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EMPIRICAL STUDY ON SUSTAINABILITY INTEGRATION EFFECTIVENESS WITHIN UNIVERSITIES CURRICULAR

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Abstract

Sustainability has been integrated within the universities teaching systems and curricular. Universities have to go beyond the standard educational approach when addressing sustainability. This study investigates the relationship between Learning and Geo-Social Development with university's sustainability integration effectiveness. This study adapted the Model of Economy Sufficiency and the Theory of Reasoned Action. Data was collected from 418 participants – the students and staffs of a government-linked university in Putrajaya – through an online platform. The findings indicate that Learning have an impact on people's sustainability understanding and their responses towards the environmental concern. Hence, learning opportunities should be incorporated within HLIs academic platforms. This could generate more staffs and students with ethical business decisions and conducts that prioritize sustainability, which would lead to the creation of future leaders with sustainability mindsets. The outcome for Geosocial Development postulated its importance on ethical responsibility for sustainable development. Thus, it is imperative for the university's curricula to integrate sustainability within its learning processes and outcomes. The findings confirmed the significant relationships of Learning and Geosocial Development towards sustainability integration effectiveness of the universities' curricular. The findings shows that the proposed model indicates substantial predictive relevance. Future research should include larger and varied population samples as well as location and industry.

Keywords: Geo-social development, learning, model of economy sufficiency, sustainability ıntegration effectiveness

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1. Introduction

Higher learning institutions (HLIs) are integrating sustainability into their educational systems and curricula. The Swedish Higher Education Act in 2006 cited that "Universities shall, in their activities, work for sustainable development, which means that present and future generations are assured of having a healthy and good environment, economy, and social welfare and justice" (The Swedish Higher Education Act, 1992). The United Nations Decade of Education for Sustainable Development (UNESCO) supported this stand.

The integration of sustainable elements in HLIs range from simple policy statements to incorporation within courses, curriculum, and activities for a complete educational system transformation. Some examples include greening the campus and improving trash management, energy-saving improvements, environmentally friendly operations, which have been incorporated across Europe, North America, and other locations. HLIs have introduced sustainability within its curricula (Ceulemans & Severijns, 2019; Emblen-Perry, 2018) but HLIs need to address sustainability teaching in a more systematic and holistic approach (Cicmil et al., 2017; Kolb et al., 2017; Kapitulčinová et al., 2018).

HLIs have the responsibility to build and support environments but sustainable design methodologies and tools do not ensure improved sustainability programs if they could not achieve high-priority objectives of the HLIs (Bengtsson et al., 2018). Watz and Hallstedt (2020) described the experiences of academic, administrative, and support employees concerning social learning opportunities for institutional sustainability. There is an urgent need to gain the insights of the long-term maintenance and evaluation on sustainability integration within the curricular and learning processes of HLIs (Liu et al., 2022).

HLIs have to ensure their education setups are integrated multi-dimensionally for a more balanced and environmentally sustainable socioeconomic growth (Ullah et al., 2022). The sustainability integration effectiveness would influence students' perceptions, attitude, career and practical techniques. These would develop them to become global citizens with higher levels of literacy, academically and environmentally (Gulacar et al., 2022). Thus, HLIs has to cater to the students' and staffs' demand without compromising its ability to meet the needs of the future.

2. Literature Review

This study focused the investigation of HLIs' Sustainability Integration Effectiveness based on Kantabutra' Sufficiency Economy Theory (2019). He postulated five predictors of sustainability in his Sufficiency Economy Theory, namely Geosocial Development, Stakeholder Focus, Perseverance, Moderation and Resilience. The Sufficiency Economy Philosophy serves as a guide for the way of living and behaving for people of all levels. It is scalable with universal domain (Bonnedahl et al., 2022).

This study is adapting Ajzen's Theory of Reasoned Action (Ajzen, 1991) due to its ability to determine individuals' intention to perform a behaviour through the influence of attitude and subjective norms (Ajzen & Fishbein, 1975).

More recent studies claim that TRA is the best predictor of people's intentions – such as in the sustainable food service industry, agricultural economy, food-related behaviour, environmental impacts

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(Chankseliani & McCowan, 2021; Ha & Lee, 2022). The application of the Sufficiency Economy theory serves as a good model for people living in a globalised and capitalist world (Thummathai et al., 2020).

2.1. Learning

Learning (LNG) has an impact on how people think, feel, and act (Olsson et al., 2022).Students' training can be viewed in a simple form as following a linear path, in which a person's knowledge of facts obtained through education or experience follows a linear path. Educational institutions strive to foster deeper circular learning processes, in which learning is reflected on and questioned in learning loops before being applied. HLIs' students and staff should be given learning opportunities to improve their understanding, responses and participation about sustainability through multiple encounters and situations (Kantabutra, 2019).

2.2. Geosocial Development

The Geosocial Development (GSD) supports the Philosophy of Stakeholder that emphasizes moral and ethical standards towards sustainability integration (Kantabutra, 2019). Stakeholder and environmental responsibility are two sustainable enterprise principles that support the Geosocial Development practice (Ketprapakorn & Kantabutra, 2022). In other words, sustainable HLIs could invest in its stakeholders to achieve a long-term competitive advantage such as society and the environment.

2.3. Subjective Norms

Subjective Norms (SN) is defined as that approval and support of an individual or group towards certain behaviour or conduct. SN determines an individual's motivation to comply with social pressure from others for them to behave in a certain way. Liu et al. (2022) postulated that SN and Attitudes influence environmental concern and geosocial as well environmental communication and community participation (Aslam et al., 2021; Liu et al., 2022).

2.4. Attitudes

Attitude (ATT) reflects a person's main behavioral ideas about the potential repercussions of an action. It is a personal belief that engaging in a certain conduct would result in positive or negative outcomes (Kim et al., 2018). Attitude affects people's conduct directly (Kim et al., 2018; Verma et al., 2020). It has been established to operationalize due values and results in consumers' behaviour (Verma et al., 2020). The purpose of this study is to find out how HLIs students and staff faculty perceive the sustainability integration effectiveness within their HLIs (Nam et al., 2020; Verma et al., 2020).

3. Problem Statement

Europe, North America, and other regions are actively initiating greening programs and the HLIs are making the campus more environmentally friendly. The programs include improving trash management, energy-saving etcetera. Unfortunately, only a small number of methods, tools, and

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approaches for sustainable environmental planning were put into practice (Faludi et al., 2020). Some universities calculate their ecological footprints (Brody & Ryu, 2006; Flint, 2001; Ferrer-Balas et al., 2004) and require the instructors to integrate sustainability into each subject (Appel et al., 2004). Sadly, not many studies dealt with the broader concept of sustainability (Segalàs et al., 2010).

Although the concept of sustainability in higher education was promoted and supported heavily, it had little impact on educational achievements (Wright, 2004). Embedding sustainability into the curricular development could not materialize if it could not achieve other high-priority objectives (Bengtsson et al., 2018; Hill & Wang, 2018). Thus, this study is to find out how students and staff perceive the sustainability integration effectiveness within the curricular of their HLIs.

4. Purpose of the Study

This study investigates the relationship between learning and geo-social development in the sustainable effectiveness integration (SIE) within the HLIs' curricula in Malaysia. The findings is to provide additional reference and information pertaining to SIE in the pool of knowledge. This is crucial in identifying effective measures of SIE – especially how SIE are influenced by Learning and Geo-Social Development towards the students and staff within the HLIs in Malaysia. The outcomes of this study would also be beneficial in providing solutions in integrating sustainability and nudging the HLIs' students and staff to be more environmentally sensitive, friendly and responsible.

5. Research Methods

This study is adapting Kantabutra's Economy Sufficiency Philosophy (2019) and Ajzen's Theory of Reasoned Action (1991). Figure 1 summarizes the focus of the research.

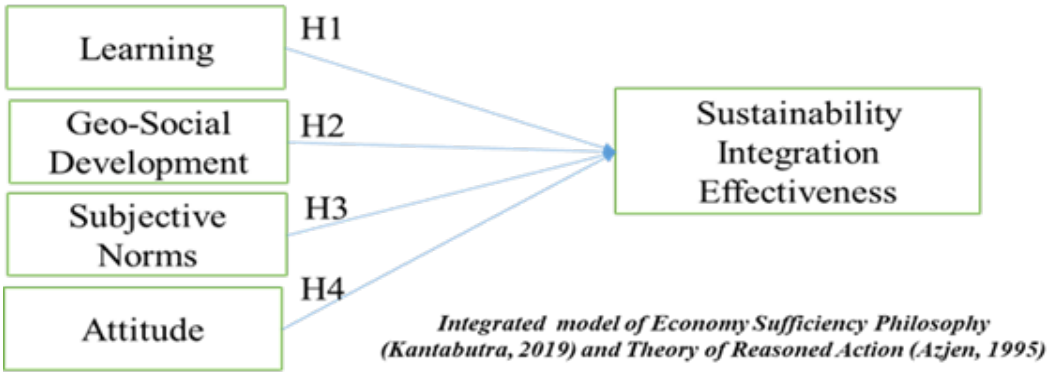

Figure 1. Research Framework

Four variables were chosen based on its relevance to this study – Learning and Geo-Social Development are from Kantabutra (2019), whilst Subjective Norms, Attitude and Sustainability Integration Effectiveness – from the perspective of intention to participate or initiate sustainability integration – are adapted from Ajzen (1991) and Chankseliani and McCowan (2021). From the framework, four hypotheses were derived to investigate the sustainability integration effectiveness of the four selected government-linked universities in Malaysia. The effectiveness of the sustainability

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integration within the GLUs' curricula was measured using an online questionnaire featuring 25 items in the form of statements. The respondents are to indicate their agreeableness according to the 5-Likert scale – from 1 for Strongly Disagree and 5 for Strongly Agree.

The students and staff of four government-linked universities around Kuala Lumpur and Selangor were the chosen samples – namely Universiti Tenaga Nasional, Universiti Teknologi Petronas, Multimedia University and University of Kuala Lumpur. An estimated total population of students and staff in these universities are 44,000 and 381 are the suggested number of samples required (Krejcie & Morgan, 1970). The instrument was sent to 500 potential respondents. Only 418 forms were completed and analyzed.

The data was analyzed using Partial Least Square – Structural equation modelling (PLS-SEM) due to its ability to evaluate hypotheses. PLS-SEM has been proven in a variety of social science disciplines and is able to estimate complex models with many constructs, indicator variables, and structural paths (Hair et al., 2020; Sarstedt & Cheah, 2019).

6. Findings

Table 1 depicts the details of the respondents' profile. Most of the respondents are aged below 40 years old (85%) – 59% are below 25 years old, 26% are between 25 to 40 years old and 10% are between 41 and 55 years old. About 54% are female and 46% are male.

Table 1. Demographic Profile

AGE	***f***	**%**
Below 25 years old	246	58.9
25 to 40 years old	109	26.1
41 to 55 years old	42	10.0
Above 55 years old	21	5.0
GENDER	***f***	**%**
Male	193	46.2
Female	225	53.8
EDUCATION	***f***	**%**
Certificate/Diploma	100	23.9
Bachelor's degree	198	47.4
Master's degree	62	14.8
Doctorate	42	10.0
Others	16	3.8
OCCUPATION	***f***	**%**
Academics	78	18.7
Management	43	10.3
Admin & Support	86	20.5
Student	203	48.6
Others	8	1.9

More than 70% are students undertaking undergraduate degree programs, whilst only 13.8% are pursuing their postgraduate degree. About 49% are active students within the participating HLIs, 19% are

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the academicians, 20.5% are the staff within the administrative and support divisions and 10% are among the management of the HLIs.

Table 2. Convergent Validity

Constructs	CA	Rho A	CR	AVE
Geo-social Development	0.942	0.948	0.951	0.687
Learning	0.919	0.920	0.935	0.674
Subjective Norms	0.896	0.897	0.935	0.828
Attitude	0.896	0.897	0.935	0.829
Integrated Effectiveness	0.872	0.872	0.922	0.797

The findings in Table 2 show that all loading, AVE, and CR values exceeded the threshold values. The loading values were between 0.872 and 0.942 (above 0.8), and the AVE values were between 0.674 and 0.829 (exceeded 0.5 threshold). Meanwhile, the CR values ranged between 0.922 and 0.951 – above the threshold of 0.7. These results confirmed the convergent validity. It also indicates a good internal consistency of the measurement model for the constructs.

Table 3. Fornell-Larcker Criterion

CONSTRUCTS	AT	GD	SI	LNG	SN
Attitude (AT)	0.910				
Geo-social Development (GD)	0.600	0.829			
Sustainability Integration (SI)	0.776	0.636	0.893		
Learning (LNG)	0.732	0.735	0.790	0.821	
Subjective Norms (SN)	0.860	0.553	0.816	0.736	0.910

Fornell-Larcker criterion (Fornell & Larcker, 1981) outcomes (as shown in Table 3) indicated that the square roots of AVE are greater than the correlation with other constructs in the model (as shown by Table 3). Whilst the Heterotrait-Monotrait ratio (HTMT) values for all constructs were less than 0.90, thus, the discriminant validity is ascertained. The confidence level does not show any value of 1 among the constructs. This verified the discriminant validity. Thus, the items of this study were valid and reliable since it passed the convergent validity and the discriminant validity tests.

Meanwhile the VIF results for all constructs are below the 5-threshold value. These indicate that collinearity is below critical level in the reflective constructs and will not be an issue for the PLS path model estimation (Ramayah et al., 2018). The results from the coefficient of determination (R2) analysis shows that Attitude, Geo-Social Development and Learning are moderate indicators for Sustainability Integration Effectiveness. The predictors explain 75% of variance in Sustainability Integration Effectiveness. All the hypotheses – H1, H2, H3, H4, H5, and H6 – show significant relationships at 0.05 level of confidence.

The predictors of Attitude, Geo-Social Development and Learning are positively related (1-tailed) to Sustainability Integration Effectiveness. Furthermore, the hypotheses are supported because there is no "0" straddled in between the confidence intervals bias results (as indicated in Table 4). Thus, the results indicate that there is a substantial model in this study.

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Table 4. Summary of Analysis

HYPOTHESES	O	M	SD	T-VALUES	P VALUES	5%	95%	Q^2
ATT -> IE	0.124	0.128	0.055	2.248	0.025			0.444
GSD -> IE	0.086	0.087	0.046	3.892	0.039	0.002	0.048	
LNG -> IE	0.196	0.197	0.052	3.809	0.000	0.009	0.144	
SN -> IE	0.659	0.658	0.051	12.943	0.000			

7. Conclusion

The study investigated the influence of Learning and Geosocial Development towards the sustainability integration within the curricula of Malaysia government-linked universities. Learning has been proven to have an impact on how people think, feel, and act (Olsson et al., 2022). HLIs' staff and students should be provided with learning opportunities to improve their sustainability understanding and the impact of their responses towards the environment. The learning platform within HLIs could open the heart and mind of the staff and students towards ethical business decisions and conducts that prioritize sustainability. Then HLIs would definitely be able to produce future leaders (the students) to look after the urgent need to monitor and improvise the learning processes continuously, in order to ensure the HLIs' sustainability integration effectiveness. Thus, the imperativeness of the university's curricula integrating sustainability within its learning processes and outcomes.

Kantabutra (2019) indicated that Geosocial Development is significant towards the Sustainability Philosophy since it highlights ethical responsibility for a sustainable development. Geosocial Development is one of the five business sustainability strategies he promoted. Meanwhile Subjective Norms and Attitudes influence environmental concern and geosocial influence (Liu et al., 2022). These findings suggest that environmental communication messages may consider contextual factors such as community participation as a key.

The targeted participants were the staff and students of Malaysia government-linked universities. This limits the generalization of the findings. More varied sample population is required. The constructs selected based on its relevance for the study, other factors – such as the availability and accessibility of the sustainability infrastructure within HLIs or sustainability intelligence – could be investigated in future research.

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