Student Awareness of the Sustainability Approaches of University Initiatives

Yao Jia Ying[1], Mohd Zulfabli Hasan[2], Hanini Ilyana Che Hashim[3], Teh Zaharah Yaacob[4]

[1,2,4] Department of Management and Technology, Faculty of Management, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia, [3]Department of Accounting and Finance, Faculty of Management, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia
Email: mohdzulfabli@utm.my

Abstract
Many experts have been pointing out the importance of sustainable development to the public for decades. It is not only important to protect the current situation and save it from inevitable deterioration, but it is also central to a better future in terms of the three essential pillars of sustainability - economic, environmental and social. Various significant researches have confirmed that higher education institutions also contribute to the achievement of the Sustainable Development Goals (SDGs) introduced by the United Nations in 2015. This study aims to propose a conceptual framework for student awareness of university approaches to sustainability. In order to promote the acceptance of sustainability among students, the main objective of this study is to measure the acceptance of university initiatives on sustainability among students. The three (3) components of the initiative taken by Universiti Teknologi Malaysia in terms of curriculum, pedagogical approach and campus activities in support of the right to sustainable development will be the focus of this study. The methodology that will be used in this study is a deductive approach along with a random sampling method as questionnaires will be developed and distributed to respondents through social media messages, e-mail, and WhatsApp group. In addition, this study proposes to use quantitative methods and refer to single units of analysis involving 375 UTM respondents that specifically refer to undergraduate students. Expert validity and pilot testing will be conducted before the questionnaires are distributed to the respondents. Ultimately, the results of this study are expected to show that the university's sustainability efforts have been successful in increasing student acceptance. The study can contribute to the university by assessing whether its efforts are appreciated by students and whether there are shortcomings. It is expected that this study can also serve as a reference for other universities to identify effective approaches that can be implemented in their respective institutions.
Keywords: Students' Awareness, Sustainability, University Initiative

Introduction

In recent years, sustainability has definitely become a predominant global interest. In accordance with the United Nations (2022) explained in the Brundtland Report, sustainability

means development that meets our own present needs without compromising the ability of posterity to meet their own needs. Originally, the goal of sustainable development was set in 2015 by the member states of the United Nations in conjunction with the 2030 Agenda for Sustainable Development, aiming for a 15-year plan to achieve the 17 goals, which essentially include sustainable economic growth, no poverty, no hunger, clean water and sanitation, affordable and clean energy, and responsible consumption and production, as stated in an article by (TWI, 2022).

Sustainable development was literally a universal call to simultaneously eradicate poverty, protect the planet, and improve the lives and prospects of all people around the world (United Nations, 2022). Moreover, the goal of sustainable development is to integrate three main pillars: environment, economy, and society. It is not an easy task to achieve a fully sustainable environment not only in our country but also in the whole world, especially during the pandemic of Covid-19 that has affected the whole world and left residues that go back to previous normal norms. However, we are still on track to meet the target by 2030, after the Covid-19 recession is over. Sustainability is an important issue that requires the world's attention because as Azhar et al (2022) point out, the acceptance of sustainability is critical to ensuring sustainability initiatives as a global effort for the benefit of our future generations, especially in Malaysia, an emerging economy. As suggested by Malik et al (2019), industry, academia, and researchers must act as change agents to realize the benefits of sustainability in industry and among students to achieve the Sustainable Development Goals. This is a clear evidence that universities play an important role in promoting students' acceptance of sustainable development with each and every approach. In the recent article by Mumtaz et al (2021), it is argued that universities have taken this responsibility to professionally train students and deploy them in non-governmental organizations, governments, or international organizations to solve current environmental problems.

A great deal of literature on students' perceptions is limited to their assessment of environmental sustainability or their role in promoting sustainability on campus, focusing only on the West and developed countries (Azhar et al., 2022). These studies have been widely discussed, such as in the United States Jung et al (2019) and in Spain, (Manresa et al., 2021). which demonstrated that most students are quite aware of the concepts of sustainability and are willing to support and participate in sustainable initiatives at their universities. In Malaysia, there are also several studies on the acceptance of sustainability among students conducted at the College Malaysia Sarawak by (Michael et al., 2020). The results showed that the students surveyed had inadequate knowledge of sustainable development, while Universiti Tunku Ang (2021) found that the acceptance of environmental literacy among students was moderate and many students did not participate in the college's social programs on the SDGs.

Ariffin & Ng's (2020) subsequent survey of higher educational institutions in Penang provided a different perspective on the findings, with respondents having a high level of understanding of sustainable development and positive and strong support for sustainable development. Radwan & Khalil (2021) emphasized that sustainability literacy can be improved by incorporating sustainability issues into higher education curricula and research that provide guidelines for integrating sustainability into daily life to build a more sustainable society. Sustainability on campus is becoming a fundamental criterion for higher education institutions to improve their academic infrastructure and implement the right faculty priorities and practices (Msengi et al., 2019).

Ultimately, higher education institutions are critical in shaping the future generation to have a positive attitude toward the importance of sustainability on campus, which is certainly beneficial in creating a sustainable future. The acceptance of sustainability among students is largely related to the environment (Malik et al., 2019; Dagiliute et al., 2018) also did mention that the created environment (infrastructure) along with information provision and acceptance raising could enable students to act in a more sustainable way and to achieve meaningful results in seeking sustainability.

Ultimately, sustainability on campus has become a fundamental criterion for any university to improve academic infrastructure, setting the right faculty priorities and practices (Msengi et al., 2019). Therefore, this study proposes to evaluate the university sustainability initiative in terms of three main aspects, namely the curriculum, educational approaches, and campus practises, to determine whether all of these aspects affect student acceptance of sustainability.

Literature Review

The focus of the literature is to propose to study the relationship between university initiative approaches of sustainability and the level of undergraduate students' acceptance with the sustainability approaches in the university. This study gives an overview of what universities can do to increase the level of undergraduate students' sustainability acceptance by implementing several drive actions in parallel with curriculum, educational approaches, and campus practices. In this chapter, the theoretical terms will be used to establish the study and the literature review will be put in place, along with defining the study's research question.

Undergraduate Students' Sustainability Acceptance

Education implementation in universities regarding environmental sustainability is vital to diffusion toward university students. Based on Amaral et al (2015) stated that higher education institutions have a special social responsibility for the development of social development, especially in the education of future leaders and in the proliferation of public acceptance about sustainability. Through its educational system, curriculum, syllabus, practises, as well as green university vision, universities have the capability to educate the future generations, particular university students, about environmental sustainability (Hamid et al., 2017). Undergraduate's students that possess a well-knowledge of sustainability can engrave a positive and acceptance toward sustainability in their mindset and practice them intuitively. This is mainly because the level of education correlates positive relationships with acceptance, knowledge, and practice (Jusoh et al., 2018). Campus sustainability is beyond doubt a perfect place to enforce meanwhile cultivate sustainable development knowledge in today's students as raised by Emanuel & Adams (2011) by raising acceptance of sustainability and providing opportunities to participate, universities can be powerful change agents with far-reaching impact.

In Malaysia, knowledge, and practice of environmental acceptance among university students have greatly improved over the years resulting in a more favorable social environment (Jusoh et al., 2018). It is also true that societies are becoming more aware of environmental issues and the importance of preserving the environment, yet the level of individual involvement in environmental preservation efforts have not increased. Research findings reveal that it is important to know how well students of universities are aware of the

environment in terms of knowledge and practices (Jusoh et al., 2018). This suggests that in order to improve the practice of knowledge and maintain the environment, the community needs to build acceptance and develop positive attitudes toward the environment. Moreover, formal education increases the students' knowledge of sustainability and influences the level of sustainability awareness and practices along the way (Mojilis, 2019). Figure 2.1 represents the interrelate between awareness, knowledge and also practice whereby none of one should be absent in an individual level of sustainability from internal to external. These three (3) elements are crucial to play as a fundamental to boost undergraduate students' acceptance in terms of the university initiatives in this study.
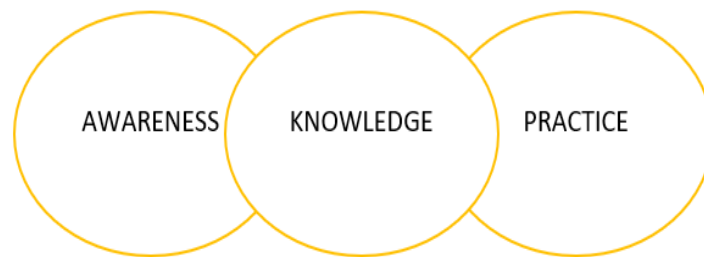

Figure 2.1: Level of sustainability correlates positive relationships with awareness, knowledge, and practice.

Curriculum

As specified by the previous study, the curriculum is among one of the aspects that can be implemented in universities' education method by integrating with the Sustainable Development Goals (SDG). Higher education institutions' role should be refined by SDGs, as well as the curriculum needs to be aligned with sustainable development. The curriculum mentioned by Menon & Suresh (2020) refers to the changes made by universities typically in sustainability at the course or program level either by adding a new topic, course material, a new module, a stand-alone course, or integrating a new program. In addition, the study in Pakistan by Jillani et al (2022) highlighted that Higher Education Commission (HEC) should develop a framework and implement concepts such as "sustainable development, education for sustainable development, and developing sustainable leaders", as well as updating and modifying curriculums and courses. Furthermore Brundiers et al (2021) argues that combining the five (5) keys competencies make it possible to create methods for developing programs and course curriculums to structure them as efficiently as possible regarding the needed learning outcomes of sustainability-related classes. System-thinking is the first competence. Secondly, will be the anticipatory competence. Followed by the third competence is normative competence, the fourth which is strategic competence and lastly is interpersonal competence.

The curriculum is not only limited in the scope of education and pedagogy but it may also connect with activities outside of campus. For instance, universities are collaborating with the industry to incorporate sustainable development projects. Chen et al (2018) did suggests that collaborating with the industry in building a sustainable curriculum can bridge the gap between students' skills and the industry requirements. Other than collaborating with industry, the other approach can be enacted by incorporating environmental sustainability

topics such as the impact of using ICT on the environment, ways of recycling hardware and ways of reducing greenhouse emissions caused by the use of ICT tools may help motivate students' interest in ICT related courses whereby this is adopted by the study conducted by (Hilty and Huber, 2018). In line with Mumtaz et al (2021) reported that in order to spread the message of maintaining a safe and sustainable environment, students need to participate in exchange programs and visit several universities both nationally and internationally in order to gain a deeper understanding of the national and international environmental challenges.

The Relationship between Curriculum and Undergraduate Students' Acceptance toward Sustainability

Curriculum activities in university are certainly able to equip the student with first-hand experience of sustainability when they are involved in extracurricular activities. External activities that are encouraged to run in universities can be to prepare seminars, voluntary activities, competitions, discussion clubs, or celebrate days entitled to the environment, such as global earth day, water day, or clean environment days (Mumtaz et al., 2021). Students are able to realize and understand the importance of sustainable development along with the capability in contributing their affordance in sustainability development not only limited to the campus.

Educational Approaches

In accordance with the trend of implementation and accomplishing the Sustainable Development Goals, Education for Sustainable Development (ESD) has been highlighted in higher institutions. Educational approaches to campus sustainability are no longer unfamiliar recently because numerous higher educational institutions as well as adopted this approach. When left unattended and ignored, education for sustainability and its acceptance can have a direct impact on students' skills, abilities, and performance (Malik et al., 2019). Alm et al (2022) defined universities can enhance students' interpersonal competencies by incorporating a knowledge of the SDGs into their teaching by leveraging students' understanding of the SDGs.

The first step in introducing sustainability and sustainable practices on a college campus is education which includes familiarizing students with a host of new terms and concepts (Emanuel & Adams, 2011). At the university level, the students should also be stressed in the teaching and learning method in environmental education focusing on methods in the field of work such as conducting experiments, and practical research in the field of solving environmental issues that will expose students direct experience to the environment and nature by "hands-on" activities (Jusoh et al., 2018). Students that impose on this environment will be beneficial as revealed by Hassan et al (n.d.) the environment will directly improve knowledge and acceptance that leads to the good of environmental practices. Moreover, United Nations Educational, Scientific and Cultural Organization (UNESCO) emphasised Education for Sustainable Development (ESD) fosters a process of learning how to make decisions that consider the long-term future of the economy, ecology, and equity of all communities.

Students are unwittingly provided with an opportunity to comprehend sustainability and then make discussions about it when universities impart knowledge and current issues about sustainable development into their study courses in the form of lectures, forums, case studies, or electives courses. Sustainable futures are able to be achieved when every human

being acquires essential knowledge, skills, attitudes, and values through education for sustainable development. Moreover, students need to be motivated and empowered to change their behaviour and action toward sustainable development through participation in teaching and learning methods. By fostering critical thinking, imagining future scenarios, and making collaborative decisions, education for sustainable development promotes sustainable development competencies. Today, education is often practiced in ways that are far from sustainable. Education for Sustainable Development demands far-reaching changes (Alsaati et al., 2020). Formal education escalates the students' knowledge of sustainability which then will substantially affect the level of sustainability acceptance and practices along the way (Mojilis, 2019).

The Relationship between Educational Approaches and Undergraduate Students' Acceptance of Sustainability

By declaring 2005-2014 the Decade of Education for Sustainable Development (DESD), the United Nations seeks to integrate sustainable development principles, values, and practices into all aspects of education and learning. UNESCO (n.d.) reviewed that education as insisted by the United Nations will certainly foster changes in behaviour that will build a more sustainable society for present and future generations in terms of environmental integrity, sustainable economics, and fairness. This has propelled a variety of educational institutions to implement and engage with the Sustainable Development Goal strategy in order to motivate students to the whole new syllabus of learning of sustainability.

Campus Practices

The dissemination of knowledge and acceptance related to sustainability can also be implied via educational approaches. Campus sustainability is one of the internal practices and activities the universities contribute to sustainability (Dagiliūtė et al., 2018). The USA has done an impactful step in corresponding with sustainable development as revealed by Emanuel & Adams (2011) a growing movement in the USA requires its state and federally funded universities to include environmental education in curriculum and incorporate sustainability practices into campus development and day-to-day operations. There is a sustainability measure developed for the higher education institution in adoption on sustainability development Msengi et al (2019) below are the stipulated phase:

PHASE 1
Grassroots Phase
This involves campus-wide grassroots movement effort to advocate for sustainability-related services and policies such as recycling,creating courses, limiting pesticide applications, eliminating bottle water sales, etc.

PHASE 2
Executive Acceptamce Phase
Leadership begins to recognize the value of efficiency programs, which reduce cost and improve reputation on campus.

PHASE 3
Visionary Campus Leader Phase
Sustainable initiatives are incorporated into the university's strategic plan and vision.

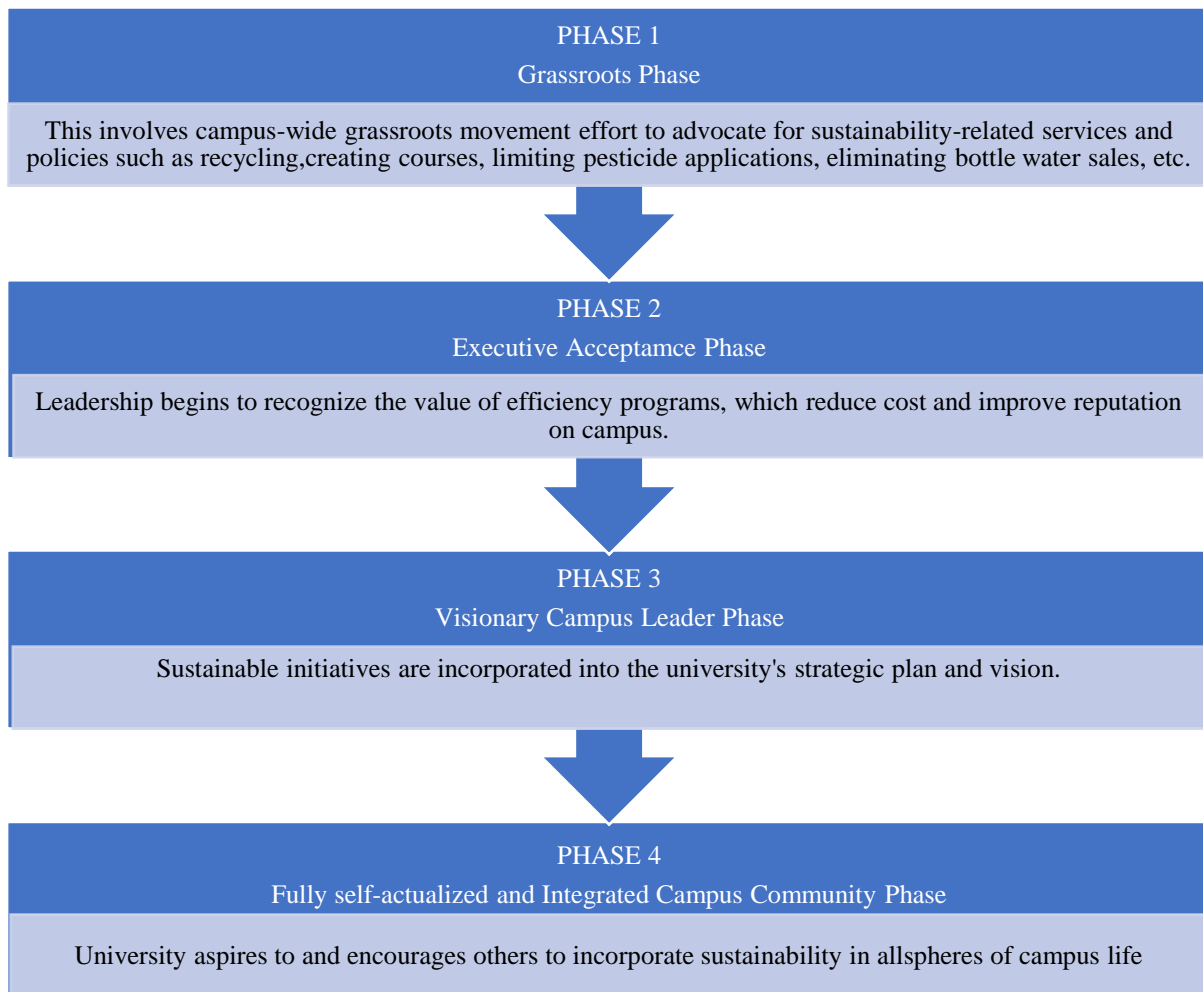| PHASE 4 |
| --- |
| Fully self-actualized and Integrated Campus Community Phase |
| University aspires to and encourages others to incorporate sustainability in allspheres of campus life |

Figure 2.2: Sustainability measure in adoption on sustainable development.

Greening university campuses is a double edged-sword as it can help to cultivate a campus culture of sustainability while simultaneously nurturing students about on-campus sustainability. Sustainability on the campus cannot be achieved without incorporating principles such as water conservation, energy efficiency, green transportation, waste management, resource conservation, equity, and minimizing pollution into campus operations (Nikpour & Pooladkhai, 2012). The university can apply sustainable practices like standardised recycling bins and labelling. These will ensure consistency by using the same bins, labels, and graphics across all campuses. Simultaneously, assist students and staffs decide which bin to put their waste in based on the bins, labels, and graphics that are used throughout the campus (Farrelly, 2022). Moreover, establish of eco-garden also inadvertently crucial to develop pro-environmental attitudes and boost students' appreciation through educational activities-based learning (Cheang et al., 2017).

There are many significant ways that can be undertaken by universities in sustainable practices, a case in point energy efficiency in each facility besides implementation of a recycling program in the university. The other eye-catching project in achieving sustainable development practice in campus is the Students Achieving Valuable Energy-Savings (SAVES). This project runs within the framework of the European Commission Intelligent Energy – Europe (IEE) programme, coordinated by National Union of Students of the United Kingdom (NUS-UK) with prior initiative to motivate students on energy-saving as a part of their daily

lives. Its goal is to embed energy-saving habits into students' lives during a crucial time of life transition so that they can continue saving energy throughout their lives (European Students' Union, 2016). Nevertheless, apart from some sustainable landscaping and waste recycling practices, there are also few sustainability initiatives in transportation and energy and water conservation on the campus that can be implement (Abubakar et al., 2016).

The Relationship between Campus Practices and Undergraduate Students' Acceptance of Sustainability

It is inevitable to accept the vitality of campus practices in nurturing students of sustainable development in university. When students become familiar with sustainability at university and feel obligated to participate, they will begin to do sustainable practices without any guidance even if they do not receive any instruction. Admittedly, to keep pace with this university management must develop policies that support the sustainability practices projects. For instance, green campus approaches are some of the initiatives that universities all over the world are taking. These initiatives act as a foundation to bring acceptance about sustainability in all fields (Malik et al., 2019).

The Contribution between Curriculum, Educational Approaches, and Campus Practices

Hassan et al (n.d.) suggested that the teaching and learning are focussed on methods in field of work as an example conducting experiments, and practical research to solve environmental issues because it is dispensable to boost the relationship between students with the environment which directly increase the acceptance and attitudes that lead to good practices on the environment. It is important for higher education to embody principles of sustainability, regardless of the field of expertise, to prepare students for making individual choices or even collective decisions about consumption and production in the future (Manresa et al., 2021). All of these approaches are integrated with theory and practice with one focus, educating students about sustainable development through theory and practice. To sum up, these approaches adapted by the universities are corresponding in nurturing undergraduate students' acceptance of the sustainability in the act of curriculum, educational approaches, and campus practices from the internal toward external of campus enact with the intention to promote sustainable development.
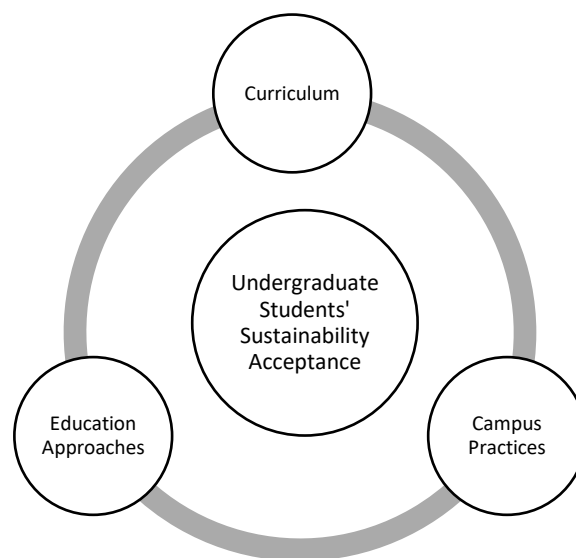

Figure 2.3: Relationship between integrating sustainability.

Underpinning Theory

The underpinning theory embedded in this study is the Resource Based View (RBV) that is associated with the term sustainability. Sridharan (2023) defines this theory as a strategy model that considers an organization's resources as key to sustainable competitive advantage. Due to the fact that resource-based views, along with the goals, can be adapted to this study, the university is easier and more feasible to achieve higher performance by focusing on exploiting external opportunities by using existing resources in a new way. This means that a university should look within itself for sources of competitive advantage instead of looking to the external environment for competitive advantages. Therefore, in order to sustain its competitive advantage, a university has to analyze, allocate, and utilize resources across functional lines. Through maximizing the utilization of resources, universities can maintain competitive advantage and cater to sustainability. In addition, RBV is an essential tool to ensure optimal resources and university performance.

Conceptual Research Framework

The conceptual research diagram is essential in this study as it is responsible for analytical tools conceptualization as a key attribute of the overall research framework. It primarily illustrates the interconnections between each of the variables to provide a better comprehension of the study. In this study, the dependent variable is undergraduate students' sustainability acceptance followed by the independent variable is the university's initiative approaches of sustainability in terms of curriculum, educational approaches, and campus practices. All of the university's initiative approaches of sustainability are interrelated and basically, that will influence the undergraduate students' sustainability acceptance. Subsequently, a relationship test will be conducted between these independent variables with the dependent variable so as to identify the connection between them. Eventually, the conceptual research diagram is proposed as below

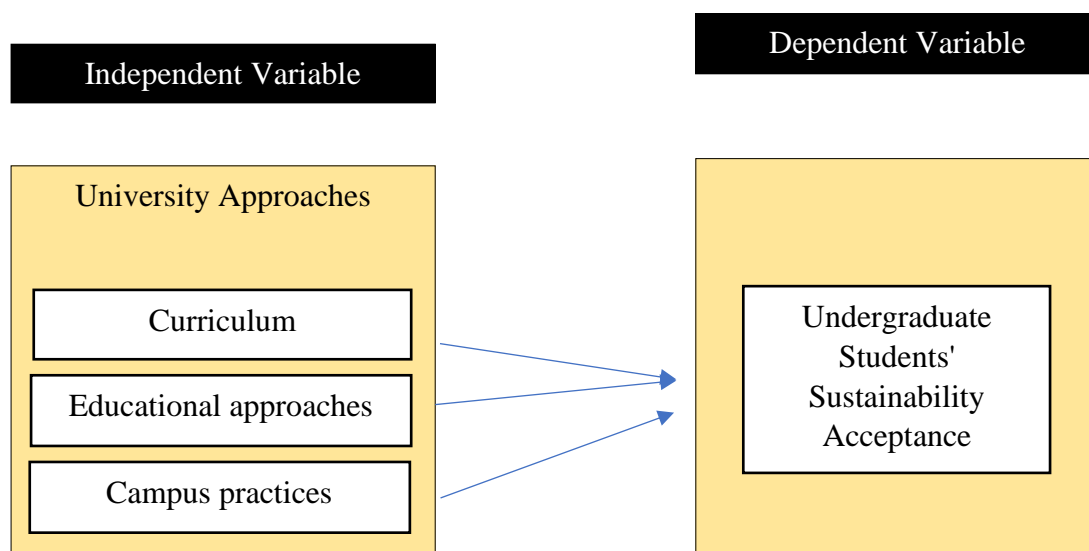
Figure 2.4: Conceptual research diagram

Hypothesis Development

To evaluate the research objective of the study, the following hypothesis statement are prediction to the possible outcome that are going to be obtained in accomplish the study:

Despite knowledge being key to assisting a community in understanding sustainability, acceptance it may not have much impact on changing behaviour, whereas engagement results in more behavioral change (Too & Bajracharya, 2015). Thus, an environment that can provide student engagement with practical approaches toward sustainability is necessary to boost students toward sustainability. Student engagement may offer an opportunity for them to connect with sustainability knowledge in a tangible way, usually through group activities. (Cogut et al., 2019). Same goes to the study by Rajabifard et al (2021) also suggested students' acceptance of SDG is vital but only learning does not achieve the objective of the program. Students are expected to be empowered and inspired to create a positive change because providing acceptance of SDGs at higher education helps students to understand the applicability of SDGs in their lives. Curriculums that involve more practical approaches, for instance incorporating the SDG into hands-on projects and exercises, rather than a teaching method should be considered to be carried out subsequently students can have a comprehensive understanding of the SDGs.

However, on the other side, there is a study conducted by Abubakar et al (2016) in the College of Architecture and Planning, University of Dammam in Saudi Arabia has revealed pessimistic results that show that although the students indicate a great deal of acceptance and concern about campus environmental sustainability, they lack initiatives in interest and willingness to take part in achieving sustainability. Hence, the curriculum does drive the undergraduate students' acceptance of sustainability. Therefore, the hypothesis (H1) is developed as below

H1: There is a relationship between curriculum and the undergraduate students' acceptance of sustainability

In the relevant research Chiong et al (2017) to achieve long-term sustainability within a country, education, particularly tertiary education, is a key tool for increasing sustainability acceptance and knowledge among the population. The other most commonly discussed policy for sustainability education is Education for Sustainable Development and the Millennium Development Goals, which highlights that education helps in developing competent knowledge to drive ecological sustainability and sustainable living style (UNESCO, 2017). Sidiropoulos (2014) also claimed that introducing sustainability into course assessment or integrating sustainability into course assessment had an impact on students' understanding of sustainability, which in turn would lead to the integration of sustainability into Higher Education Institutions (HEI) over time.

Conversely, in Afghanistan, although universities have given priority to environmental studies and have placed environment-related subjects in almost every faculty but it still lacks in driving undergraduate students' acceptance of sustainability which can be blamed on environmental issues continue to be ignored in the country because the government is currently focused on fighting terrorism and extremists (Mumtaz et al., 2021). This has identified that there is also a negative side of educational approaches to campus sustainability that it does not really drive the undergraduate students' acceptance of sustainability as argue by the study Ahamad & Ariffin (2018), Despite sufficient knowledge about sustainability, students lack the ability to put it into practice. Hence, the educational approaches to campus

sustainability does drive the undergraduate students' acceptance of sustainability. Therefore, the hypothesis (H2) is developed as below

H2: There is a relationship between educational approaches and the undergraduate students' acceptance of sustainability.

In relation to Msengi et al (2019) has concluded that most participants were neither aware of campus sustainability initiatives nor able to clearly define sustainability. It demonstrates the underlying problem that goes beyond students' understanding of sustainability. It reflects the institution's reluctance to adopt sustainability initiatives into campus life, which continues to be a challenge owing to its slow pace or reluctance to change the culture of business as usual. Therefore, universities indeed play an important role in advocating for the integration of sustainability initiatives into campus life.

Besides, based on the study carried out by Emanuel & Adams (2011), students surveyed in the study for both states Alabama and Hawaii show concern about wasteful consumption and pollution. Among respondents, their self-assessed knowledge about sustainability on campus and the responsibility for sustainability on campus were similar. However, a larger number of Hawaii respondents expressed concern for and willingness to participate in sustainable practices. Therefore, the gap between knowledge and commitment is relatively small when it comes to campus sustainability, but there seems to be a significant gap when it comes to commitment. In this respect, student responses are a reflection of the sustainability practices in the community where their campus is situated. This proves that students follow where their community leads when it comes to campus sustainability. Ultimately, it is the responsibility of universities to lead the way in establishing sustainable practices on campus.

On the contrary, the other aspect to be analyzed is the sustainability practices on campus, a case in point green university. Dagiliūtė, R., Liobikienė, G., & Minelgaitė, A. (2018) indicates that a comprehensive analysis of whether green universities really contribute to sustainability performance more than conventional universities has not yet been undertaken. In this case, the declaration that a university is environmentally friendly might remain at this level while no effort is made to green the campus or incorporate more environmental courses. Hence, the sustainable campus practices do drive the undergraduate students' acceptance of sustainability. Therefore, the hypothesis (H3) is developed as below

H3: There is a relationship between campus practices and the undergraduate students' acceptance of sustainability

Research Methodology
This chapter focuses the discussion on the research philosophy, research design, the techniques used for data collection, the sources of data, procedure and also data analysis for this research. This research was mainly to assess and evaluate the university initiative of sustainability in improving the student acceptance. Later, the data collected will be analyzed to answer the hypothesis development, objectives and research questions.

Research Philosophy

According to Saunders et al (2019), research philosophy refers to the system of beliefs and assumptions about the development of knowledge. In addition, developing knowledge in a particular field related to the research is what exactly happens when research is conducted. Although the initial intellectual development may not be as likely as the development of a new theory of human motivation, new skills for solving specific problems within an organization are still acquired. Research philosophy is certainly a crucial step when conducting research, as a result, it represents the first layer of the research onion followed by the other layers which are approaches, strategies, choices, time horizons, techniques, and also procedures.

Furthermore, there are five (5) management philosophies consisting of postmodernism, critical realism, realism, pragmatism, interpretivism, and positivism. Eventually, in this study pragmatism type of research was chosen because these approaches are value-driven research and are appliable following the research problem and research question and the range of methods can be a quantitative method of data analysis, with a range of data that could be analyzed.

Research Design

Burney & Saleem (2008) points out there are two (2) types of research methods which are deductive and inductive approaches. The deductive approach works from general to specific. It can also be referred to as a "top to down" approach so the conclusion follows logically from the available facts. The inductive approach, on the other hand, moves from specific observations to broader generalizations and theories. This approach is also known as the "bottom to up" approach and may contains of uncertainty. As a result, deductive approaches typically use arguments derived from laws, rules, and accepted principles while inductive approaches will use observations. In short, using deductive approaches will be the best approach to be used in this study since it focuses on theory, hypothesis, observation, and ends with a confirmation of the result throughout this study.

Population and Sample Frame

The population is the study's target population that it intends to study and researchers will decide on a sample from the population of interest to include in their study (Majid, 2018). The target population of this study is aimed at all undergraduate students in Universiti Teknologi Malaysia, Johor Bahru. Meanwhile, the initial research place of this study will assuredly be carried on at Universiti Teknologi Malaysia, Johor Bahru. As well. Ultimately, the target population which is undergraduate students in Universiti Teknologi Malaysia, Johor Bahru that consists of 16,090 students based on Universiti Teknologi Malaysia (2022) regardless of their gender, the field of study, and also background. In terms of the time dimension, there are two (2) specific types of time dimensions, cross sectional and longitudinal. Cross-sectional research involves observing at a single point in time; in contrast, longitudinal research looks at characteristics of individuals or other units over the course of several points in time (CSUN.edu, n.d.). Due to the limited amount of time available to gather all the necessary data, cross-sectional research is more practical. Natural environments are applied as the study setting in this study.

Unit of Analysis

Kumar (2018) highlight that business researchers collect data from individuals or objects as their units of analysis. An analysis of business research aims to answer the questions of 'what' is being studied and 'who' is being studied. The unit of analysis includes individuals, groups, organizations, and social interaction. Individuals are the most typical units of analysis applied in research. A group is a group of two or more people who share the same characteristics and share a sense of unity. Organizations are formally structured groups; they could be corporations, religious groups, army divisions, colleges, academic departments, etc. The final category will be social interactions, such as making eye contact with a co-worker, traffic accidents, professional counseling and WhatsApp chat. In contrast, the unit of analysis adopted in the study is individual. The primary reason for this decision is on account of this study that wanted to investigate the undergraduates' acceptance of the university initiative approach to sustainability. In view of the fact that individuals are basically for the researcher might be interested in investigating the behaviours, perceptions, attitudes, or opinions.

Sampling Technique

There are two (2) main categories of sampling known as probability sampling and non-probability sampling by which under this there are a variety of sampling techniques (Singh, 2018). The sampling category that will be adopted in this study is non-probability sampling subject to convenience sampling on the ground of simplicity and to ensure that all elements of data collection can be collected quickly in a limited amount of time. The convenience sampling method also allows for better qualitative research, particularly in social sciences and education, where pre-existing groups, such as students, can be used. The convenience sampling method could also be suitable for studies that want to know the attitudes and opinions of people. This is aligned with the study on increasing students' awareness of university sustainability initiatives (Nikolopoulou, 2022). Singh (2018) mentioned probabilities consists of sampling techniques, such as simple random sampling, stratified sampling, systematic sampling, and cluster sampling, however, non-probability sampling does not require randomization and relies more on the researcher's ability to select sample elements. In convenience sampling, purposive sampling, quota sampling, and snowball sampling, there is a possibility that the outcome of sampling will be biased but Nikolopoulou (2022) defined that it can still be avoided by mobilizing as many participants as possible and by adopting a sample size calculator to determine the appropriate sample size even undertaking the strategy to distribute the questionnaire at different times and days conducive to reduce the probability of bias happened in the study.

Sampling Size

Sampling is an important tool for research studies because the population of interest usually consists of numerous of individuals for each research project to include as participants (Majid, 2018). Thus, the sample size selection will be decided corresponding to the Krejcie and Morgan sampling method developed by (Krejcie & Morgan, 1970). This table as shown below is aiming to assist researchers in determining the appropriate number of samples needed depending on the population size. It is beneficial for researchers to adapt the table to obtain a suitable sample size that will accurately represent the population. In general, the total population of undergraduate students in Universiti Teknologi Malaysia, Johor Bahru is 16,090 Universiti Teknologi Malaysia (2022), thus based on matching the table below this

study is at par with the population of approximately 15,000, resulting in about 375 respondents required to make this study accomplished (Krejcie & Morgan, 1970).

Table 3.1
Table of Krejcie & Morgan

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	26	140	103	340	181	1000	276	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is Population Size
"S" is Sample Size.

Data Collection Method

This study will be conducted quantitative-based. Quantitative research is a systematic investigation of phenomena by gathering quantifiable data and performing statistical, mathematical, or computational techniques. By using sampling methods and online surveys, online polls, and questionnaires, data will be collected from existing and potential customers. The results accumulated can be depicted in the form of numerical Fleetwood (2018), afterward to construct the findings into the form of graphs and tables of raw data. A questionnaire will be developed through an extract from the previous research and distributed to the target respondents.
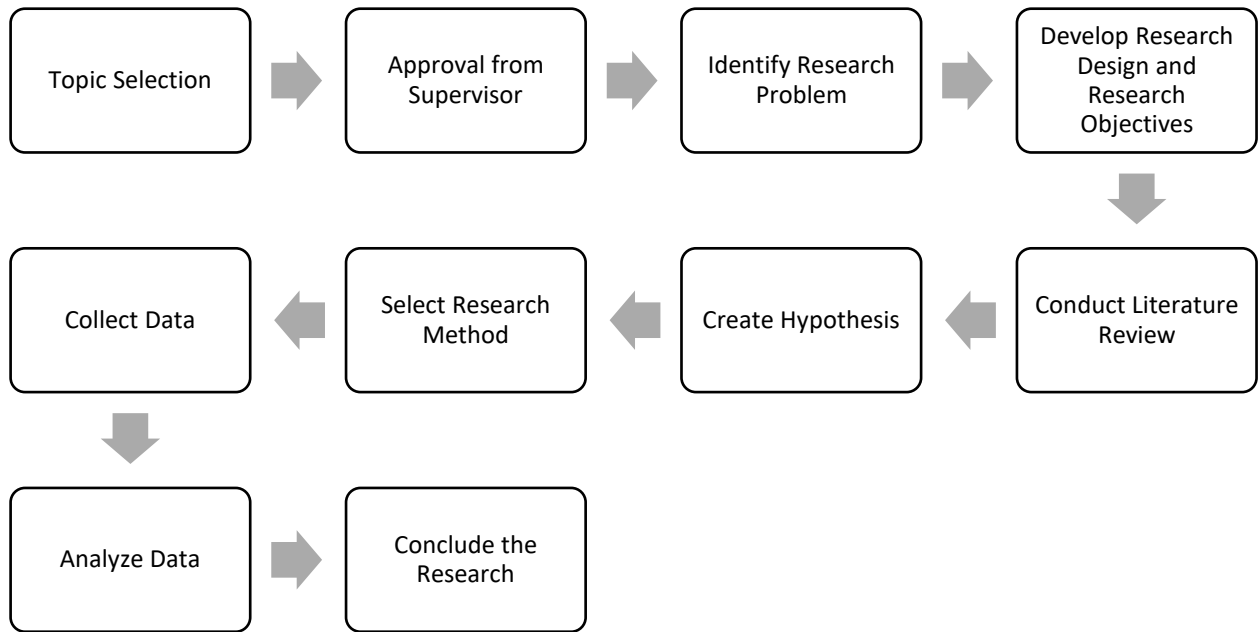
```
┌─────────────┐      ┌─────────────┐      ┌─────────────┐      ┌──────────────┐
│   Topic     │ ──▶  │ Approval    │ ──▶  │  Identify   │ ──▶  │Develop       │
│  Selection  │      │ from        │      │ Research    │      │Research      │
│             │      │ Supervisor  │      │ Problem     │      │Design and    │
│             │      │             │      │             │      │Research      │
│             │      │             │      │             │      │Objectives    │
└─────────────┘      └─────────────┘      └─────────────┘      └──────────────┘
                                                                      │
                                                                      ▼
┌─────────────┐      ┌─────────────┐      ┌─────────────┐      ┌──────────────┐
│ Collect Data│ ◀──  │Select       │ ◀──  │  Create     │ ◀──  │Conduct       │
│             │      │Research     │      │ Hypothesis  │      │Literature    │
│             │      │Method       │      │             │      │Review        │
└─────────────┘      └─────────────┘      └─────────────┘      └──────────────┘
       │
       ▼
┌─────────────┐      ┌─────────────┐
│Analyze Data │ ──▶  │Conclude the │
│             │      │Research     │
└─────────────┘      └─────────────┘
```

Figure 3.1: Data Collection Method

Conclusion

Sustainability is a trend in today's life, people desire sustainability and have been obsessed with achieving sustainable development goals since its inception. The purpose of this study is to determine if the initiatives taken by HEI specifically at UTM increase the acceptance of sustainability among students. Three (3) main approaches taken by UTM are evaluated focusing on curriculum, educational approaches, and campus practises. In this study, it was expected that all of these approaches being assessed can influence student acceptance of sustainability by showing a positive outcome that can significantly support the findings of this study. This study is important in determining the university's effectiveness in sustainability approaches because it helps the university assess whether its efforts are valued by students and is able to make further improvements if there are deficiencies. This leads to students appreciating the university's approaches while also using them to a high degree.

References

Abubakar, I. R., Al-Shihri, F. S., & Ahmed, S. M. (2016). Students' Assessment of Campus Sustainability at the University of Dammam, Saudi Arabia. *Sustainability (Switzerland)*, *8*(1). https://doi.org/10.3390/su8010059

Ahamad, N. R., & Ariffin, M. (2018). Assessment of Knowledge, Attitude and Practice towards Sustainable Consumption among University Students in Selangor, Malaysia. *Sustainable Production and Consumption*, *16*, 88–98. https://doi.org/10.1016/j.spc.2018.06.006

Alm, K., Beery, T. H., Eiblmeier, D., & Fahmy, T. (2022). Students' Learning Sustainability – Implicit, Explicit or Non-Existent: A Case Study Approach on Students' Key Competencies Addressing the SDGs in HEI Program. *International Journal of Sustainability in Higher Education*, *23*(8), 60–84. https://doi.org/10.1108/IJSHE-12-2020-0484

Amaral, L. P., Martins, N., & Gouveia, J. B. (2015). Quest for a Sustainable University: A Review. In *International Journal of Sustainability in Higher Education* (Vol. 16, Issue 2, pp. 155–172). Emerald Group Holdings Ltd. https://doi.org/10.1108/IJSHE-02-2013-0017

Burney, S. M., & Saleem, H. (2008). Inductive & Deductive Research Approach. In *Lecture delivered on*.

California State University. (n.d.). *Dimensions of Research*. Retrieved January 7, 2023, from https://www.csun.edu/~hbsoc126/soc4/chapter_2_outline.pdf

Chen, M. Hui, Wu, Y. J., & Tsai, K. M. (2018). Building an Industry-Oriented Business Sustainability Curriculum in Higher Education. *Sustainability (Switzerland)*, *10*(12). https://doi.org/10.3390/su10124698

Cogut, G., Webster, N. J., Marans, R. W., & Callewaert, J. (2019). Links between Sustainability-related Awareness and Behavior: The Moderating Role of Engagement. *International Journal of Sustainability in Higher Education*, *20*(7), 1240–1257. https://doi.org/10.1108/IJSHE-09-2018-0161

Dagiliute, R., Liobikiene, G., & Minelgaite, A. (2018). Sustainability at Universities: Students' Perceptions from Green and Non-Green Universities. *Journal of Cleaner Production*, *181*, 473–482. https://doi.org/10.1016/j.jclepro.2018.01.213

Emanuel, R., & Adams, J. N. (2011). College Students' Perceptions of Campus Sustainability. *International Journal of Sustainability in Higher Education*, *12*(1), 79–92. https://doi.org/10.1108/14676371111098320

European Students' Union. (2016). *Students Achieving Valuable Energy Savings (SAVES)*. https://esu-online.org/projects/students-achieving-valuable-energy-savings-saves/

Fleetwood, D. (2018). *Quantitative Research: What it is, Tips & Examples*. https://www.questionpro.com/blog/quantitative-research/

Hassan, A., Abd Rahman, N., & Intan Sharina Syed Abdullah, S. (n.d.). *The Level of Environmental Knowledge, Awareness, Attitudes and Practices among UKM Students*.

Hilty, L. M., & Huber, P. (2018). Motivating Students on ICT-Related Study Programs to Engage with the Subject of Sustainable Development. *International Journal of Sustainability in Higher Education*, *19*(3), 642–656. https://doi.org/10.1108/IJSHE-02-2017-0027

Jillani, H., Chaudhry, M. N., & Zahid, H. (2022). Assessing sustainability cognizance in higher education institutions. *Current Research in Environmental Sustainability*, *4*. https://doi.org/10.1016/j.crsust.2022.100190

Jusoh, S., Kamarudin, K. A. M., Abd Wahab, N., Saad, H. M. M., Rohizat, H. N., & Mat, H. N. N. (2018). Environmental Awareness Level Among University Students in Malaysia: A

Review. *International Journal of Engineering & Technology*, *7*(4.34), 28. https://doi.org/10.14419/ijet.v7i4.34.23575

Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. In *EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT* (Vol. 30).

Kumar, S. (2018). Understanding Different Issues of Unit of Analysis in a Business Research Journal of General Management Research. *Business Research Journal of General ManaGeMent Research Article*, *5*, 70–82. https://www.researchgate.net/publication/356035134

Majid, U. (2018). Research Fundamentals: Study Design, Population, and Sample Size. *Undergraduate Research in Natural and Clinical Science and Technology (URNCST) Journal*, *2*(1), 1–7. https://doi.org/10.26685/urncst.16

Malik, M. N., Khan, H. H., Chofreh, A. G., Goni, F. A., Klemes, J. J., & Alotaibi, Y. (2019). Investigating Students' Stainability Awareness and the Curiculum of Technology Education in Pakistan. *Sustainability (Switzerland)*, *11*(9). https://doi.org/10.3390/su11092651

Manresa, A., Berbegal-Mirabent, J., Faura-Martinez, U., & Llinares-Ciscar, J. V. (2021). What Do Freshmen Know About Sustainability? Analysing the Skill Gap among University Business Administration Students. *Sustainability (Switzerland)*, *13*(16). https://doi.org/10.3390/su13168813

Menon, S., & Suresh, M. (2020). Synergizing Education, Research, Campus Operations, and Community Engagements towards Sustainability in Higher Education: A literature Review. In *International Journal of Sustainability in Higher Education* (Vol. 21, Issue 5, pp. 1015–1051). Emerald Group Holdings Ltd. https://doi.org/10.1108/IJSHE-03-2020-0089

Mithun Sridharan. (2022). *RBV – What Is a Resource-Based View of Strategy?* https://thinkinsights.net/strategy/rbv-strategy/

Mojilis, F. (2019). Sustainability Awareness of Students from a Green University in Sabah. In *Malaysia. Journal of Tourism, Hospitality and Environment Management* (Vol. 4, Issue 13). www.jthem.com

Msengi, I., Doe, R., Wilson, T., Fowler, D., Wigginton, C., Olorunyomi, S., Banks, I., & Morel, R. (2019). Assessment of Knowledge and Awareness of "Sustainability" Initiatives Among College Students. *Renewable Energy and Environmental Sustainability*, *4*, 6. https://doi.org/10.1051/rees/2019003

Mumtaz, Y., Mumtaz, R., & Shukla, A. (2021). Contribution of Higher Education Institutions in Environmental Conservation and Sustainable Development: An example of Nangarhar University. *Modern Environmental Science and Engineering*, *7*(6), 624–628. https://doi.org/10.15341/mese(2333-2581)/06.07.2021/013

Nadine Farrelly. (2022). *18 Recycling Tips for College Students*. https://www.1800gotjunk.com/us_en/blog/environment/recycling-tips-college-students

Nikolopoulou, K. (2022). *What Is Convenience Sampling? | Definition & Examples*. https://www.scribbr.com/methodology/convenience-sampling/

Nikpour, M., & Pooladkhai, R. (2012). Arts and Design Studies Review of Different Architectural Strategies for Creating Sustainable Universities. *Online)*, *5*. www.iiste.org

Rajabifard, A., Kahalimoghadam, M., Lumantarna, E., Herath, N., Hui, F. K. P., & Assarkhaniki, Z. (2021). Applying SDGs as a Systematic Approach for Incorporating Sustainability in

Higher Education. *International Journal of Sustainability in Higher Education*, *22*(6), 1266–1284. https://doi.org/10.1108/IJSHE-10-2020-0418

Saunders, M. N., Lewis, P., & Thornhill, A. (2019). *Research Method for Business Students* (8th ed.).

Singh, S. (2018). *Sampling Techniques*. https://towardsdatascience.com/sampling-techniques-a4e34111d808

Sidiropoulos, E. (2014). Education for Sustainability in Business Education Programs: A Question of Value. *Journal of Cleaner Production*, *85*, 472–487. https://doi.org/10.1016/j.jclepro.2013.10.040

Too, L., & Bajracharya, B. (2015). Sustainable Campus: Engaging the Community in Sustainability. *International Journal of Sustainability in Higher Education*, *16*(1), 57–71. https://doi.org/10.1108/IJSHE-07-2013-0080

UNESCO. (2017). *Education for Sustainable Development Goals : Learning Objectives*. https://unesdoc.unesco.org/ark:/48223/pf0000247444

Universiti Teknologi Malaysia. (2022). *Official Web Portal of Universiti Teknologi Malaysia | Innovative . Entrepreneurial . Global*. https://www.utm.my/