

# Sustainable Universities as Brand Marketing for Universities: A Case of Universiti Sains Malaysia

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## Abstract

Numerous universities have promoted a sustainable university's brand by offering sustainability curricula, conducting sustainability studies, enforcing sustainable policies, etc. As such, sustainable universities take advantage of the opportunity to market these activities to attract potential students. This research explores international students' perception towards the sustainable brand of Universiti Sains Malaysia (USM) and choosing a sustainable university. The study further examines the influence of factors in choosing USM regarding being USM a sustainable university. A survey was conducted involving 391 international students, using a self-assessment questionnaire followed by collecting and analysing the data using PLS-SEM. The results discovered positive relationships between brand image and brand meaning of USM as a sustainable university regarding students' intention in choosing USM. Aside from that, USM's credibility, informativeness, entertainment, and irritation of information affected students' intention to study at USM. In contrast, the study found that both the perception of USM as a sustainable university and the brand identity of USM as a sustainable university had an antagonistic relationship towards students' intention to study at USM.

Keywords: Sustainable development education, sustainable university brand, international students, survey, PLS-SEM, brand image, brand identity, brand meaning, USM, Malaysia.

## Introduction

Institutions like universities play an essential role in addressing climate change and its impact on the surrounding environment. By implementing sustainability practices in universities, they will be well-positioned to offer educational courses on sustainability to respective students, staff, and community through sustainability research and sustainable policies and good governance (Elliott & Wright, 2018). Also, the role of universities towards a sustainable future is seen as pivotal. It is stated as one of the primary aims in providing Education Sustainable Development (ESD) to society (Tapia-Fonllem et al., 2017).

In a similar vein, universities need to recognise that being acknowledged as a sustainable university undoubtedly helps them be unique and set themselves apart from other universities. In this context, a university brand is a term or recognition that helps display an institution's image and the value provided by the university. Failure to establish

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a brand leads to misrepresentation, not only by universities but also from the public (Judson et al., 2008). Moreover, university branding aims to influence students to choose a university (de Heer & Tandoh-Offin, 2015; Palacio, Meneses & Pérez, 2002). Therefore, for a university to be branded as a sustainable university is crucial in today's competitive environment, especially during developing its educational programmes (Dangelico & Vocalelli, 2017). Similarly, marketing strategies are also important for the survivability of universities and their sustainability. In implementing effective marketing strategies, students' needs and perceptions also form part of the university's sustainability brand (Watkins & Gonzenbach, 2013). An adequate amount of studies have claimed that brand communication and brand management are essential marketing communication components. A study conducted in Russia has found that brand communication plays a vital role in effective brand engagement and business promotion (Chernova, Tretyakova, & Vlasov, 2018).

Little attention has been devoted to the factors of international students' intention to choose sustainable universities. Prior studies have examined destination motivational factors of international students' choice of university (Bulmer, 2020; Haase et al., 2020; Li et al., 2020; Pawar et al., 2019; James-MacEachern & Yun, 2017), public and private university students' perception of sustainable development (Yang & Maresova, 2020) and drivers of students' travel mode choice (Moniruzzaman & Farber, 2018; Haggar et al., 2019).

Realising the lack of rigorous past studies on international students' choice of sustainable universities, our study stands to be explorative in appeal to bridge this gap. Pertinently, therefore, this exploratory work aims not only to ascertain the relationships of the factors influencing the intention of international students to choose a sustainable university but also to gather further rich insights into international students' appreciation of universities' sustainable practices claim sustainability.

Building on previous works on students' choice of universities, this study emphasises the cognitive, brand, and marketing informational factors affecting the international students' intention to choose a sustainable university. In this regard, the course has a little slant on the international students' demographic factors of choosing sustainable universities (Yan & Berliner, 2011). In particular, we investigate how international students' perception of university sustainability practices affect their decisions to choose a university. Besides, we explore how a sustainable university's image, identity, and meaning impact international students' decision to select that university. Moreover, we examine marketing informational factors concerning the choice of a sustainable university of international students.

In this study, we argue that a university should adopt four interwoven stages towards sustainability brand marketing. First, this study establishes the importance of brand marketing in identifying the university's prominent sustainable practice. Secondly, the study explores internal and external marketing activities and factors towards the sustainability brand and the approach. A review on university-marketing mediums, followed by marketing segmentation and niche, will be discussed.

## Literature Review

### Understanding the Notion of a Sustainable University

Historically, the 'Declaration of Talloires' was established in 1990 to discuss the role of universities towards contributing to and achieving future sustainability through various actions, namely increased awareness, knowledge, stakeholder involvement, and more (Zutshi & Creed, 2018), a situation that seemed to place universities passive participants, and which media can articulate among university students (Tursynbayeva, 2020). After that, international conferences in launching and promoting higher education, such as the conference entitled "Committing Universities to Sustainable Development," were organized in Austria in 2005 to discuss universities' role in supporting sustainable development (Paletta et al., 2019). During this particular conference, the Graz Declaration on Committing Universities to Sustainable Development was accepted under the agreement that universities should provide information about the status of sustainable development within their strategies and activities (Paletta et al., 2019), which signifies universities growing active involvement in sustainability issues (Amaral et al., 2020).

In other words, to become a sustainable university, the institution needs to be prepared for change and, most importantly, understand the sustainability curriculum (Khan & Henderson, 2020), which may pave the way to venturing into sustainability practice. For instance, Yale University is a university that has theoretically and practically maintained sustainability by implementing sustainable teaching, research, operation, and services courses and reducing the ecological footprint of the university (Goodall & Moore, 2019). The Yale University's dual effort, suggests Goodall and Moore (2019), is the focal point of the ten fundamental principles proposed for creating a sustainable campus. The principles include i) Sustainability governance framework, ii) Formal policy or statement of commitment to sustainability, iii) Flagship projects/initiatives to reduce environmental impact, iv) Green funding and investment, v) Sustainable operations, vi) Sustainable buildings, vii) Sustainable transport/travel, viii) Sustainability reporting, ix) Sustainability education and research, and x) Grassroot sustainability projects (p. 9). Within their study, Amey et al. (2020) mentioned many Canadian Universities that follow and practice a sustainable university's fundamental principles, such as communicating sustainability information via the universities' website.

In countries like Malaysia, the government's focus on sustainable development has engineered the support of local universities, along with the notion of a sustainable campus (Mad Ithnin et al., 2019). Universiti Sains Malaysia (USM), for example, is one such sustainable university in Malaysia recognised by the community for its sustainability activities as a "garden university." In 2019, given the university's ongoing sustainability efforts, USM globally was ranked 49th and ranked number one in Malaysia, according to the Times Higher Education (THE) University Global Impact Rankings. This has established universities like USM to perform well concerning sustainability. In contrast, like Universiti Malaysia Sabah (UMS), other universities also introduced themselves as a sustainable university or 'EcoCampus' in 2013 as a sustainable campus of the future (Rosazman & Kunjurama, 2015).

### USM as a Sustainable University

USM is a public university established in 1969. The university's main campus is often associated as a green campus, given it faces the ocean, along with hills located in the Northern region of Malaysia, called Penang. Regarding the university's layout, the main

campus is exceptionally compact since it is located on the island, surrounded by residential areas (Abd-Razak et al., 2011). Also, given the compactness of USM, it has minimal problems and is considered practical in supporting and practicing sustainability on campus (Abd-Razak et al., 2011).

Moreover, as one of the prime research universities in Malaysia, USM was awarded Accelerated Programme for Excellence (APEX) status in September 2008 by the Ministry of Higher Education (MOHE), Malaysia with the theme, “Transforming Higher Education for a Sustainable Tomorrow.” USM is the only university that has obtained the APEX status. Accordingly, as an APEX university, USM expects to receive global recognition via excellence in teaching, innovation via research, and creativity in community engagement (Koshy et al., 2013).

Since obtaining the APEX status, USM has continued to be a leading university in Malaysia through its vision of progressing sustainability initiatives. In the university’s attempt to become a sustainable university, USM has provided sustainability attainments via innovation in technology and lifestyle changes (Norizan, 2011). Indeed, the sustainability campus practice is essential for leading universities like USM to maintain their position (Rosazman & Kunjurama, 2015).

Additionally, it is worth highlighting that USM has established a centre called the Centre for Global Sustainability Studies (CGSS), enabling the university to focus on sustainability efforts for the campus and collaboration with other sections and departments in the university, including external stakeholders outside the campus. USM also has many sustainability experts who remain active in research within this domain. In USM, there are numerous courses related to sustainability, especially the course conducted by CGSS, such as the Master’s Program in Sustainable Development Practice. CGSS also offers an undergraduate subject entitled, Sustainability: Issues, Challenges, and Prospects that aims to improve USM students’ understanding of sustainability practices and sustainable development. Also, at the faculty and research centre level, many sustainability activities have been conducted within the university and outside the community. One such example is *GORANGE: Zero Waste Campaign*, conducted by the School of Communication since 2018 that focused on recycling and waste management awareness and education among university students, staff, and school students near USM media, environmental non-governmental organisations, and the government.

## Research Objectives

This study observes the following objectives:

- (i) To investigate the influence of international students’ perception on choosing USM as a sustainable university.
- (ii) To explore the influence of the sustainable university brand of USM on the intention of international students to choose USM as a sustainable university.
- (iii) To examine the influence of sustainable university marketing information factors on international students’ intention in choosing USM.

## Theoretical Background and Research Model

Meyer and Rowan’s (1977) Institutional Theory suggests that for an organisation to survive, it must gain legitimacy by conforming to institutional pressures prevailing in the environment (Wang & Zhao, 2018). For universities to survive, they may habituate local norms, mimic university models, or comply with set rules (Melles, 2020) that serve as three sources of pressure on sustainability practices in institutions (Kauppi & Hannibal,

2017). In a bid to respond to normative isomorphism (forces from social factors like student unions, alumni, media and trade associations) and to also understand their conformity to the global trend on sustainable universities, universities should understand and acknowledge the perception of stakeholders (Melles, 2020), like international students and their intention to study based on the sustainability and brand marketing of the university. Here, Joseph et al. (2019) discovered that forces from social factors (isomorphism mechanism) influenced Indonesian local authorities to disclose information on sustainable development goals (SDGs) on their websites. Under this model, international students' perception would evaluate information disclosure on the USA's sustainability brand.

On the other hand, without the signaling of sustainability information, it is difficult for investors and consumers (i.e., students and other stakeholders) to be confident and comprehend which organisations are dedicated (Heinberg et al., 2018) towards sustainability practices. Non-signaling of sustainable situations from which sustainable organisations emerge may lead to sustainable organisation devolution (Swanson & Bruni-Bossio, 2020); so, firms may use expensive sustainability initiatives to reduce information asymmetry (Hassan et al., 2020). As implied by Connelly et al. (2011), institutions such as universities utilise expensive signals to communicate useful and quality practices of sustainability to anyone of interest. The extent to which signaling is successful depends on how receivers (for example, students) are attracted and pay attention to these sustainability signals. Furthermore, institutions may be more inclined to invest in expensive signals, given they realise students are waiting for and able to respond to certain signals. Therefore, the universities attempting to demonstrate adherence to sustainable practices to consumers and other stakeholders may offer input on the efficacy of such sustainable practices (Connelly et al., 2011; Omrcen et al., 2018). In this study, signaling theory is used as a lens to assess USM's sustainable brand image, identity, meaning, informativeness, credibility, entertainment, and irritability of sustainability message through international students' intention in selecting USM.

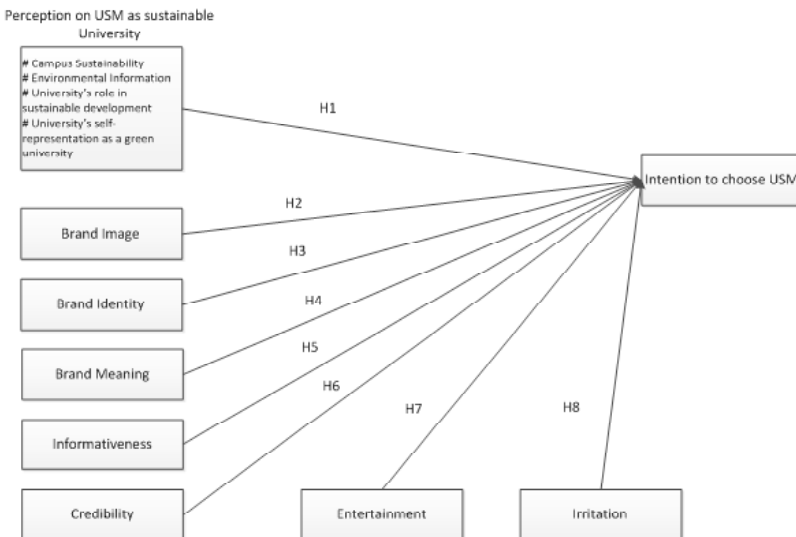


Figure 1: Research model

## Development of Hypotheses

### *Perception of a Sustainable University*

Dagiliūtė et al. (2018) proposed an insistent proposition in a series of formal statements on university sustainability that could be recognised via their activities, such as through campaigns, whereas otherwise, cautioning that their effort may be wasted. Moreover, universities should engage with internal and external stakeholders (Marshall, 2018), along with their respective internal roles (i.e., internal roles like curriculum, staff engagement, energy consumption, transportation, purchase of useful services, etc.) and their external roles (i.e., generation of or extending knowledge) regarding sustainability (Dagiliūtė et al., 2018). Similarly, gender can also play an essential role in the students' perception of a sustainable university (Dagiliūtė et al., 2018; Vicente-Molina et al., 2018). There are many examples in prior studies where the perception of students are considered in sustainability-related issues like developing a campus plan (Abd-Razak et al., 2011); university's sustainability practices (Nejati & Nejati, 2013); sustainable transformations of the university (Winter et al., 2015); participation in sustainability (Trencher et al., 2015) and university's sustainability courses' and programmes' names (Stoler et al., 2020).

In this study, the perception of a sustainable university is regarded as the extent to which international students' perceived USM as healthy and well-managed environmentally, economically viable, and conserving resources and energy, reducing waste efficiently, upholding equity and social justice, and encouraging public adoption and participation of environmental and sustainability practices (Alshuwaikhat & Abubakar, 2008). Among the important concepts that may help understand the perception of international students regarding a sustainable university's choice includes campus sustainability, environmental information, the university's role in sustainable development, and the university's self-representation as a green university (Dagiliūtė et al., 2018). Therefore, the following hypothesis is proposed:

**H1:** Perception of USM as a sustainable university positively influences the intention to choose USM.

### *Brand Image*

Brand image is often used to market higher educational institutions (HEIs) (Chen, 2016). A university brand image is defined as the value, excellence, or superiority developed over time in this context. It is significant in bridging the gap in connecting with existing and potential students' decision-making (Chen, 2016). Chen's submission implies that having a positive brand image is an antidote towards losing students' admissions and is a magnet to lure students to attend a university. According to Chen (2016), in the analysis of public and private universities' brand image, he identified that brand image has a significant influence on students' intention to share and recommend public or private universities. Therefore, the following hypothesis is proposed:

**H2:** The brand image of USM as a sustainable university positively influences the intention to study at USM.

### *Brand Identity*

Goi et al. (2014) define brand identity as "the configuration of words, images, ideas, and associations that form consumers' perception of a brand" (p. 62). The brand is identified here in the form of verbal cues (through a distribution channel, word of mouth (WOM), public relations, and promotion) and visual cues (like service facilities, employee services,

product/core services, price, culture, employee development, and system/processes) (Goi et al., 2014). Brand identity is undertaken to ease prospective international students (Yang et al., 2020) in identifying sustainable practices in a university. Therefore, the following hypothesis is proposed:

**H3:** The brand identity of USM as a sustainable university positively influences the intention to study in USM.

### *Brand Meaning*

Brand meaning is the extent to which symbolic, experiential, and functional needs guide consumers' selection in selecting a university (Park et al., 1986). Brand meaning is therefore represented in social reputation and self-image; internal experience (Dean et al., 2016) like sensory pleasure and cognitive stimulation; and external demand like the use of materials and buildings which can be extended to potential students via reference groups (Escalas & Bettman, 2005). University brand meaning can extend to life after student graduation (Dennis et al., 2016). Therefore, the following hypothesis is proposed:

**H4:** The brand meaning of USM as a sustainable university positively influences the intention to study in USM.

### *Informativeness*

Informativeness is defined as the ability of information content from advertising materials in offering potential customers (such as students) the latitude to decide in favour of an organisation (like a university) which is reinforced by the expectations surrounding the offerings (Ducoffe, 1996); for example, of the university by students. Therefore, an explanation on whether a student can make an informed decision regarding USM in the context of sustainability, without considering the university's popularity, is likely to assist the marketing of USM in terms of sustainability. How consumers evaluate the experience of processing advertising, independent of any brand's relevant information itself, constitutes an additional source of advertising value (Ducoffe, 1996) on university sustainability. Majedul Huq et al. (2015) and Salem (2016) suggest that informativeness affects customer attitude. Therefore, the following hypothesis is proposed:

**H5:** Informativeness of sustainable university information positively influences the intention to study in USM.

### *Irritation*

The intention to patronise reduces as a result of advertising failure to fulfill other needs of consumers (students) on its value (university) (Ducoffe, 1996). Partly, according to Docuffe, the tactics employed by an opinion leader, rather than the content of information, plays a significant role in having negative feelings regarding information about a brand (sustainability). This assertion was earlier mentioned by Aaker and Bruzzone (1985) in a study on the causes of irritation in advertising. The tactics employed can stand between advertising and students' effectiveness when they perceived it as annoying, offending, insulting, "or overly manipulative" (Ducoffe, 1996, p. 23). The studies by Luna Cortés and Royo Vela (2013) and Salem (2016) reveal that irritation affects customer intention, although Liu et al. (2012) suggest that it does not significantly affect customer attitude. Therefore, the following hypothesis is proposed:

**H6:** Irritation in sustainable university information negatively influences the intention to study at USM.

## *Entertainment*

How pleasant and or likable an advertisement can affect consumers' attitude towards the information presented and subsequently to the product, services, or ideas (Ducoffe, 1996). The pleasantry gives psychological arousal during media use (Fikkers & Piotrowski, 2020), which "is linked to positive cognitions" (Vorderer et al., 2004, p. 402) that could positively affect the students' interpretation of sustainability regarding a university. This contradicts the notion that entertainment is mainly for pastime, diversion, hobbies, appealing to pleasure, or emotional release (Ducoffe, 1996). Considering this, the following hypothesis is proposed:

**H7:** Entertainment of sustainable university information positively influences the intention to study in USM.

## *Credibility*

Credibility is considered a positive or negative perception of the consumer on advertising concerning its truthfulness and believability. Salem (2016) revealed that scholars tend to define credibility in an advertisement as the "extent to which the consumer perceives claims made about the brand in the advertisement to be truthful and believable, perceive the source to have knowledge and skills and to give truthful and unbiased information" (p. 3). An advertisement's credibility is also influenced by many factors, including the advertising company's credibility (Majedul Huq et al., 2015, p. 285). As such, a university's credibility is a vehicle that can help in the projection and rejection of opinion leaders' voices. Many researchers have elucidated a strong correlation between consumers' perception of advertising credibility and their attitude towards the advertisement (Majedul Huq et al., 2015; Salem, 2016). Therefore, this can, among other factors, play a significant role in choosing a university. Therefore, the following hypothesis is proposed:

**H8:** Credibility in sustainable university information positively influences the intention to study in USM.

## *Intention to Choose*

According to Xu (2006), they established the existence of a strong direct relationship between the attitude of a consumer (the way a student feels or thinks about a university) and the intention of consumers (students to choose the university). Moreover, scholars have also noted that "behavioural intention is a measure of the strength of one's willingness to exert effort while performing certain behaviours" (Kassim & Ramayah, 2015, p. 399). Applying the Theory of Planned Behaviour (TPB) by Ajzen (1991), individuals' intention to choose a university, strengthened by their attitude, reinforces their decision to choose a university, especially a sustainable university.

## **Methodology**

### **Data Collection**

The primary respondents of this study included international students seeking to attend USM. Data was collected using a self-administered online questionnaire, of which 391 respondents completed. The online questionnaire consisted of two sections. The first section collected demographic data. The second section elicited information regarding USM as a sustainable university, the perception of USM's sustainable university brand, factors in choosing USM, and the intention to study at USM. Purposive sampling was adopted in this



research based on the participants meeting three criteria; they were (a) international students of USM, (b) registered at USM, (c) undergraduate and postgraduate students. International students, such as exchange students and alumni, were excluded from this study based on the criteria. Also, the snowball sampling method was employed to obtain respondents from the contacts of previous respondents. The list of international students' names and contact information as potential respondents was obtained via the Student Intake Unit, Academic Management Division, Registry Department of USM. Emails were used to contact all international students in answering the online questionnaire.

## Instrument Development

The items used in this study were adapted from previous literature (see Table 1). Items used to measure the perception of USM as a sustainable university were adapted from Dagiliūtė et al. (2018). The items to measure students' perception of USM's sustainable university brand were divided into three constructs: brand image from Chen (2016), brand identity, and brand meaning from Dennis et al. (2016). Moreover, the factors in choosing USM were divided into four constructs, namely, informativeness, adapted from Ducoffe (1996) and Majedul Huq et al. (2015), credibility was adapted from Majedul Huq et al. (2015) and Xu (2006), entertainment was adapted from Ducoffe (1996), and Majedul Huq et al. (2015) and irritation were adapted from Ducoffe (1996) and Majedul Huq et al. (2015). The items on the intention to study at USM were adapted from Cheema and Katikati (2010) and Xu (2006).

Table 1: Questionnaire items used in this study

Construct of a	Questionnaire Items	Source
Perception	USM has an active environmental student organisation	Dagiliūtė et al. (2018)
Sustainable	USM encourages the use of public transport, bikes, etc.	
University	Environmental and sustainability-related information is available during lectures in USM.	
	USM contributes to the inclusion of sustainability aspects in study programmes.	
	USM promotes sustainability research.	
	USM represents itself as environmentally friendly and declares environmental objectives.	
Brand Image	USM has a positive reputation as a sustainable university.	Chen (2016)
	USM has a benchmark position as a sustainable university.	
	USM has a unique image as a sustainable university.	
Brand Identity	USM has an outstanding vision and mission on sustainability.	Dennis et al. (2016)
	USM's staff are well trained in sustainability.	
	USM has a forceful sustainability slogan.	
Brand meaning	USM's sustainable university brand reflects who I am.	Dennis et al. (2016)
	I feel a personal connection to USM's sustainable university brand.	
	I use USM sustainability practices to communicate who I am to other students.	
Informativeness	USM's website provides a good source of information on the university's sustainability practices.	Ducoffe, (1996) and Majedul Huq et al. (2015)
	I feel that USM social media offers up-to-date material on the university's sustainability practices.	
	I feel that USM social media makes its sustainability practices information immediately accessible.	
	I feel that USM social media makes its sustainability practices information convenient to be accessed.	
	I feel that the USM website makes its sustainability practices information easy to understand.	

Credibility	<p>I use USM sustainability practices information on the university website as a reference to decide on the university.</p> <p>I trust USM's sustainability practices information on the university website.</p> <p>I think USM's sustainability practices information on the university social media is credible.</p> <p>I am impressed by the achievement of USM in university sustainability rankings information displayed on the university website.</p> <p>I think it is inevitable that the USM website and social media will become an advertising tool for sustainability practices in the future.</p>	Majedul Huq et al. (2015) and Xu (2006)
Entertainment	<p>I feel that USM's website information on sustainability practices is entertaining.</p> <p>I feel that USM's website information on sustainability practices is pleasing.</p> <p>I feel USM's website information on sustainability practices is fun to use.</p> <p>I feel USM's website information on sustainability practices is exciting.</p> <p>I find entertainment services (video, images) on sustainability practices in USM social media is positive.</p>	Ducoffe (1996) and Majedul Huq et al. (2015)
Irritation	<p>I feel that USM's website information on sustainability practices is irritating.</p> <p>I feel that USM's social media information on sustainability practices is annoying.</p> <p>I feel that USM's website information on sustainability practices is deceptive.</p> <p>I feel that USM's social media information on sustainability practices is confusing.</p> <p>I feel USM's website information on sustainability practices is abusing my intelligence.</p>	Ducoffe (1996) and Majedul Huq et al. (2015)
Intention to study at USM	<p>I use sustainability practices information on the USM website whenever I have a chance.</p> <p>I use sustainability practices information on USM social media whenever I see the update.</p> <p>Given that I had access to the USM website information on sustainability practices, I chose to study at the university.</p> <p>I have good things to say about the USM sustainability practices information published on the university website.</p> <p>I will recommend others to study at USM based on its sustainability practices information published on the university website.</p>	Xu (2006) and Cheema and Kaikati (2010)

## Sample Profile

The demographic profile of the respondents is displayed in Table 2. There were eight demographic attributes such as country, age, gender, educational level, school/research centre, and year of study. The table shows 391 respondents from 14 specified countries and several from other unspecified countries who responded to the survey. The majority of respondents, 103 respondents (26%), came from Nigeria, followed by China (12% representing 47 respondents). The profile table also shows a pool of younger scholars between the ages of 31 and 40 (37.3%), representing 146 respondents, followed by those aged between 21 and 30 years (36.8%) representing 144 respondents.

However, the research found that most respondents were male (71.6%), representing 280 respondents, with 28.4% (111) representing female respondents, respectively. The statistics showed that about two-thirds (60.4%) of respondents, representing 236, were Ph.D. students. School of Management hosted the highest number of respondents (53 representing 13.6%), while 47.1% represented 184 respondents in their first year of study. A total number of 209 respondents had heard about sustainable USM as a brand,

representing more than half (53%) of the respondents. However, 46.5% representing 182 respondents, had not heard about sustainable USM as a brand. Therefore, the result indicates that 306 respondents (representing 78.3%) thought USM had a brand as a sustainable university, while 83 respondents (representing 21.2%) thought otherwise.

**Table 2: Profile of Sustainable USM respondents**

Demographics	Categories	Frequency	%
Country	China	47	12.0
	Nigeria	103	26.3
	Indonesia	35	9.0
	Yemen	33	8.4
	Saudi Arabia	17	4.3
	Maldives	1	0.3
	Canada	1	0.3
	Pakistan	36	9.2
	Bangladesh	13	3.3
	Thailand	9	2.3
	Japan	5	1.3
	Jordan	9	2.3
	United Arab Emirates	3	0.8
Age	Other	79	20.2
	20 years old and below	34	8.7
	21-30 years old	144	36.8
	31-40 years old	146	37.3
	41-50 years old	56	14.3
Gender	51 years old and above	11	2.8
	Male	280	71.6
Educational level	Female	111	28.4
	Undergraduate student	57	14.6
	Master student	96	24.6
	Ph.D. student	236	60.4
School/Research centre	Others	2	0.5
	School of Housing, Building, and Planning	38	9.7
	School of Industrial Technology	20	5.1
	School of Pharmaceutical Sciences	15	3.8
	School of Computer Sciences	36	9.2
	School of Educational Studies	31	7.9
	School of Management	53	13.6
	Graduate School of Business (GSB)	14	3.6
	School of Communication	13	3.3
	School of the Art	8	2.0
	School of Languages, Literacies, and Translation	23	5.9
	School of Humanities	5	1.3
	School of Social Sciences	26	6.6
	School of Biological Sciences	18	4.6
	School of Chemical Sciences	6	1.5
	School of Mathematical Sciences	19	4.9
	School of Physics	17	4.3
	School of Health Sciences	1	0.3
	School of Medical Sciences	2	0.5
	School of Dental Sciences	2	0.5
School of Electrical and Electronic Engineering	2	0.5	
School of Materials and Mineral Resources Engineering	2	0.5	

	School of Aerospace Engineering	1	0.3
	School of Civil Engineering	3	0.8
	School of Distance Education	2	0.5
	Centre for Global Sustainability Studies (CGSS)	1	0.3
	National Advanced IPv6 Centre (NAv6)	6	1.5
	Centre for Drug Research	2	0.5
	Centre for Instructional Technology and Multimedia	4	1.0
	National Higher Education Research Institute	1	0.3
	Centre for Global Archaeological Research	1	0.3
	Centre for Policy Research and International Studies (CenPRIS)	1	0.3
	Centre for Islamic Development Management Studies (ISDEV)	3	0.8
	Advanced Medical and Dental Institute (AMDII)	7	1.8
	Institut for Research in Molecular Medicine (INFORMM)	1	0.3
	Collaborative Microelectronic Design Excellence Centre (CEDEC)	2	0.5
	Institute of Nano Optoelectronics Research and Technology (INOR)	3	0.8
	Others	2	0.5
Year of study	First-year	184	47.1
	Second-year	127	32.5
	Third-year	57	14.6
	Fourth-year and above	23	5.9
Have you heard about the sustainability brand?	Yes	209	53.5
	No	182	46.5
Do you think USM has a brand as a sustainable university?	Yes	306	78.3
	No	83	21.2

## Analysis

The SPSS statistical analysis package (version 23) was used to compute the descriptive statistics for the respondent's profile while the model developed for this study was tested via the structural equation modeling (SEM) technique using partial least squares (PLS) with SmartPLS v.3.2.9 (Ringle et al., 2015) software. SmartPLS is second-generation analysis software used to test a complex model with latent variables. The two-stage analytical procedures recommended by Anderson and Gerbing (1988) were adopted where the measurement model was tested first to validate the instruments, followed by structural model testing to test the hypothesised relationships.

## Assessment of the Measurement Model

The literature suggests that researchers consider the indicator loadings, average variance extracted (AVE), and composite reliability values that measure convergent validity to assess the measurement model. Convergent validity evaluates whether or not the items represent the same underlying construct. Assessments on the loadings of the indicators were examined to ensure that they were above the threshold value of 0.708 (Hair et al., 2017); AVE should be above 0.5, and the composite reliability (CR) should be above 0.7 (Hair et al., 2017). As shown in Table 3, all the values were above the recommended values; thus, convergent validity was achieved.

**Table 3: Measurement model**

Construct	Items	Loadings	AVE	CR
Perception of sustainable university	PUSU1	0.717	0.613	0.888
	PUSU3	0.767		
	PUSU4	0.813		
	PUSU5	0.803		
	PUSU6	0.810		
	PUSUB1	0.907		
Brand Image	PUSUB2	0.908	0.806	0.926
	PUSUB3	0.879		
	PUSUB4	0.837		
Brand identity	PUSUB5	0.848	0.687	0.868
	PUSUB6	0.800		
	PUSUB7	0.852		
Brand meaning	PUSUB8	0.859	0.742	0.896
	PUSUB9	0.873		
Informativeness	FCUSM1	0.826	0.764	0.942
	FCUSM2	0.902		
	FCUSM3	0.883		
	FCUSM4	0.886		
	FCUSM5	0.871		
Credibility	FCUSM7	0.848	0.701	0.904
	FCUSM8	0.871		
	FCUSM9	0.842		
	FCUSM10	0.786		
Entertainment	FCUSM11	0.870	0.735	0.932
	FCUSM12	0.899		
	FCUSM13	0.858		
	FCUSM14	0.887		
	FCUSM15	0.765		
Irritation	FCUSM16	0.860	0.812	0.956
	FCUSM17	0.921		
	FCUSM18	0.909		
	FCUSM19	0.900		
	FCUSM20	0.914		
Intention to choose USM	ISUSM1	0.842	0.691	0.918
	ISUSM2	0.856		
	ISUSM3	0.803		
	ISUSM4	0.859		
	ISUSM5	0.795		

*Note:* FCUSM6 and PUSU2 were deleted due to low loadings.

Numerous studies have previously used the Fornell and Larcker (1981) criterion for testing discriminant validity. Although, there has been criticism regarding the Fornell and Larcker (1981) criterion more recently as it does not reliably detect the lack of discriminant validity in common research situations (Henseler et al.,2015). Instead, many researchers suggest using an alternative approach, based on the multitrait-multimethod matrix, to assess discriminant validity; the heterotrait-monotrait ratio of correlations. Henseler et al. (2015) also demonstrated this method's superior performance in a Monte Carlo simulation study. Hence, this study tested the discriminant validity using this method as suggested with the results shown in Table 4. To test this, scholars have also mentioned that if the HTMT value is more significant than HTMT.85 (value of 0.85) (Kline, 2011), or HTMT.90

(value of 0.90) (Gold et al., 2001), then there is a problem regarding discriminant validity. As shown in Table 4, all the values passed the HTMT.90 (Gold et al., 2001), indicating that discriminant validity was attained.

Table 4: Heterotrait-Monotrait Ratio (HTMT) of correlations test for discriminant Validity

Construct	1	2	3	4	5	6	7	8	9
1. Brand identity									
2. Brand image	0.896								
3. Brand meaning	0.814	0.775							
4. Credibility	0.741	0.75	0.695						
5. Entertainment	0.762	0.712	0.724	0.885					
6. Informativeness	0.742	0.685	0.721	0.843	0.836				
7. Intention	0.722	0.702	0.731	0.769	0.806	0.735			
8. Irritation	0.211	0.108	0.18	0.123	0.274	0.167	0.247		
9. Perception sustainable university	0.843	0.84	0.73	0.721	0.719	0.69	0.66	0.085	

## Assessment of the Structural Model

Table 5 presents the results from testing the hypotheses. The structural model indicates that Brand Image is positively related ( $\beta = 0.118$ ,  $p < 0.05$ ) to Intention to Choose USM, Brand Meaning is positively related ( $\beta = 0.164$ ,  $p < 0.01$ ) to Intention to Choose USM, Informativeness is positively related ( $\beta = 0.109$ ,  $p < 0.05$ ) to Intention to Choose USM, Credibility is positively related ( $\beta = 0.145$ ,  $p < 0.05$ ) to Intention to Choose USM, Entertainment is positively related ( $\beta = 0.301$ ,  $p < 0.01$ ) to Intention to Choose USM, and Irritation is positively related ( $\beta = 0.069$ ,  $p < 0.05$ ) to Intention to Choose USM explaining 60.3% of the variance. Thus **H2**, **H4**, **H5**, **H6**, **H7**, and **H8** were supported. The predictive relevance ( $Q^2$ ) was higher than 0, as suggested by Fornell and Cha (1994), with Intention to Choose USM ( $Q^2 = 0.389$ ). The  $f^2$  values indicate that all have a small effect in producing the  $R^2$  for Intention to Choose USM (Cohen, 2013). On the other hand, we further checked if multicollinearity was an issue, but all VIF values were less than 5, as suggested by Hair et al. (2017).

Table 5: Hypotheses Testing

Hypothesis	Relationship	Std Beta	Std. Error	t-value	Decision	R <sup>2</sup>	f <sup>2</sup>	Q <sup>2</sup>	VIF
H1	Perception Sustainable University -> Intention	0.017	0.063	0.274	Not Supported	0		2.579	
H2	Brand Image -> Intention	0.118	0.066	1.792*	Supported	0.603	0.011	0.389	3.126
H3	Brand Identity -> Intention	0.035	0.07	0.492	Not Supported		0.001		2.764
H4	Brand Meaning -> Intention	0.164	0.062	2.636**	Supported		0.031		2.242
H5	Informativeness -> Intention	0.109	0.064	1.708*	Supported		0.01		3.09
H6	Credibility -> Intention	0.145	0.067	2.155*	Supported		0.017		3.268
H7	Entertainment -> Intention	0.301	0.075	4.034**	Supported		0.063		3.696
H8	Irritation -> Intention	0.069	0.036	1.924*	Supported		0.011		1.119

Note: \*\*  $p < 0.01$ , \*  $p < 0.05$

## Discussion

This study aimed to investigate students' intention to study in USM regarding their perception of USM as a sustainable university. This study further examined the relationships between brand image, brand identity, brand meaning, informativeness, credibility, entertainment, and irritation of USM's sustainable university communication regarding their intention to study in USM.

The PLS-SEM analysis results showed that the hypotheses representing the students' intention to study in USM had mixed results. The perception of USM as a sustainable university (**H1**) and the brand identity of USM as a sustainable university (**H3**) had a negative relationship with the students' intention to study in USM. However, the results revealed positive relationships between brand image (**H2**) and brand meaning (**H4**) of USM as a sustainable university towards the students' intention to study there. Aside from that, other factors such as informativeness (**H5**), credibility (**H6**), entertainment (**H7**), and non-irritation (**H8**) of information on USM as a sustainability university also had a positive relationship with the students' intention to study in USM.

Accordingly, this research has shown that the perception of USM as a sustainable university acquired a negative relationship with the students' intention to choose USM as their institution (**H1**). The result was possibly due to the university's lack of sustainability practices that engage internal and external stakeholders, including academics, personnel activities, transportation, the purchase of useful services, etc. (Dagiliūtė et al., 2018). This can further be linked to unavailability of other factors like "good links with the job market, good reputation of the university, the availability of a desired course or programme, and the adequacy of facilities" (Fernandez, 2010, p. 127). Nejati and Nejati (2013) mentioned that sustainability practices are vital in creating a perception of a sustainable university. The lack of which the result is a negative relationship between the perception and intention to choose USM.

Indeed, this study also found that the brand identity of USM as a sustainable university also had a negative relationship with the students' intention to choose USM as their institution (**H3**). A strong brand would have a distinctive identity, which is utilised to differentiate itself from competitors. A possible explanation of why USM brand identity as a sustainable university was negatively associated with the students' intention to choose the university to study at would be based upon USM's sustainable university brand identity. The projection of words, images, ideas, and associations by USM that form consumers' perception of the university as a sustainable university is possibly insufficient. This is because brand identity referred to the company's internal desired image and is projected to the customers through a unique set of brand associations (Ghodeswar, 2008).

In contrast, brand image (**H2**) and brand meaning (**H4**) on USM as a sustainable university both positively correlated with the students' intention to choose USM as their institution. In general, brand image can be described as the set of beliefs, associations, attitudes, and impressions held by customers on the organisation. In light of this, USM's brand image as a sustainable university could be quite comparable. This finding reinforces the assumption that a university's brand image is the initial mental picture envisioned by an individual regarding the institution (Foroudi et al., 2019), which is achieved through continuous interactive activities and engagement with the university that might enhance the university's brand image (Hatch and Schultz, 2010). This could also be why the brand meaning to have positively associated with student intention. The brand meaning is the symbolic, experiential, and functional aspect of the brand (Park et al., 1986) of USM's sustainability.

Informativeness of sustainable university information (**H5**) was also positive towards influencing the intention to study in USM. Readily accessible information via the USM's website could be why the positive relationship as 90% of respondents mentioned USM's website as the main source of information. This finding is in line with Fernandez's (2010) revelation that students referred to the Internet as the best information source. Looking at this finding, it is essential to highlight that informativeness affects customer attitude in several studies (Majedul Huq et al., 2015; Salem, 2016).

Irritation towards sustainable university information negatively correlates with students' intention to choose USM as their institution (**H6**). Here, overly manipulative messages could also be perceived as annoying, thus repelling the consumer audience like the USM students. The negative relationship between irritation and students' intention supports the findings in a study by Luna Cortés and Vela (2013) and Salem (2016).

Entertainment within messages was shown to positively correlate with the students' intention to choose USM as their institution (**H7**). This explains that pleasant or likeable advertisements could affect consumers' attitude to information and subsequently to products, services, or ideas (Ducoffe, 1996). Therefore, psychological arousal due to pleasant advertisements will bring positive cognitions (Vorderer et al., 2004; Hyun et al., 2011) regarding what students in USM might be experiencing.

Finally, credibility within messages was shown to positively correlate with the students' intention to choose USM as their institution (**H8**). Therefore, USM's advertisements may have helped build confidence within the student audience as credibility could be a positive or negative perception held by the USM's publics on advertising concerning its truthfulness and believability.

## Conclusion

This study's contribution can be appreciated from three perspectives: theoretical, methodological, and practical perspectives. The theory adopted in this research was the signalling theory that explains the encouragement students get when choosing USM from brand image, brand meaning, credibility, informativeness, entertainment, and non-irritation. As a methodological contribution, considerable interest was devoted to the methodological aspects of this research in identifying and treating heterogeneous data structures within a PLS-SEM framework to determine the influence of the sustainable university brand on international students' intention to choose a university. As for practical considerations and contributions, the data collected and analysed in this study helped USM strengthen its sustainable university brand. Likewise, it can be concluded that the brand identity of USM as a sustainable university is not sufficient or healthy. Therefore, further actions should be adopted to enhance the perception of students of USM as a sustainable university.

Additionally, positive findings were found that USM is established as a leading university in Malaysia, having its unique brand from various perspectives. Moreover, the credibility of USM regarding the quality of teaching and learning, research, leadership, and marketability of its students is undeniable. In other words, it has a distinct reputation as a learning environment that captures international students' interest and attention as one of the major factors.

Even though favourable findings dominate the results obtained in this study, in contrast, three unfavourable or negative aspects were highlighted, which USM should address. Therefore, the researchers would like to propose that the university conduct other sustainable programs that incorporate establishing recycling stations around the campus, plan an e-waste recycling drive, and initiate a bike rental program, and more. However, in progress, a programme of this type should be ongoing and unobtrusive. Also, establishing ongoing programmes and projecting the USM's image and reputation to the community, the general public, and international students should be encouraged.



This study will inspire and motivate future researchers to examine and compare the sustainable university brands of other HEIs and the influence regarding the choice of international students to study in Asia by comparing the results to the findings of this current study. Since the current study only focused on international students, future researchers could investigate local students' different Malaysia perspectives. Moreover, future researchers could explore the influence of the sustainable university brand on university staff.

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