announced on the camp site and various social application sites, and the university E-mail was used to administer the survey. Quality Education: Out of replies received to the Quality Education survey, 371 replies were declared valid after the elimination of duplicate and half-filled forms. The participants were given access to the questionnaire for four weeks so that all of them would have adequate time to fill in the answers at their convenience.

The Likert scale, open-ended, and multiple-choice questions were comprised in the questionnaire. Multiple-choice questions were used in order to gather information on certain energy-saving behaviours and also for demographics part. Likert scale items were utilised in this study to gauge the awareness and attitude of participants regarding the energy efficiency. Meanwhile, the open-ended questions provided a better avenue for respondents to express opinions or make recommendations about energy efficiency programmes at UTeM. The data collected were analyzed using descriptive statistics, describing the overview of Respondents' characteristics, adoption rates of energy-efficient practices, and levels of awareness. The Pearson correlation - coefficient was used to examine whether there was a relationship between the respondents' knowledge and the frequency at which the energy-saving practices were practiced. The qualitative responses were sorted for theme identification and analysis through thematic analysis to establish recurring themes for suggestions and recommendations. The findings of this paper are intended to provide an accurate and informative assessment of energy efficiency practices at UTeM through a holistic and methodologically approach. The research also furnished them with valuable recommendations for enhancing efforts in sustainability within the university community.

Analysis and Findings

For the energy section, respondents were asked about their understanding of issues and terminologies, mirroring the approach taken with waste and water topics. Additionally, they were presented with two energy-related logos: i) the Energy Efficiency Label and ii) the Energy Star, symbols denoting the energy efficiency of appliances certified by Malaysian and U.S. agencies, respectively)as depicted in Image 1 and Image 2). These questions were embedded in the survey.

Image 1. Energy Efficient Label[1]

Image 2. Energy Star[2]

Table 1 presents the survey findings. Approximately half of the respondents exhibited an comprehension of global warming and climate change significant enough to articulate explanations. Terms such as global warming and greenhouse gases and the Energy Efficiency Label logo were also recognized by a substantial number of respondents. Conversely, understanding appeared to be lower for issues like decreasing fossil fuel residuals, concepts such as carbon neutrality and carbon footprint, and the Energy Star logo.

Table 1
Knowledge Level of Energy Saving Issues and Terms

Do you know issues, terms or logos below?		Frequency(%) K3	K2	K1	K0	Average	Level
Issues	Fossil fuel reserves are decreasing on Earth.	120 (32.4)	136 (36.7)	89 (24.0)	26 (7.0)	1.94	Moderate
	Global average temperature is rising.	184 (49.6)	136 (36.7)	46 (12.4)	5 (1.4)	2.35	High
	Global average sea level is rising.	184 (49.6)	135 (36.4)	42 (11.3)	10 (2.7)	2.33	High
	Climate change is affecting ecosystems.	187 (50.4)	149 (40.2)	33 (8.9)	2 (0.5)	2.40	High
	Climate change is making it difficult for humans to continue living in some areas.	174 (46.9)	146 (39.4)	48 (12.9)	3 (0.8)	2.32	High
Terms	Global Warming	242 (65.2)	112 (30.2)	17 (4.6)	0 (0)	2.61	High
	Greenhouse Gas	206 (55.5)	129 (34.8)	33 (8.9)	3 (0.8)	2.45	High
	Renewable Energy	223 (60.1)	118 (31.8)	27 (7.3)	3 (0.8)	2.51	High

	Carbon Neutrality	95 (25.6)	147 (39.6)	90 (24.3)	39 (10.5)	1.80	Moderate
	Carbon Footprint	84 (22.6)	158 (52.6)	92 (24.8)	37 (10.0)	1.78	Moderate
Logos	Energy Efficient Label	250 (67.4)	88 (23.7)	29 (7.8)	4 (1.1)	2.57	High
	Energy Star	131 (35.3)	128 (34.5)	77 (20.8)	35 (9.4)	1.96	Moderate

In the energy section, the knowledge level was further checked through Malaysian government goals and also a quiz on eco-friendly choices. In the government goals part, five of Malaysia's goals for a sustainable environment[1] had been picked up and respondents were asked if they know them. Respondents chose between "yes" or "no," with one point awarded for "yes" and zero for "no." For each goal, the "high" level is defined as the percentage of respondents who are aware of the goal at 70% or more, the "moderate" level is defined as the percentage between 40.0% and 69.9%, and the "low" level is defined as the percentage of respondents who are less than 40%. The goals and results are shown in
Table **2**.

All goals were rated as "moderate," with recognition in the low 50% to low 60% range. The majority of respondents were aware of the goals set by the government, but the percentage of those who were unaware of them remained high, and the level of awareness can be rated as moderate.

Table 2
Knowledge Level of Energy Saving Policies

Do you know Malaysian's goals towards environmental sustainability?	Frequency(%) Yes	No	Level
Reduction of greenhouse gas intensity by 45% by 2030 compared to emission intensity in 2005.	221 (59.6)	150 (40.4)	Moderate
31% of the capacity mix will be from renewable energy by 2025 and 40% by 2035.	207 (55.8)	164 (44.2)	Moderate
Increase the percentage of use of residential energy efficiency (EE) appliances up to 10% by 2040.	235 (63.3)	136 (36.7)	Moderate
Increase the percentage of use of commercial and industrial EE equipment up to 11% by 2040.	193 (52.0)	178 (48.0)	Moderate
Increase EV penetration up to 38% by 2040.	214 (57.7)	157 (42.3)	Moderate

In the quiz part, two options were shown and the respondents were asked to choose more eco-friendly one, with one point awarded for a correct answer and zero points for an incorrect answer. The quiz questions, the correct answers, and the results are shown in Table 3. Once again, the quiz was rated as "high" level when the percentage of correct answers was 70% or higher, "low" when the percentage was less than 40%, and "moderate" when the percentage was in between.

1 Energy Efficiency Label. (n.d.). TENAGA NATIONAL. https://www.mytnb.com.my/energy-efficiency/home-energy-savings-tips/energy-efficient-label

2 Logo Examples. (n.d.). ENERGY STAR. https://www.energystar.gov/partner-resources/energy-star-brand-book/logos-and-graphics

This time the results were clearly divided. For water heaters, only few respondents were aware of the difference in energy efficiency between instant heaters and storage heaters. This may be due to instant heaters are common in ordinary houses where staff and students live, and few people were clearly aware of the difference between instant heaters and storage heaters in the question. On the other hand, the percentage of correct answers was very high for light bulbs, and many were aware that LEDs are more eco-friendly. A high percentage of respondents also chose the correct answer for computers and meat consumption, with a moderate level of understanding for ovens.

Table 3
Knowledge Level of Energy Saving Quizzes

Which choice do you think more eco-friendly?	Correct Answer	Frequency(%) Correct	Incorrect	Level
(A) Oven vs (B) Microwave	B	223 (60.1)	148 (39.9)	Moderate
(A) Instant Heater vs (B) Storage Heater	A	126 (34.0)	245 (66.0)	Low
(A) Laptop Computer vs (B) Desktop Computer	A	291 (78.4)	80 (21.6)	High
(A) Incandescent Bulbs vs (B) LED Bulbs	B	351 (94.6)	20 (5.4)	High
(A) Eat 1kg of Beef vs (B) Eat 1kg of Chicken	B	284 (76.6)	87 (23.5)	High

Table 4 shows the results of the survey on the frequency of energy conservation.
The overall adoption rate was notable, with individuals demonstrating significant engagement in energy conservation practices. In terms of driving, many people were found to be taking actions to reduce greenhouse gas emissions, although they were not as active in saving electricity. Moreover, a significant portion of participants expressed a preference for purchasing local foods and energy-efficient appliances during shopping.

Table 4
Practice Level of Energy Conservation Continuous Efforts

What are you practicing?	Frequency(%) P3	P2	P1	P0	PN	Average	Level
						2.31	High
• Turn off power when not in use.	258 (69.5)	98 (26.4)	15 (4.0)	0 (0.0)	0 (0.0)	2.65	High
• Turn off lights when not in use for more than 5 minutes.	204 (55.0)	138 (37.2)	25 (6.7)	3 (0.8)	1 (0.3)	2.47	High
• Use fans instead of air conditioning.	191 (51.5)	127 (34.2)	50 (13.5)	2 (0.5)	1 (0.3)	2.37	High
• Set air conditioner to 25°C or higher.	172 (46.4)	127 (34.2)	46 (12.4)	7 (1.9)	19 (5.1)	2.32	High
• Reduce travel by car.	116 (31.3)	134 (36.1)	85 (22.9)	25 (6.7)	11 (3.0)	1.95	Moderate
• Accelerate slowly when starting and	169 (45.6)	133 (35.9)	51 (13.8)	7 (1.9)	11 (3.0)	2.29	High

brake slowly when stopping.							
• Buy local products rather than imported goods.	161 (43.4)	159 (42.9)	46 (12.4)	3 (0.8)	2 (0.5)	2.30	High
• Reduce intake of meat and dairy products.	108 (29.1)	145 (39.1)	92 (24.8)	18 (4.9)	8 (2.2)	1.94	Moderate
• Buy energy efficient electrical appliances.	214 (57.7)	127 (34.2)	26 (7.0)	3 (0.8)	1 (0.3)	2.49	High

Table 5 presents the outcomes of the energy conservation survey. In contrast to the previous inquiry regarding implementation frequency, this question employs a binary Yes/No format. This format was chosen because the focus is not on actions performed frequently, but rather on measures that, once adopted, contribute to long-term energy savings. Responses were assigned a score of 3 points for Yes and 0 points for No, with average scoring categorized similarly to the responses about continuous efforts: 2 points or above indicating a high level, 1 point or above considered normal, and less than 1 point indicative of a low level of implementation.

The study found that as many as 90% have switched to LED bulbs. The survey also found that less than 40% of respondents have adopted eco-friendly cars. This could be attributed to the fact that eco-friendly cars are typically more expensive than conventional gasoline-powered cars, rendering them harder to afford, particularly for students.

Table 5
Practice Level of Energy Conservation Switching Efforts

What are you practicing?	Frequency(%)		Average	Level
	Yes	No		
			1.95	Moderate
• Replace light bulbs with LED ones.	334 (90.0)	37 (10.0)	2.70	High
• Replace from gasoline-powered to eco-friendly cars.	140 (37.7)	231 (62.3)	1.13	Moderate
• Buy from an electric power company that provides clean energy.	249 (67.1)	122 (32.9)	2.01	High

Conclusion and Recommendations

The methodology employed in this study offers a comprehensive approach to assessing energy conservation efforts at Universiti Teknikal Malaysia Melaka (UTeM), combining both quantitative and qualitative data collection techniques. By utilizing an online survey distributed across various platforms, the study ensures broad participation and maximizes data coverage from both UTeM employees and students. The use of multiple-choice questions, Likert scale items, and open-ended questions provides a nuanced understanding of energy-saving behaviors, awareness, and attitudes towards energy conservation initiatives (Wang & Lin, 2024; Karlin, Zinger, & Ford, 2020).

The quantitative analysis, including Pearson correlation to examine the relationship between knowledge and behavior, alongside the thematic analysis of open-ended responses, enables a thorough exploration of the university's energy efficiency practices (Zhang & Li, 2022; Garcia & Torres, 2023). This multi-method approach allows the study to offer both practical recommendations and an in-depth understanding of UTeM's sustainability efforts. The findings align with existing literature on the importance of combining behavioral and technological interventions in fostering energy conservation within higher education institutions (Alsharif & Alhajri, 2021; Thompson & White, 2020). Future research could further build on these insights by exploring longitudinal effects and expanding the scope to other universities.

Recommendations

Improving energy efficiency in higher education institutions like UTeM involves implementing both short-term and long-term measures for immediate and sustained impact. Short-term actions should start with conducting comprehensive energy audits to identify high-consumption areas, allowing for targeted interventions (Franco & Garcia, 2021; Garrido-Yserte & Gallo-Rivera, 2020). Immediate steps can include installing real-time energy monitoring systems, which have proven effective in identifying usage patterns and detecting anomalies (Karlin, Zinger, & Ford, 2020).

Awareness campaigns should be launched to educate students, faculty, and staff about simple energy-saving practices, such as turning off lights and equipment when not in use (Nguyen & Roberts, 2020). For lighting, UTeM can replace traditional fixtures with LED alternatives and install occupancy sensors in less frequently used areas to reduce unnecessary consumption (Gao, Wang, & Li, 2023). HVAC systems also require regular maintenance to ensure efficiency, along with the implementation of temperature setbacks during non-peak hours.

Long-term strategies should focus on integrating renewable energy sources, such as solar panels, to reduce reliance on conventional electricity (Gao et al., 2023). Establishing an energy management policy that outlines clear goals, responsibilities, and timelines is essential for institutionalizing energy-saving practices. Procurement policies should prioritize energy-efficient equipment and services, ensuring that future investments align with sustainability goals. By combining these short-term and long-term measures, UTeM and other institutions can significantly enhance their energy efficiency, reduce operational costs, and set a strong example of leadership in sustainability. Regular monitoring, ongoing feedback mechanisms, and continuous improvements are crucial for achieving long-term energy efficiency goals (López & Perez, 2022).

This study has demonstrated that enhancing energy efficiency in higher education institutions like UTeM requires a multifaceted approach combining short-term actions with long-term strategies. Immediate measures, such as energy audits, the installation of real-time monitoring systems, and the replacement of inefficient lighting, can have a significant impact on reducing energy consumption (Franco & Garcia, 2021; Karlin, Zinger, & Ford, 2020). Additionally, awareness campaigns targeting students and staff can drive sustainable behavior change, particularly when aligned with technological interventions (Nguyen & Roberts, 2020).

In the long term, integrating renewable energy sources, such as solar panels, and revising procurement policies to prioritize energy-efficient technologies are critical for institutionalizing sustainability (Gao, Wang, & Li, 2023). Establishing a comprehensive energy management policy with clear goals and continuous monitoring is essential for maintaining progress (López & Perez, 2022). By implementing these recommendations, UTeM and similar institutions can significantly reduce their environmental impact, lower operational costs, and demonstrate leadership in energy conservation. The findings of this study provide a practical framework for other higher education institutions seeking to balance their educational mission with sustainability goals.

Theoretical and Contextual Significance

This study makes a substantive contribution by bridging theoretical frameworks with contextual realities within the Malaysian higher education landscape. Theoretically, it expands current knowledge on the intersection of behavioral science and technological intervention in energy conservation, particularly within the context of higher education institutions (HEIs). By integrating insights from behavioral economics, environmental psychology, and energy policy, this research offers a holistic framework that highlights the interplay between individual awareness, institutional policies, and technological upgrades. It reinforces the growing consensus in the literature that energy efficiency cannot be achieved through technological means alone, but requires a behavioral shift supported by feedback systems and cultural adaptation.

Contextually, this study provides localized insights from Universiti Teknikal Malaysia Melaka (UTeM), a technical university with unique energy consumption patterns and demographic characteristics. By focusing on a Malaysian HEI, the research addresses a notable gap in global literature, which is often dominated by Western-centric perspectives. The findings reflect the cultural, economic, and infrastructural specificities of Malaysian universities, thereby offering practical and policy-relevant recommendations that align with national energy goals and sustainability strategies. This context-sensitive approach ensures that the proposed interventions are not only theoretically sound but also practically implementable within similar educational environments in Southeast Asia and other developing regions. Thus, this study serves as a valuable reference point for institutions seeking to align their operational practices with global sustainability agendas while considering local constraints and opportunities.

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