


The Impacts of a Redefined HEI Image Model on Postgraduate International Students' Satisfaction in Malaysia


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ABSTRACT

The influx of international students has moved beyond the Global North towards the Global South in countries like China, Malaysia, Singapore, and Hong Kong as they pursue strategies to become an international education hub in Asia. This massive competition among higher education institutions (HEIs) worldwide necessitates revisiting the existing image models to understand their heightened impacts on student satisfaction for both retaining existing students and attracting new ones. This study attempts to do so by gathering responses from 200 international postgraduate students from two renowned universities in Malaysia. The redefined HEI image model based on postgraduate international students shows that all of its three dimensions have a positive significant impact on students' satisfaction and decision-making. The outcomes of importance-performance map analysis (IPMA) have yielded the results of PLS-SEM both at the construct and indicator levels toward building more socially responsible HEIs as a service industry to boost student satisfaction in both regular and uncertain times.

KEYWORDS

Higher Education, Institutional Image, Internationalization, Postgraduate Students, Service Science, Student Satisfaction

INTRODUCTION

The internationalization of higher education has seen significant growth in international student mobility. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2019), over 5.6 million students are currently pursuing tertiary education in foreign countries, and this number is expected to reach 8 million by 2025 (Roshid & Seraj, 2023). Traditionally, most international students move from economically less developed countries in the Global South to more affluent ones in the Global North (Stein & de Andreotti, 2016). This is typically centered in

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economically developed, English-speaking regions of North America, Europe, and Oceania, forming the core of the global higher education system (Chen & Barnett, 2000). Nevertheless, changes are underway as countries like China, Singapore, and Hong Kong, once known for sending students abroad, are now adopting strategies to internationalize their own higher education systems, aspiring to become regional hubs of advanced education (Knight, 2011). In recent years, the fundamental elements of the global macro-environment in general and higher education, in particular, have been threatened by the COVID-19 pandemic (Altbach & Wit, 2020).

Organizational image today is a primary concern for managers of both public and private organizations (Vigoda-Gadot et al., 2003) and plays an important role in forming student decision-making (Shehzadi et al., 2020). Member perceptions of how others view their organization play an important role in how they respond to the demands made by the organization (Dutton et al., 1994). A favorable organizational image can not only affect the attitudes and behavior of organization members and enhance positive opinions (Mishra et al., 2012), satisfaction, and loyalty (Duarte et al., 2010) but also may serve as a tool for obtaining a competitive advantage for organizations (higher education institutions).

The surge in demand in the latter half of the 20th century prompted an enhanced supply of education, both in terms of accessibility and diversity (Maringe & Gibbs, 2009). This growth was further fueled by global phenomena like globalization and a decline in public funding. Globalization, in particular, played a role in the increased internationalization of higher education, leading to a significant rise in the number of international students (Altbach et al., 2009). Universities, recognizing the importance of this trend, intensified their efforts to attract these students, sparking heightened competition for both local and international students, resources, and esteemed faculty (Alves & Raposo, 2007; Drydakis, 2015). As a result, universities have prioritized building a positive image and reputation among stakeholders, viewing these as key differentiators that shape stakeholders' emotional responses and behaviors towards the institution (Curtis et al., 2009). Consequently, universities are dedicating increased resources to enhance their overall image.

Existing university models exhibit a gap in their capacity to retain international students within higher education institutions (HEIs). This challenge arises not only due to foreseeable factors, such as individual students facing financial difficulties in paying tuition fees, but also due to unpredictable and more severe circumstances like the COVID-19 pandemic (Altbach & Wit, 2020). Many Asian institutions offer lower tuition fees than those in the West (*ICEF Monitor*, 2019). This has triggered the researchers of this study to look back to the global south and redefine HEI image factors. Interestingly, at least six Asian countries have adopted national strategies to position themselves as primary destinations for international students, with many establishing specific targets for attracting students from abroad, triggering intra-regional mobility in Asia. In response to such situations, many international students in Asia opt to pursue their studies in higher education institutions located in proximity to their home country.

The aftermath of the pandemic poses “the most significant challenge to international student mobility on a global scale since the Second World War,” thereby triggering a rebound in student demand and a specific need for internationalization (Ilieva & Raimo, 2020, para. 28). The pandemic forces students to navigate a landscape filled with risk and uncertainty (Sachdeva, 2022). One post-COVID impact is a decrease in international student mobility from Western universities, with more students expressing a willingness to study in countries closer to home (Roshid & Seraj, 2023). While studies on such “non-center” contexts are increasing, they remain limited in number and scope. There is a need for more research to better capture the contemporary realities of international student mobility. This underscores the importance of analyzing the image of HEIs in Southeast Asia, such as Malaysia.

Alcaide-Pulido et al. (2017) mentioned four factors that constitute university image using the context of universities in Europe: *external communication and values*, *economic value*, *university facilities*, and *national and international awareness*. Now, from the new world perspective, the authors will explore whether there have been any changes in these factors related to university image in the

context of universities in Asia, including Malaysia as the most deserving destination post-pandemic era. Hence, a redefined university image model is desired that can be used for international postgraduate students in Malaysia.

While the research focus on university image is steadily increasing (Aghaz et al., 2015), scholars observing the subject closely have argued that academic research attention has been limited (Duarte et al., 2010; Wilkins & Huisman, 2015) and have emphasized the need for more empirical research (Aghaz et al., 2015). Although academics generally agree that the university image is a complex concept influenced by various factors (Luque & Del Barrio, 2008; Aghaz et al., 2015), there is no consensus on its specific dimensions (Lafuente-Ruiz-de-Sabando et al., 2018).

In the last decade, numerous Asian governments, including Malaysia, have actively pursued international recruitment strategies, and implemented higher education initiatives aligned with political and economic objectives to attract global students and enhance their presence in the international student market (Dennis, 2022). Malaysia is working to reach a long-term goal of building its foreign enrollment base to 250,000 students by 2025 (*ICEF Monitor*, 2023). Against a more immediate target of 50,000 international student applications for 2022, Education Malaysia Global Services (EMGS) reports receiving 51,270 applications to study in Malaysian public and private education institutions through the end of December 2022 (*Study International*, 2022). This amounts to a 27.5% increase in the application volume for 2021. Researchers in the past have noted that Malaysia is positioned as a strong contender to emerge as a leading education hub, drawing a significant influx of international students. Despite this, research on international postgraduate studies has not yet thoroughly explored the case of Malaysia (Singh & Jack, 2018). Given that postgraduate studies differ in duration and pedagogy from undergraduate studies, it becomes valuable to examine the factors associated with the image perceived by international postgraduate students and understand how this image influences their satisfaction.

Therefore, we analyzed samples of international students at a public university and a private university in Malaysia. This study's first objective is to explore the dimensions of university image that have the relevant scholars' consensus and analyze their impacts on student satisfaction as an outcome related to their prosocial behavior crucial for the HEIs for student retention. Secondly, it also explains and illustrates the use of the importance-performance map analysis (IPMA), a useful analysis approach in PLS-SEM that extends the standard results reporting of path coefficient estimates by adding a dimension that considers the average values of the latent variable scores. Thus, it is possible to identify predecessors (image dimensions) that have relatively high importance for the target construct satisfaction (i.e., those that have a strong total effect) but also have a relatively low performance (i.e., low average latent variable scores) thus create room for important managerial implications for the HEIs. The paper starts with the background of the study, and the literature review, methodology, results, discussions, and implications are presented in the subsequent sections.

LITERATURE REVIEW

In the post-COVID-19 world, most universities have strengthened their learning management system and regularized online or hybrid modes of classes alongside in-person, which creates the positive and negative *eWOM* (electronic word of mouth) which influences the brand image of the universities (Shehzadi et al., 2021). This research is, therefore, grounded in social identity theory (SIT) as proposed by Boros (2008). SIT posits that individuals develop a sense of belonging to a specific social group, in this case, an organization. Given its emphasis on the importance and impact of group memberships, SIT is deemed suitable for examining college and university faculties. However, there is a dearth of knowledge regarding how their perceptions of identity affect HEIs. Moreover, social identity theory is notably scarce in higher education literature.

In the context of HEIs, organizational image, and reputation play pivotal roles in shaping identity. The perceived prestige of an institution is likely a crucial factor influencing organizational

identification among faculty members (Butt & Annabi, 2018). Oliveira et al. (2017) propose that image is intricately linked to the identity of HEIs. Additionally, literature widely recognizes that image serves as a source of distinctiveness and is connected to consumer identities (Lee et al., 2018). Identity distinctiveness allows consumers to meet their need for uniqueness by differentiating themselves from others (Bhattacharya & Sen, 2003). Research exploring social identification in higher education indicates that the levels of customer–organization identification are closely linked to individual self-esteem and overall satisfaction (Wilkins et al., 2016). Similarly, individual willingness to fulfill duties and responsibilities within an organization is associated with the level of identification with that organization.

University Image

The formation of an image involves configuring its crucial components. In this regard, Ressler and Abratt (2009) suggested that universities ought to examine the perceptions held about them by prospective students, current students, graduates, and employers or companies. The increase in publications dedicated to the concept of HEI image over the past decade reflects a growing interest among academics (Curtis et al., 2009; Aghaz et al., 2015). According to Lafuente-Ruiz-de-Sabando et al. (2019), the comprehensive definition of university image encompasses the evaluations made by various stakeholders based on perceptions, beliefs, ideas, and accumulated impressions formed consistently over time. This definition aligns with the interpretation commonly ascribed to the concept of corporate image within the marketing research domain. Manzoor et al. (2020) provided a more holistic definition of university image as “the result of an aggregate process using students’ mental perceptions of their reality, based on the evaluation of various university attributes through the expression of their feelings, ideas, beliefs, impressions, and real-life experiences at the university” (p. 3).

Numerous studies emphasize the significance of students as a primary audience for HEIs (Guilbault, 2016; Wagner et al., 2012). Consequently, it is crucial to comprehend how the university’s image is shaped to formulate effective strategies and enhance university management (Kazoleas et al., 2001). Masserini et al. (2019) showed that various factors contribute to defining the university’s image, including infrastructure, interpersonal relationships, environmental factors, academic characteristics, teaching and research quality, educational practices, facilities, and employment opportunities, among others (Aghaz et al., 2015; Duarte et al., 2010).

The dimensions analyzed in this study are based on the university image model developed by Alcaide-Pulido et al. (2017). The model envisages providing meaningful insights through analyzing their dimensions for students in HEIs. Alcaide-Pulido et al. (2017) university image model consisted of four dimensions: *external communication and values*, *national and international awareness*, *economic value*, and *university facilities*.

External Communication and Values

The initial dimension of the university image revolves around external communication and values. Aligning internal and external communication, as proposed by Hatch and Schultz (2001), helps minimize inconsistencies in communication that may arise during future crises. Recognizing that students can be influenced by various significant others, institutions must maintain regular and effective communication with stakeholders, including parents, schools, employers, regulatory bodies, and the media. Wilkins and Huisman (2015) recommended adopting a comprehensive and integrated communications strategy. Alcaide-Pulido et al. (2017) pointed out that the factor of *external communication and values* encompasses variables such as maintaining an influential website, particularly noted in Asian markets like Malaysia, Singapore, and Hong Kong. This dimension also involves commitments to societal well-being, the communication of ethical values and social responsibility, and the endorsement of environmental sustainability values, as highlighted by previous researchers, including Kazoleas et al. (2001). In line with this, Ankit and El-Sakran (2020) stressed the importance of establishing a socially responsible higher education institution, incorporating such

values into both the curriculum and management practices, coupled with a sustained dedication to robust community engagement.

National and International Awareness

The second facet within the university image model pertains to national and international recognition. A robust brand presence for a university can lead to a higher likelihood of students choosing it for their studies, subsequently enhancing enrollment and retention rates, along with the perceived value of the institution (Foroudi et al., 2019). This branding effort also contributes to international acknowledgment and positively impacts university rankings (Calma & Dickson-Deane, 2020).

Establishing and cultivating brand awareness, imprinting the university in the minds of consumers, and fostering a preference for the brand are crucial steps for a successful brand (Keller, 2003). Earlier studies, such as those by Ivy (2001) emphasizing the reputation of lecturers and the impact of research, Kazoleas et al. (2001) underscoring the significance of being a local institution, and Beerli et al. (2002) considering the reputation of the university, highlight variables that contribute to this dimension. Furthermore, the performance of institutions is notably influenced by high-achieving faculty members within universities (Hoque & Tshutsha, 2022).

Azoury et al. (2014) showed that, among the cognitive factors of image, reputation and age exercise the greatest positive influence. Their findings showed that, when a university is prestigious and has an illustrious history, campus life is dynamic, and the students can quickly get jobs, this indicates a good image of the institution, which helps student employability and satisfaction. With this aim, Malaysian universities are actively striving to improve employability prospects for international postgraduate students (Manzoor et al., 2023).

Economic Value

Sakthivel and Raju (2006) argue that the value of HE is not solely about imparting technical knowledge; it is also tied to the financial investment made by students. Value for money pertains to the perceived quality level relative to the price paid for a product or service (Kumar & Kumar, 2021). However, Michel et al. (2008) assert that value extends beyond monetary considerations, emphasizing that students actively contribute to shaping the overall value of university services.

Neves and Hillman (2017) propose that there is a need for significant efforts to better address the informational needs of all students regarding expenditure and the value derived from it. The discussion on value in education marketing has been prominent, yet it has not been explicitly identified as the foundation of the pricing formula (Hemsley-Brown & Oplatka, 2006).

Educational institutions, requiring resources from diverse channels, such as student enrollments, taxpayer funds, donations or subsidies, and industrial project investments, must consider the cost and funding of the institution as a variable impacting the construction of its image (Sabando et al., 2019). Similarly, Ivy (2001) highlighted economic value, emphasizing lower fees compared to competitors, and Zaghloul et al. (2010) identified the cost of education to be a significant factor.

University Facilities

The fourth component in the university image model pertains to university facilities. The university image encompasses the subjective perspective of students regarding program quality and the social and physical environment of the institution (Gafoor & Ashraf, 2012). Some studies highlight that the university environment, whether physical or psychological, significantly shapes student perceptions of the university image. Other research, such as Maringe (2006) and Manzoor et al. (2019), recognizes a university's location, teaching quality, and infrastructure as dimensions of its image. The final crucial aspect is related to facilities (Muhsin et al., 2020), comprising variables such as well-equipped technological classrooms, appropriate student-to-class ratios, a balanced mix of theory and practice in subjects, and a campus of suitable size.

Student Satisfaction

Drawing on the foundational assumptions of social identity theory (SIT), the identification of customers with a company, in this case, students with an institution, is linked to an individual's confidence and overall satisfaction (Wilkins et al., 2016). Satisfaction among customers is said to occur when their post-service perception aligns with their pre-existing expectations (Fornell, 1992). Satisfaction occurs when the emotional state stemming from the disconfirmation of expectations is melded with pre-existing consumer sentiments regarding the consumption experience. It represents an individual's sentiment derived from an encounter or process designed to meet their needs (Padlee et al., 2021).

Service providers such as universities are tasked with rendering services visible and persuading customers (i.e., students) of their superior quality. Institutions face both opportunities and challenges due to the high expectations customers (students) hold for their services. Service-providing companies (HEIs) should embrace these challenges, transform them into opportunities, and strive to meet customer (student) expectations (Mandal, 2022). Atabaru et al. (2017) defined satisfaction as a measure of how well customer requirements are met. Hence, the satisfaction or dissatisfaction of a customer is the response to single or prolonged experiences with a service provider (Rust & Oliver, 1994). Zhang et al. (2020) defined *customer satisfaction* as how a firm responds to the fulfillment of customer expectations.

The satisfaction of students with their university experience is a topic of discussion in higher education literature (e.g., DeShields et al., 2005; Elliott & Shin, 2002). In the context of this study, university experience pertains to comprehensive academic encounters and encompasses a broad aspect of satisfaction. This includes student evaluations of various facets of university life, such as administrative procedures and personnel, infrastructure, and the social environment.

Association of University Image Dimensions and Student Satisfaction

Researchers have proposed that a brand's image has the potential to meet customer (i.e., student) expectations, thereby enhancing their satisfaction (Hanaysha et al., 2021). In the theoretical context of marketing, institutional image is regarded as more important than the service quality in giving satisfaction to the students and is considered one of the key factors of consumer satisfaction (Shehzadi et al., 2020; Chandra et al., 2019; Lafuente-Ruiz-de-Sabando et al., 2018). This underscores the importance of redefining the university image as a multidimensional construct and examining its impact on student satisfaction in the context of prosocial behavior.

Enhancing service facilities within institutions to meet diverse customer (i.e., student) needs can result in satisfied customers (Mandal, 2021), especially for universities that provide excellent services. The factors related to *external communication and values* are linked with the flow of information from the inside to the outside of an organization (Sedereviciute & Valentini, 2011, cited in Lee et al., 2018), thus having an impact on student satisfaction. Institutional image and reputation are considered valuable assets for attracting prospective students as well as for competing with other universities (Alves & Raposo, 2007) and are found to be the determinant of student satisfaction (Schlesinger et al., 2017). Communication is one of the most important sources of student satisfaction in HEIs (Terzic et al., 2019; Terzić & Aščić, 2018). The findings of these researchers endorsed a significantly strong correlation between university reputation and student satisfaction, which is also one of the most crucial components related to national and international awareness.

In her meta-analysis focused on satisfaction within higher education, Santini (2017) identified the economic value construct as a notable predictor of satisfaction ($p < .001$). Haverila and Haverila (2021) similarly discovered significant connections between student satisfaction and the concept of value for money. Khan and Yildiz (2020) emphasized the importance of location, facilities, and infrastructure in fostering student satisfaction. Weerasinghe and Fernando (2018) reported a statistically significant correlation between university facilities and levels of student satisfaction. Based on these outcomes of past research studies, various HEIs have started realizing the need to invest a handsome amount

in developing state-of-the-art campus infrastructure that is directly associated with international students' satisfaction.

Based on the review of the literature, we postulate the main hypothesis for this study as follows:

H1: University image dimensions have a positive relationship with students' satisfaction.

RESEARCH METHODS

Sample Characteristics and Measurements

The top five sending markets for Malaysia are China, Indonesia, Bangladesh, India, and Nigeria (*ICEF Monitor*, 2023). HEIs in Malaysia are of two main types: public and private. Public higher education institutions (Institut Pendidikan Tinggi Awam [IPTA]) are known as *state-funded HEIs* that consist of the various “universities, polytechnics and community colleges that are fully reliant on government funding” (Anis et al., 2018, p. 54). A *private* HEI (Institut Pendidikan Tinggi Swasta [IPTS]) is “an educational institution, including a University or University College or a foreign branch campus, approved and registered under this Act, which is not maintained or established by the government” (*Laws of Malaysia*, 2006, p. 2).

Data was collected from one top public university and one leading private university in Malaysia, which has a higher number of enrolled international postgraduate students, using a self-administered questionnaire. Both universities are enlisted among the top 10 universities in QS Asian University Rankings 2023 (Top Universities, 2023). Aghaz et al. (2015) have stressed the importance of postgraduate students in one of their studies related to university image due to the higher experience level of these groups of students. Malaysia serves as a crucial research setting due to its location in the Global South, where universities witness a growing presence of international postgraduate students (Singh & Jack, 2022).

In Malaysia, 27,812 international students enrolled in postgraduate programs (Bernama, 2015). EMGS data indicates a rising interest among international students in pursuing a PhD in Malaysia over the past two years, despite intermittent lockdowns, known as the Movement Control Order (MCO), due to the COVID-19 pandemic. In 2021, EMGS reported a substantial increase, with a total of 11,161 international applicants for the Doctor of Philosophy (Ph.D.) program in both public and private institutions in 2021. This marked almost a doubling of application numbers compared to 2020, which had 6,348 applications (*Study International*, 2022). Hence, this study has used international postgraduate students studying in Malaysia as a source of data collection. Responses were collected using a seven-point Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*).

This study used the scale developed by Alcaide-Pulido et al., 2017 to redefine the university image model. Five items were used to measure *external communication and values*, *national and international awareness* (four items), *economic value* (two items), and *university facilities* (four items). The questionnaire comprises two sections with a total of 27 items. Fifteen items were used to measure the image dimensions, student satisfaction (seven items), and demographic and academic aspects of the respondents (five items). The items on student satisfaction were adapted from Po Cheung Lai et al. (2014; five items) and Oliver (1999; two items).

Building on the approach used by Singh and Jack (2022, 2018), this study adopts purposive sampling to investigate international postgraduate students in Malaysia. The sampling criteria comprise international students currently studying in Malaysia and being enrolled in postgraduate programs such as master's and PhD. A total of 210 responses were obtained, of which 200 were usable. The response rate was 60%. In this study, the single factor explains 46.09% of the variance based on Harman's single-factor test; hence, the common method bias is not a problem here (Podsakoff et al., 2003).

To reduce questionnaire errors, a pre-test was conducted with the international postgraduate students studying in sampled universities. Cronbach's alpha for *external communication and values*

was 0.850, *national and international awareness* (0.850), *economic value* (0.748), *university facilities* (0.799), and *student satisfaction* (0.931), indicating acceptable reliability.

In Table 1, 79.0% of the respondents were male, while 21.0% were female international postgraduate students. 60.5% were studying in the PhD program and 37% were in master’s programs (37%). Based on nationality, the respondents were from Bangladesh (22.0%), Indonesia (4.5%), Yemen (8.0%), Nigeria (11.5%), Pakistan (9.0%), India (7.0%), and others (38.0%); 43.0% were staying for more than three years in Malaysia. Table 2 shows the mean and standard deviation of the variables. In this table, the mean values for the majority of the variables associated with *national and international awareness* are higher compared to the variables related to other factors such as *external communication and values, economic value, and university facilities*.

Table 3 shows an exploratory factor analysis using principal components with varimax rotation to determine the underlying components of 15 items presenting the university image instrument for international postgraduate students studying in Malaysia.

The Kaiser–Meyer–Olkin test yielded a value of 0.898, well above the threshold of 0.70, confirming the adequacy of the sample size of 200. Additionally, the Bartlett test of sphericity ($p = 0.000$) suggests a significant correlation among some variables, making the data suitable for exploratory factor analysis. Applying criteria of eigenvalue > 0.70 and factor loading > 0.4 , three factors have been identified, explaining 63.472% of the total variance.

The findings indicate these three factors form the image of the international students studying in Malaysia’s HEIs. The first factor has the greatest influence on the university image of international postgraduate students. This factor includes eight items, such as “Classrooms are technologically well equipped,” “The number of students per class is appropriate,” and “It has a good academic reputation and prestige,” which explains 27.91% of the variance. This factor is called *institutional national and international awareness and facilities*. The second factor comprised five items and accounted for

Table 1. Characteristics of respondents

	Percentage (N = 200)
Institution type:	
Public university	45.0
Private university	55.0
Gender:	
Male	79.0
Female	21.0
Program of study:	
Master’s degree students	37.0
PhD students	60.5
Students in other postgraduate programs	2.5
Nationality:	
Bangladesh	22.0
Indonesia	4.5
Yemen	8.0
Nigeria	11.5
Pakistan	9.0
India	7.0
Others	38.0
Stay duration:	
< 1 Year	18.0
1–2 Years	16.5
2–3 years	22.5
> 3 years	43.0

Table 2. Means and standard deviations of variables

	Mean	Std. Deviation
National and international awareness:		
It is known in the country.	5.90	1.103
It is known internationally.	5.68	1.153
It has a good academic reputation and prestige.	5.75	1.014
It is well placed in university rankings.	5.52	1.186
University facilities:		
Classrooms are technologically well equipped.	5.55	1.074
The number of students per class is appropriate.	5.50	1.137
Subjects generally have a good theoretical-practical balance.	5.31	1.051
The campus is of an appropriate size.	5.74	1.169
External communication and value:		
It has a good website.	5.59	1.113
It is present in social networks.	5.56	1.033
It is committed to society.	5.59	1.018
It conveys ethical values and social responsibility.	5.67	0.990
It conveys the values of environmental sustainability.	5.69	0.985
Economic value:		
It offers good value for money.	5.18	1.267
The price is right.	5.05	1.268

Table 3. Results of factor analysis for HEIs image (SPSS output)

	Factor 1	Factor 2	Factor 3
Classrooms are technologically well equipped.	.735		
The number of students per class is appropriate.	.690		
Subjects generally have a good theoretical-practical balance.	.437	.418	
The campus is of an appropriate size.	.720		
It is known in the country.	.816		
It is known internationally.	.697	.427	
It has a good academic reputation and prestige.	.637	.506	
It is well placed in university rankings.	.524	.490	
It offers good value for money.			.825
The price is right.			.841
It has a good website.		.656	
It is present in social networks.		.708	
It is committed to society.		.799	
It conveys ethical values and social responsibility.		.753	
It conveys the values of environmental sustainability.		.726	
Eigenvalue	6.915	1.405	1.292
Variance (%)	27.911	23.467	12.699
Cumulative variance (%)	27.911	51.378	64.077

23.47% of the variance. This factor is named *external communication and values*. Lastly, the third factor involves two variables that explain 12.70% of the variance. This factor is designated *economic value*.

Hypotheses Development

Based on the outcomes of exploratory factor analysis, we re-state the H1 as follows:

H1a: Institutional national and international awareness and facilities positively influence student satisfaction.

H1b: External communication and values positively influence student satisfaction.

H1c: Economic value positively influences student satisfaction.

Based on the literature review, the research framework of this study is framed as shown in Figure 1.

Data Analysis

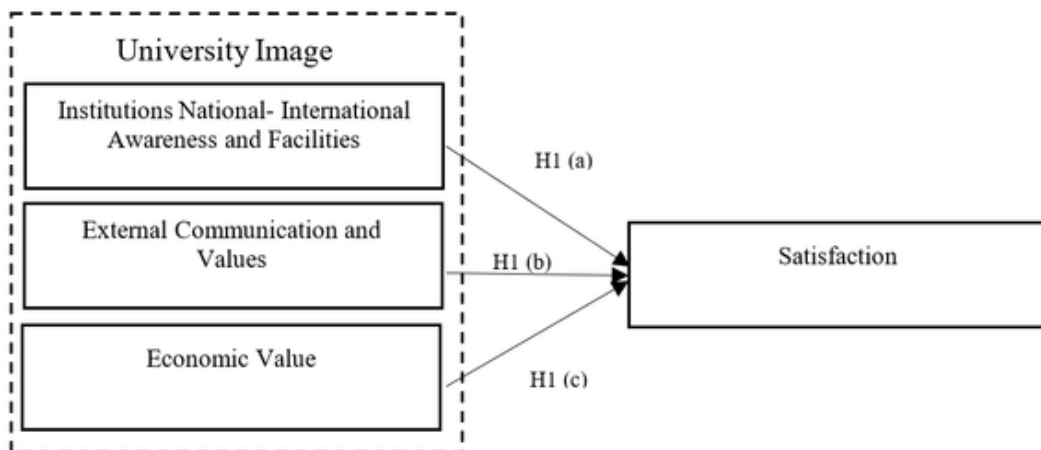
The above hypotheses were estimated using the partial least squares structural equation modeling (PLS-SEM) approach. PLS-SEM is appropriate not only for exploratory studies but also for confirmatory studies (Hair et al., 2017).

RESEARCH FINDINGS

Measurement Model

Analyzing the measurement models is the initial step in evaluating the results of PLS-SEM (Hair et al., 2019). Convergent validity for PLS-SEM can be examined from the measurement by evaluating their indicator reliability and average variance extracted (AVE). The outer loadings of the indicators are assessed for indicator reliability and range from 0.684 to 0.920 in this study. The composite reliability (CR) in this study is greater than 0.7, indicating adequate convergence or internal consistency. The ρ_A values also lie between Cronbach's alpha and composite reliability (Henseler et al., 2016). According to Hair et al. (2017), on average, all the constructs in this study explain more than half of the variance of their indicators, with average variance extracted (AVE) values for the constructs ranging from 0.576–0.833 (see Table 3).

Figure 1. Conceptual framework



For discriminant validity, the heterotrait–monotrait (HTMT) criterion ratio is used to examine if the measure of the construct discriminates well empirically (Voorhees et al., 2016). Table 4 shows the HTMT values that are lower than the required threshold value of HTMT.90 (Gold et al., 2001). The bootstrapped HTMT inference criteria based on the upper confidence interval value is less than 1 (Hair et al., 2017) indicating that discriminant validity is established for the constructs of this study.

Hypothesis Testing and Structural Model

According to Hair et al. (2019), after successfully evaluating the measurement model, it is possible to assess the PLS-SEM results to evaluate the structural model. The hypotheses developed for this study were tested by running a bootstrapping procedure with a resample of 5,000 as suggested by Hair et al. (2014). The hypothesis testing results in Table 5 show a significant positive relationship between *external communication and values* and student satisfaction (H1a: $\beta = 0.355$, t -value = 5.793, $p < 0.01$). Similarly, a positive association was also found between *economic value* (H1b: $\beta = 0.095$, t -value = 1.732, $p < 0.05$) and *institutional national and international awareness and facilities* (H1c: $\beta = 0.436$, t -value = 6.131, $p < 0.01$) with the satisfaction of international students in HEIs. Hence, H1a, H1b and H1c were supported.

Table 4. Summary of reflective measurement model

Constructs	Indicators	Convergent validity		Internal consistency reliability			Discriminant validity (HTMT confidence interval does not include 1)
		Loadings	Average variance extracted	Cronbach's alpha	ρ_A	Composite reliability	
Institutions national and international awareness and facilities	NatIntAwr_1	0.753	0.576	0.894	0.898	0.906	Yes
	NatIntAwr_2	0.781					
	NatIntAwr_3	0.837					
	NatIntAwr_4	0.781					
	UnivFac_1	0.766					
	UnivFac_2	0.746					
	UnivFac_3	0.684					
	UnivFac_4	0.713					
External communication and values	ExtComVal_1	0.772	0.661	0.871	0.873	0.907	Yes
	ExtComVal_2	0.794					
	ExtComVal_3	0.871					
	ExtComVal_4	0.808					
	ExtComVal_5	0.816					
Economic value	EcnVal_1	0.920	0.833	0.799	0.803	0.909	Yes
	EcnVal_2	0.905					
Satisfaction	Satisfaction_1	0.843	0.720	0.900	0.907	0.908	Yes
	Satisfaction_2	0.834					
	Satisfaction_3	0.880					
	Satisfaction_4	0.887					
	Satisfaction_5	0.901					
	Satisfaction_6	0.783					
	Satisfaction_7	0.806					

Table 5. Results of the discriminant validity (HTMT)

		1	2	3	4
1	Economic value	0.890			
2	External communication and values	0.423	0.813		
3	Institutions national-international awareness and facilities	0.453	0.684	0.759	
4	Satisfaction	0.443	0.693	0.722	0.849

In addition, the predictive relevance of the model was examined using the blindfolding procedure (Henseler et al., 2014). If the Q^2 value is larger than zero, the model has predictive relevance for a certain endogenous construct; if the value is less than zero, it does not (Henseler et al., 2014). The Q^2 value for student satisfaction is 0.424, which is above zero, indicating that the model has sufficient predictive relevance (Hair et al., 2010). Following Shmueli et al. (2016), this study has also applied cross-validation with holdout samples in assessing predictive validity (out-of-sample prediction). Using ten folds (i.e., $k = 10$), the linear regression model (LM) value is compared with the PLS-SEM model's MAE (mean absolute error) or the RMSE (root mean squared error) value of each indicator. The outcome of this study shows that the values for all the indicators of satisfaction in PLS-SEM, LM depicted lower prediction errors and the Q^2 values are larger than zero (i.e., $Q^2 > 0$; see Table 6). This indicates the model has high predictive power. The R^2 value of student satisfaction is 0.603 (substantial) indicating the strength of the predictive accuracy of a model (Cohen, 1989). It also indicates that 60.3% of the variance in student satisfaction is accounted for by the dimensions of HEIs' image. The standardized root mean square residual (SRMR) value is 0.05 for the saturated model, which is less than 0.08 and is considered to indicate a good fit (Henseler et al., 2014). The resulting redefined HEI's image model outcome is observed in Figure 2.

IPMA (Importance and Performance Matrix)

PLS-SEM studies that draw on IPMA results offer important insights into the role of antecedent constructs and their relevance for managerial actions (e.g., Grønholdt et al., 2015; Hock et al., 2010). In this study, IPMA was carried out based on the procedure used by Hair et al. (2017) as it can provide additional information on the actual performance of each construct. This is pertinent for the study, as new insights could be gained for further managerial actions (see Table 7; Figure 3). Among the three image dimensions examined against satisfaction, external communication and values have the highest

Table 6. Structural parameter estimates for the proposed model

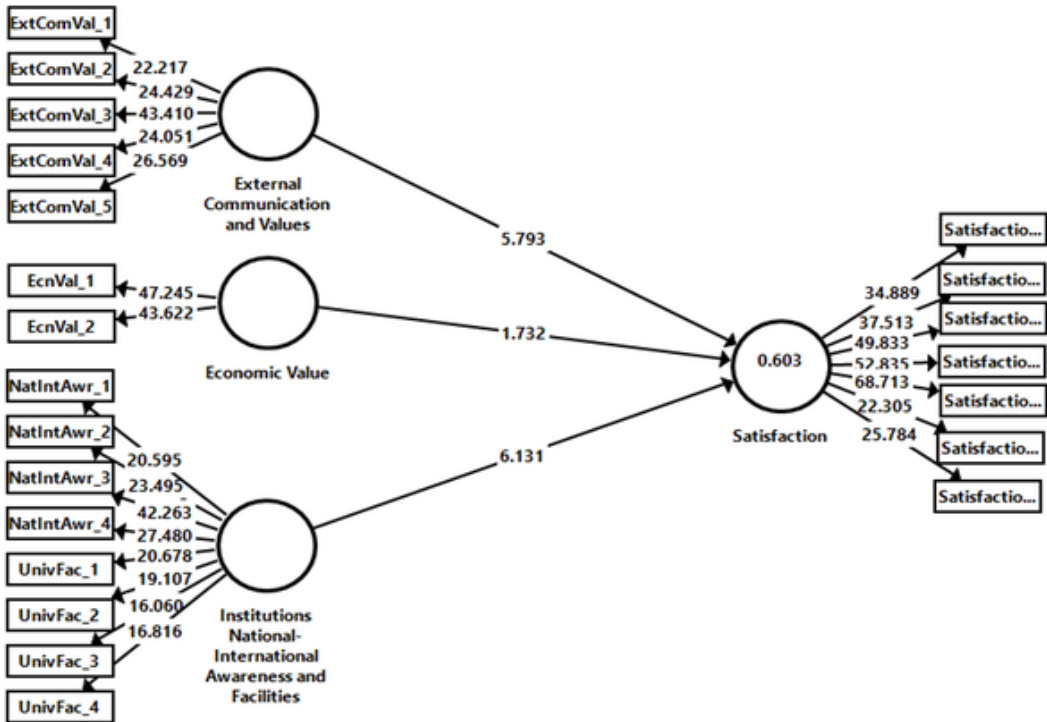
Hypotheses	Path	Beta	BCCI (5%–95%)	Standard error	t-value	p-value (< 0.05)	Decision
H1a+	Institutions' national and international awareness and facilities → satisfaction	0.436	(0.314, 0.542)	0.071	6.131	0.000(S)	Supported
H1b+	External communication and values → satisfaction	0.355	(0.254, 0.452)	0.061	5.793	0.000 (S)	Supported
H1c+	Economic value → satisfaction	0.095	(0.002, 0.187)	0.055	1.732	0.042 (S)	Supported

Note. S = significant; NS = not significant

Table 7. Indicator prediction summary

	PLS MODEL			LM			PLS-LM		
	RMSE	MAE	Q ² _predict	RMSE	MAE	Q ² _predict	RMSE	MAE	Q ² _predict
Satisfaction_1	0.571	0.294	0.406	0.630	0.319	0.277	-0.059	-0.025	0.129
Satisfaction_2	0.702	0.364	0.386	0.767	0.391	0.265	-0.065	-0.027	0.121
Satisfaction_3	0.616	0.314	0.316	0.730	0.360	0.038	-0.114	-0.046	0.278
Satisfaction_4	0.534	0.264	0.395	0.616	0.306	0.196	-0.082	-0.042	0.199
Satisfaction_5	0.594	0.295	0.445	0.633	0.323	0.370	-0.039	-0.028	0.075
Satisfaction_6	0.675	0.308	0.252	0.713	0.326	0.165	-0.038	-0.018	0.087
Satisfaction_7	0.586	0.290	0.397	0.651	0.296	0.258	-0.065	-0.006	0.139

Figure 2. Redefined HEI's image model outcome



performance. It is also the most important predictor of satisfaction (e.g., Ringle et al., 2011) for HEI students. Secondly, *institutional national-international awareness and facilities* turned out to be the next important construct based on its total effects on satisfaction. However, it has comparatively lower performance in the prediction of student satisfaction, thus requiring attention for improvement. The positioning of *economic value* in the IPMA quadrant also indicates certain actions by the HEIs for improvement although its impact is lower compared to the other two dimensions of university image.

In the results report, under satisfaction criteria → importance–performance map (satisfaction; indicators), SmartPLS shows the indicators’ importance–performance map as displayed in Figure 4.

Figure 3. Importance performance map (construct level) of the target construct satisfaction

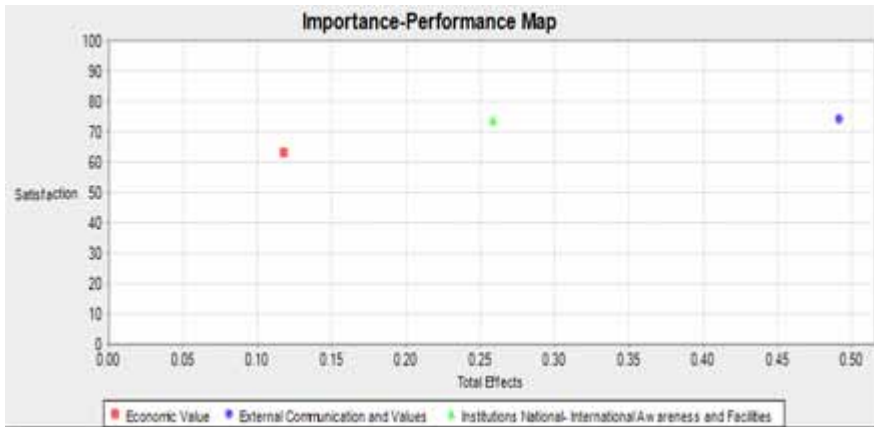
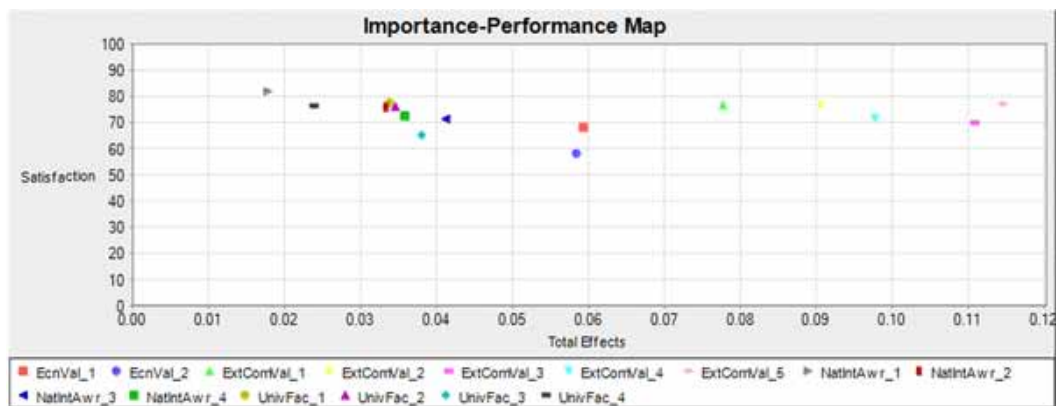


Table 8. IPMA result for student satisfaction

Construct	Importance (total effect)	Performance (index values)
Institutional national and international awareness and facilities	0.259	73.750
External communication and values	0.491	74.136
Economic value	0.118	63.074

Figure 4. Importance performance map (indicator level) of the target construct satisfaction



For example, we find that the indicator ExtComVal_5 (“It conveys the values of environmental sustainability”) has relatively high importance when focusing on the construct of external communication and values while offering some room for performance improvement. As a direct consequence, the performance of the construct *external communication and values* increases, which improves the target construct satisfaction. Similarly, other indicators (e.g., ExtComVal_3, “It is committed to society”) may gain particular attention regarding improving student satisfaction.

RESULTS AND DISCUSSION

Based on the first objective, H1a shows that the factor *institutional national and international awareness and facilities* has a significant positive impact on international student satisfaction in HEIs in Malaysia. This outcome matches with the findings of past research that one of the significant consequences of university reputation and university facilities (Manzoor et al., 2020; Heffernan, 2017; Santini et al., 2017) is none but student satisfaction.

The result of H1b reveals that the factor *external communication and values* positively affects student satisfaction with international postgraduate students in HEIs. Manzoor et al. (2020) and Terzic et al. (2019) also showed positive associations between institutional communication and satisfaction in the service context, as international students might not tend to be physically present to acquire information about the respective HEIs due to their varied geographic context making them keener towards the institutional external communication through websites even after enrolment and continuation of their study. The results of this study also revealed that international students prefer to get information regarding the course offering, semester schedule, academic updates, and event details, thus considering external communication as a crucial component of university image related to their satisfaction.

The last hypothesis, H1c, asserts that there is a substantial positive correlation between economic value and the satisfaction of international postgraduate students. This finding aligns with earlier studies conducted by researchers such as Santini et al. (2017) and Haverila and Haverila (2021). The meta-analysis conducted by these researchers on student satisfaction revealed that the *economic (monetary) value* construct emerged as a noteworthy predictor of satisfaction.

RESEARCH IMPLICATIONS

Theoretical Implications

The study also theoretically extends the scope of social identity theory (Boros, 2008) toward achieving prosocial behavior such as achieving student satisfaction. This clarifies that the dimensions related to image not only instill a sense of belongingness with the HEIs through developing strong identities but are also associated with positive behavioral outcomes as well.

This study has crucial implications for the relevant fields in academia because it has explored the dimensions forming the HEI image that ultimately leads to positive behavioral consequences such as student satisfaction. This study has explored three dimensions such as *institutional national and international awareness and facilities*, *external communication and values*, and *economic value* forming the university image that differs from the classification of *image* identified by past researchers. Besides, the sample used for this study is the current international postgraduate students. These students not only have more experience but also add diverse inputs due to their multiplicity.

Maintaining and enhancing a desirable organizational image requires an emphasis on all the factors associated with the three dimensions such as *institutional national and international awareness and facilities*, *external communication and values*, and *economic value* contributing to HEI image. The variables related to *national and international awareness* and *university facilities* are grouped as a new factor in this study, forming the university image. This shows that international students prefer to evaluate university reputation and facilities as combined matters rather than separate entities while evaluating the university image (Palacio et al., 2002).

Managerial Implications

The three dimensions forming the university image in this study will help the higher education marketing experts to revise their marketing and communication strategies for attracting and retaining international students by satisfying their needs and expectations. It will not only motivate the postgraduate students to willingly apply for PhD programs or even membership of faculties in the

same university but also influence undergraduate students and prospective students to enroll in the university. Theories also support the idea that members of an organization with a favorable image are more likely to stay in that organization (Rashid et al., 2012). Therefore, the three dimensions of the university image model explored in this study are crucial for both existing student retention and new student attraction, particularly during contingency periods like the COVID-19 pandemic.

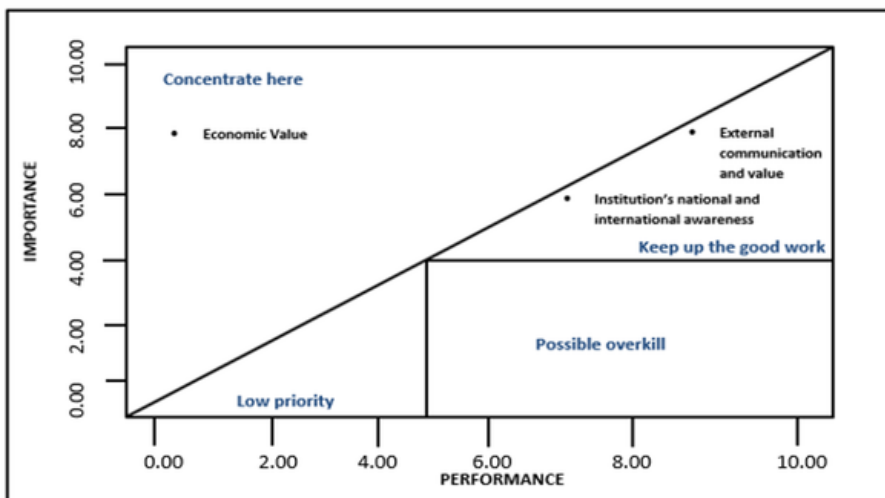
Another managerial implication of the current study is the items of student satisfaction. 60.3% variations in student satisfaction are determined by the three dimensions of HEI image. Hence, HEI managers need to accentuate these dimensions to enhance satisfaction, thus leading to a higher level such as student delight. HEI administrators can enhance their identity by strategically allocating resources through effective public relations planning, as suggested by Lee et al. (2018). This approach aims to generate positive behavioral effects not only among current international students but also among prospective students and other stakeholders, including parents.

The redefined HEIs image model outcome in this study can help to add more fresh ideas for using this student satisfaction data that could instill meaningful insights for the development of the customer satisfaction index (CSI), considered one of the important indicators that determine the ranking (i.e., Times *Higher Education* World University Rankings) for the university.

This study differs from past studies as IPMA has been used to identify the dimensions of university image having satisfactory performance with relation to its importance and vice versa. Based on the IPMA outcome indicator level, HEIs can initiate more social responsibility activities through means of curricular activities, publications, and conferences to create awareness among the students to serve the society and community. HEIs also can design their curriculum to shape student attitudes and perceptions toward a sustainable society. The research centers in the HEIs should get sufficient funds to take up more projects related to environment, energy, and sustainability issues that could be useful for society and people. Moreover, HEI managers can create a facility for waste management and continue their active participation in United-Nations-centered activities that would instigate the performance of *external communication and values* thus positively influencing student satisfaction.

The insightful findings based on the additional IPMA (see Figure 5) have not only managed to extend the body of knowledge in HEI image but have also provided a significant contribution to higher education. Top HEI management would now have more vigilant observations and understanding of the explicit

Figure 5. IPA diagram of redefined the HEI image model outcome constructed using the performance and importance measures and data



dimensions and items to prioritize in their development and deployment of their financial, marketing, and communication resources to enhance their image that yields higher satisfaction among their students.

As this study is conducted in one of the emerging education hubs in the Southeast Asian region, its outcomes could provide meaningful insights for the other contenders in these similar territories and beyond.

CONCLUSION

Due to the increased competition for international students, higher education institutions should seriously consider developing and maintaining a positive and distinctive image to achieve a competitive advantage. Based on the first objective, this study reveals three dimensions, *institutions national-international awareness and facilities*, *external communication and values*, and *economic value*, that form the university image for the international students studying in Malaysia's HEIs and their positive associations with international student satisfaction. Establishing a distinctive image seems to be key because students generally judge universities on their reputations and not on the actual quality of their teaching or research (Marginson, 2006). The second objective has been accomplished by using the IPIMA analysis which identifies predecessors (image dimensions) such as *institutions national-international awareness and facilities* that have relatively high importance for achieving student satisfaction. The factor *external communication and values* was found to have a relatively low performance (i.e., low average latent variable scores) thus creating room for important managerial implications for the HEIs.

The outcomes of this study can help universities revise their marketing and communication strategies to retain international students, especially in the competitive global education market. Besides universities can assess their performances based on the redefined HEI image model revealed in this study. The IPMA analysis provides insights into in-depth focus areas of HEI image that require further attention and development through more budget allocations in marketing, performing environmental sustainability activities and so on that leads to satisfaction among the students.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This study is also beyond limitations. The main limitation of this study is the fact of using a sample of international postgraduate students studying in one country such as Malaysia. However, future studies can focus on cross-cultural studies by incorporating international students studying in various countries in Southeast Asia and beyond to analyze the impact of the redefined HEI image model on international postgraduate student satisfaction to enhance the generalizability of the current research findings. Although the cross-sectional design adopted in this study is consistent with previous studies related to the HEI context (Wilkins et al., 2016), alternate research works using longitudinal methods for future studies are recommended for better control of causality. Subsequent research endeavors can explore larger sample sizes, with a specific focus on differentiating between private and public universities. Lastly, this study is based on a questionnaire survey with international postgraduate students as respondents. However, to get a clear picture of university image, future studies should also include focus group discussions and interviews with various stakeholders such as parents and potential students to generate deeper insights for HEI managers and administrators.

DECLARATION OF CONFLICTING INTERESTS

The authors declare no potential conflicts of interest concerning the research, authorship, and publication of this article.

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