

The Impact of Student Value Co-Creation, Institutional Green Image on Student Loyalty in Higher Education in Kuala Lumpur, Malaysia

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Abstract

The study of co-creation in higher education context is characterized by a dearth of precision. Educational institutions are preoccupied with the expansion of student loyalty. The aim of this study was to investigate the impact of student value co-creation on student loyalty, using the Stimulus-Organism-Response (S-O-R) framework as a theoretical framework. As the size of the entire population was unknown, judgmental sampling was utilized to select samples for this study. In total, 314 respondents from ten private higher education institutions (PHEIs) in Kuala Lumpur, Malaysia, participated in the analysis. Structural equation modeling was employed to analyze the data using SmartPLS 4 software. The study employed bootstrapping to examine the relationship between student value co-creation and student loyalty, with institutional green image serving as the mediator. The findings of the present study revealed a positive correlation between student loyalty, institutional green image, and student value co-creation. Nonetheless, value co-creation and student loyalty are positively mediated by institutional green image. The implications of these findings were deliberated. Therefore, exploring many sectors that necessitate development in future study is of utmost importance. Examining other variables that influence student loyalty may yield beneficial outcomes. Despite this, it is essential to recognize that the present study is restricted by its confined survey design, which may have omitted some relevant data.

Keywords: Institutional Green Image, Student Value Co-Creation, PHEIs, Student Loyalty.

Introduction

For decades or centuries, deforestation, global warming, ozone layer depletion, pollution, and garbage disposal have afflicted the planet as a whole. In particular, global warming has generated higher temperatures, ocean levels, stronger storms, droughts, and more (Ang, 2021; Wong et al., 2023). With the increasing visibility of climate change's consequences, there is a rising need to educate individuals on adopting sustainable lifestyles and minimizing the environmental footprint (Zhao & Cheah, 2023). The advancement of educational sustainability can enable learners to grow into outstanding students on a global scale (Muniandy, 2022). The essential process of co-creation through higher education institutions (HEIs) facilitates social innovation, community transformation, and sustainable development; as a result, HEIs are positioned as global leaders in the formulation of fruitful international partnerships with businesses and communities (Kumari et al., 2020). Nowadays, private higher education institutions are implementing the SD concepts thoroughly into the curriculum and giving the Sustainable Development Goals (SDG) 2030 agenda paramount importance in their value creation initiatives (Sawani et al., 2023; Zhou et al., 2022). Sustainability initiatives are clearly embedded in HEI curriculum, research, operations, and community (Goni et al., 2017). Thus, higher education institutions play a crucial role in achieving sustainability (Fawehinmi et al., 2022) and sustainable development by integrating green curriculum and promoting an environmentally-friendly atmosphere (Said, 2022).

Malaysian higher education institutions face a growing need to compete globally. In addition, Malaysia is continuously pushing towards being a renowned destination for education in the southeast Asia region. Sustainability is a crucial concern for Malaysian Higher Education Institutions (HEIs) (Hj Mohayadin et al., 2018). However, Malaysian higher education has seen significant modifications and development (Daud et al., 2020). Higher education undergoes several transformative processes, with some focusing on teaching and learning, service quality, governance, and academic identity. Liang et al (2022), Malaysia has two types of higher education institutions: public HEIs, which are government-operated, and private HEIs, which are privately run. However, the consumers of Higher Education include students, parents, society, and authorities (Ahmad, 2019). Policy Planning and Research Division (2022), reports 437 private HEIs, comprising 68 universities and university colleges (including international branch campuses). The repercussions are concerning for the image and long-term sustainability of the institutions. For long-term sustainability, private HEIs must allow students to participate and implement environmental initiatives through educational practices in green marketing to increase student loyalty. The higher education institution and its students work together throughout the process of co-creation to enhance the student's knowledge and participation (Jhantasana, 2022). Increasing sustainability concerns in the education sector have led several Malaysian private HEIs to seek competitive advantage (Liang et al., 2022). Due to their growing number, private higher education institutions (PHEIs) are promising. Due to their diverse influence, PHEIs have a more pressing duty to raise awareness and knowledge to create a sustainable future (Ling et al., 2015).

The growth of student loyalty is a crucial factor for educational institutions in order to maintain or expand their presence in the education industry. Existing studies in the field of education have primarily focused on variables such as service quality, satisfaction, and trust when investigating the factors that influence student loyalty. However, to the best of my knowledge, there is a lack of empirical research that examines the direct and mediating

relationship between student value co-creation and institutional green image, particularly in the context of Malaysia from the green marketing perspective. There exists a dearth of scholarly research regarding the factors that precede student loyalty from the green marketing perspective among undergraduate students in private higher education institutions, specifically in relation to student value co-creation and institutional green image (Wong et al., 2023). The purpose of this study is to fill the existing gaps in the scholarly literature. However, the relationship between value co-creation and the institutional green image is a recent area of interest in academic research. Insufficient attention to environmental matters can lead to diminished loyalty, resulting in less financial revenue, increased student dropout, and additional expenses associated with recruiting new students, particularly for privately-owned educational institutions.

Problem Statement

Base on figure 1, United Nations Educational, Scientific and Cultural Organization's (UNESCO's) institute for statistics (UIS) indicated that the proportion of new student enrolment at private universities in Malaysia grew to 48.1 percent in 2016 and declined to 38.8 percent in 2022. Hence, the Malaysia ministry of higher education needs to set an aggressive strategies and growth targets to increase the number of students enrolment in a private HEIs.

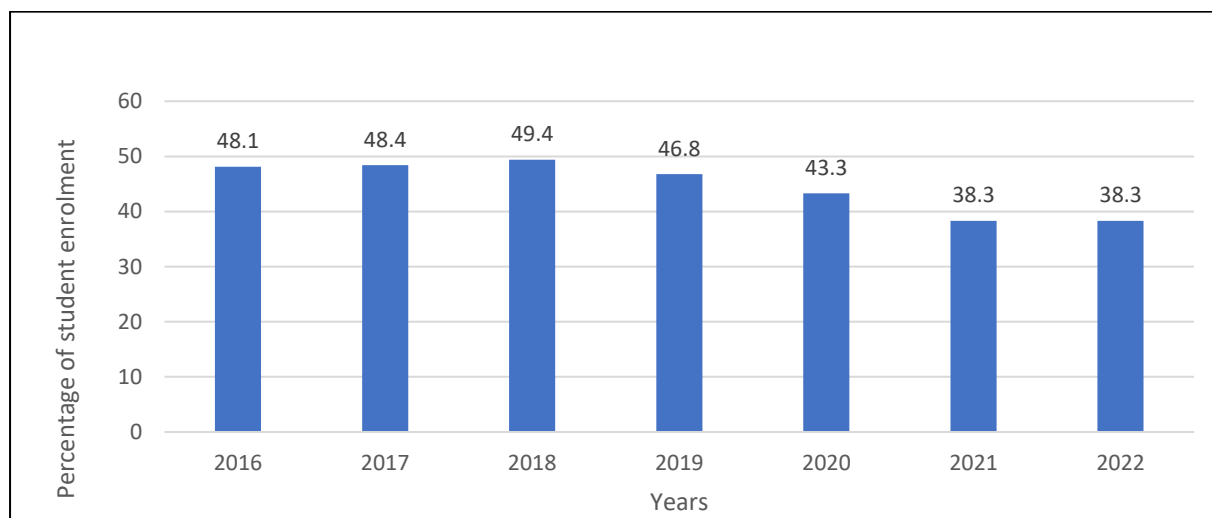


Figure 1: Percentage of Student Enrolment in Tertiary Education in Malaysia Private Institutions

Students' awareness of the effects that their actions have on the environment has led to an increase in the importance of establishing a green image (Jin et al., 2023). According to Policy Planning and Research Division (2022), stated that the sustainability challenges faced by private higher education institutions resulted in delayed enrollments and worsened cash flow problems. Students enjoy clean, green environs and would be proud of their university's efforts to reduce human activity's environmental impact (Wong et al., 2023). Thus, present study can explore how private higher education institutions might use green image to attract and retain students. Therefore, present study examines the concept of green image as a totally different construct from HEI image.

Malaysian higher education has grown due to increased student enrollment, HEIs, government expenditures, educational policies, and the need for human resources (Manzoor et al., 2019). The primary problem that Higher Education Institutions (HEIs) encounter is how to effectively attract and stimulate customers to participate in value co-creation processes, as well as how to guarantee their ongoing participation in such activities (Al-kumaim et al., 2021). As of 2014, the goal of increasing student enrollment is falling short due to declines in Nigeria, Yemen, and Iran, which account for roughly half of foreign students in Malaysia (Manzoor et al., 2019). Present study suggests utilizing green image to impact student loyalty in higher education, alongside student value co-creation.

Literature Review

Student Loyalty

Identifying student loyalty predictors is crucial for the higher education sector since it can lead to consumer loyalty and market share growth (Latif et al., 2021). According to Çavusoglu et al (2021), loyalty serves as a consistent and reliable revenue stream for institutions. To survive and retain customers, a HEI must follow globalization, which has led to a major evolution of the human revolution and student loyalty is crucial (Haeruddin et al., 2020). In a competitive and active environment, loyalty is a key aspect in gaining a competitive edge (Negussie, 2019). However, in the present study loyalty is examined on an individual basis, rather than being considered as an integral component of brand equity. Haeruddin et al (2020) stated that the measurement of loyalty is commonly conducted through the utilization of indicators such as retention, referral, and repeat. Todea et al. (2022) detailed that the efficacy of an educational establishment is contingent upon the loyalty exhibited by its current enrollees and alumni. Loyal students in higher education will not transfer to another university till complete their studies. Thus, loyal students are also more likely to return to the same college and suggest it to their families, friends, and significant others (Wong et al., 2023). Higher education institutions promote loyalty through improving facilities, pedagogy, industry linkage, placements, and outreach (Kaushal & Ali, 2020). Loyal alumni will support their alma mater in a variety of ways, including donations, placement of internships, co-development of new courses, and new student recruitment (Jhantasana, 2022).

Student Value Co-creation

The conceptual framework pertaining to co-creation within a university setting may exhibit a lack of clarity (Elsharnouby, 2015; Ranjan & Read, 2016). The concept of co-creation is a fundamental aspect that encompasses two dimensions: coproduction and value-in-use; thus, many scholars who focus on either dimension often refer to it as value co-creation (Dollinger et al., 2018; Jhantasana, 2022). In this manner, the final results of numerous previous studies fail to demonstrate the advantageous result of significant co-creation of value (Ranjan & Read, 2016). According to Jhantasana (2022); Sholehuddin et al (2023), incorporation of the value co-creation model is necessary within the framework of the third-order build. In contrast, the constructs of satisfaction and image are derived from second-order models, which are built upon three-stage and two-stage aspect designs, respectively. Knowledge sharing, equity, engagement, experience, personalization, and relationships make up the first stage of co-creation; coproduction and value-in-use constitute the second; and co-creation itself constitutes the third.

Value co-creation is an emerging approach to value generation, wherein both students and higher education institutions collaborate in the process of creating value (Farrokhi, 2020), with the student as the focal point (Tariq et al., 2022; Wang, 2021). Dziwanowska (2018), stated that in the process of co-creating value in higher education services, students and lecturers assume two primary roles; consequently, resource integration mostly occurs through interactions among these parties. Co-creation allows customers to share their talents and knowledge with suppliers, resulting in value-creating actions (Harandi et al., 2023). Customers possess an extensive array of needs and wants, however corporations are constrained by limited resources in their ability to fulfill client expectations and preferences (Baehaqi et al., 2023). The foundation of the value co-creation process facilitates a closer relationship between the institution and the students (Dollinger et al., 2018; Johansson et al., 2019). Higher education institutions should encourage students to bring their resources for sharing information and knowledge which will attract new students to the university and produce value (Ranjan & Read, 2016). According to Ghorbanzadeh and Sharbatyian (2022), the implementation of a value co-creation approach by universities has various benefits, including facilitating knowledge acquisition, expanding ownership, mitigating conflicts, fostering innovation, enabling comprehensive decision-making, promoting equality, creating social capital from an ethical perspective, facilitating dialogue, presenting individual values and attitudes, and fostering the development of shared attitudes and goals from a social learning perspective.

Institutional Green Image

According to Jin et al (2023), green image means the perceptions held by students on the level of concern and commitment exhibited by a higher education institution towards environmental matters. Green image has emerged as a significant metric for measuring success across a range of companies, including educational institutions and can enhance an organization's overall reputation (Chairy et al., 2019). In view of environmental issues and disasters, it has become imperative for organizations to acknowledge and cater to the environmental demands of their customers (Çavusoglu et al., 2021; Tan et al., 2022). As students become more environmentally sensitive, an institution's green image including its environmental policies has grown in importance (Deng & Yang, 2022; Wong et al., 2023). Organization are engaging in the development of various initiatives pertaining to corporate social responsibility (CSR) with the aim of enhancing their image (Çavusoglu et al., 2021; Yusuf et al., 2012). Thus, showing the HEIs' environmental credentials to the public can help attract a large number of dedicated students (Jin et al., 2023).

However, a successful institution uses green image to symbolize its brand and distinguish its services from competitors (Deng & Yang, 2022; Le et al., 2022; Tan et al., 2022). Institutions value green image (Wong et al., 2023) more due to consumers' environmental awareness and severe international environmental standards (Çavusoglu et al., 2021). The image of private colleges and universities pertains to the holistic perception and assessment by societal collectives about the institution's ethos, capacity for nurturing talent, faculty prowess, social standing, and other pertinent facets (Wang, 2021). Due to lack of studies in the context of HEIs green image. This study aims to examine the students' perceptions of the green image connected to higher education institutions and investigate the impact of this green image on their loyalty.

Student Value Co-creation and Student Loyalty

The concept of value co-creation has emerged as a prominent theoretical framework in the study of customer behavior (Baehaqi et al., 2023). The significance of customer loyalty as a tangible asset for companies has been widely acknowledged (Baehaqi et al., 2023). However, an higher education institution has the potential to gain a competitive edge by facilitating the co-creation of distinctive academic experiences with students (Dziewanowska, 2018), thereby fostering effective interactions that enhance student loyalty (Tariq et al., 2022). Thus, building relationships between students and institutions is the foundation of the value co-creation process, which over time may increase student trust and loyalty (Dollinger et al., 2018; Yi et al., 2023). Co-creation enables the endowment of a service, which leads to brand loyalty (Johansson et al., 2019). The impacts of service usage on consumers' perceptions and brand associations play a role in the co-creation process and influence customer loyalty (Pharr, 2016). However, the more significant the customer's value co-creation behavior level, the greater the customer's loyalty to the company (Baehaqi et al., 2023). Prior studies found that value co-creation has a positive relationship with student loyalty in the context of HEI (Jhantasana, 2022); mobile legend game players (Arissaputra et al., 2023); and Sampoerna Retail Community (Baehaqi et al., 2023). The study postulates that the increase of student value co-creation is correlated with increased student loyalty. Thus, the proposition of the first hypothesis was established.

H₁: There is a positive relationship between student value co-creation and student loyalty.

Student Value Co-creation and Institutional Green Image

The engagement of students in co-creation activities, particularly through their participation behavior, yields several advantages, including the enhancement of the institution brand's image and reputation (Ghorbanzadeh & Sharbatian, 2022). Thus, the university's ability to attain a lasting competitive advantage within a highly competitive market is contingent upon the ongoing enhancement of its brand image and reputation (Ghorbanzadeh & Sharbatian, 2022). Co-creation allows educational institutions improve their services, brand image, and student recruitment through engaging students in the learning process (Pinna et al., 2023). Environment knowledge, brand, and attitude must be linked to the green image (Tan et al., 2022). Each student who exhibits value co-creation behavior serves as an ambassador of the brand image of higher education institutions across society (Wang, 2021). Value co-creation is related to brand image and has an advantageous effect on an institution (Abror et al., 2019). Prior studies found that value co-creation has a positive relationship with image in the context of HEI (Jhantasana, 2022) and cosmetic industry (Abror et al., 2019). However, the study posits that the enhancement of student value co-creation has the potential to bolster the institutional green image. Thus, the proposition of the second hypothesis was established.

H₂: There is a positive relationship between student value co-creation and institutional green image.

Institutional Green Image and Student Loyalty

Within the context of higher education institutions (HEIs), the perception of environmental sustainability, sometimes referred to as the green image, has been identified as a potential predictor of student loyalty (Jin et al., 2023). The existing body of literature in

higher education institutions (HEIs) has identified a scarcity of studies pertaining to green images. Institutions that work hard to improve their image will prevent environmental protests and penalties and foster consumer satisfaction and loyalty for environmental, sustainable, and green demands (Çavusoglu et al., 2021). However, institution's ability to build loyal connections with customers, shareholders, and the general public is influenced by its favorable green image (Le et al., 2022). Prior studies in the context of green hotels demonstrated that green image and customer loyalty are positively correlated (Çavusoglu et al., 2021; Martínez, 2015). Green Image of retailers was discovered to correlate positively with store loyalty (Yusof et al., 2011). Previous studies conducted on branding in China and the food and beverage industry in Taipei City, Taiwan, has revealed that fostering of a green image has a positive impact on loyalty (Lin et al., 2017; Wu et al., 2021). However, in HEIs context green image was found to have a positive effect on student loyalty (Jhantasana, 2022; Wong et al., 2023). Furthermore, in the context of green product consumers and mainstream fast-food, green image has a positive relationship with green loyalty (Chrisjtmiko, 2018; Watson et al., 2023). The study postulates that the strengthening of an institutional green image is correlated with increased student loyalty. Thus, the proposition of the third hypothesis was established.

H₃: There is a positive relationship between institutional green image and student loyalty.

Mediating role of Institutional Green Image

Institutions that have rigorously endeavored to enhance their image will not only avert environmental protests or legal repercussions, but also enhance customer satisfaction and loyalty in relation to environmental preferences, sustainable expectations, and sustainability criteria (Çavusoglu et al., 2021). Thus, greater the green image, the more it will align with environmental goals, sustainable expectations, and sustainability criteria. Any innovation has the ability to revive brand loyalty, and co-creation is an open innovation for customers, especially in the service industry (Tariq et al., 2022). One of the essential objectives that institutions have is to establish a strong image on the competitive environment since a strong image in the perspectives of consumers can bring benefits such as satisfaction and loyalty (Çavusoglu et al., 2021). Student loyalty and value co-creation are positively correlated (Arissaputra et al., 2023). Additionally, there is a favorable correlation between the student value co-creation and institutional green image (Jhantasana, 2022). Similarly, a positive correlation exists between an institutional green image and student loyalty (Jin et al., 2023). However, a mediating impact may occur when the variables under consideration have a positive and causal connection (Hayes & Preacher, 2014). The present study suggests that the association between student value co-creation and student loyalty is mediated by the institutional green image. Thus, the proposition of the fourth hypothesis was established.

H₄: Institutional green image mediates the relationship between student value co-creation and student loyalty.

Underlying Theory of S-O-R Model

This relationship can be elucidated using the psychological theory stimulus-organism-response (S-O-R) model (Mehrabian & Russell, 1974). The chosen theoretical framework for discussing the aspects that can increase student loyalty in private higher education is the stimulus-organism-response (S-O-R) model. Mehrabian and Russell (1974) introduced the S-

O-R model with the aimed to enhance Edward Thorndike's stimulus-response theory (Thorndike, 1913) by incorporating the role of the organism or individual in responding to the stimuli. The paradigm posits that the exposure of an individual to external stimuli (Stimulus) elicits emotional and cognitive responses (Organism), which in turn lead to a specific behavioural outcome (Response). The present study emphasizes on the concept of student value co-creation as the stimulus, institutional green image as the organism, and student loyalty as the response. This construct is classified as a stimulus since it has the ability to evoke internal states in students. The cognitive responses towards the specified stimuli are represented by the institutional green image. It signifies the students' encounter with the previously described stimulus. Student loyalty is the response or behavioural outcome examined in the present study; it is an immediate consequence of institutional green image. Present study aims to examine the impact of student value co-creation on student loyalty through institutional green image.

Conceptual Framework

Drawing upon the observed phenomenon, relevant theoretical concepts, and existing supporting research, a conceptual framework has been constructed to serve as a model in this study. The dependent variable under investigation is student loyalty, while the antecedent variables encompass student value co-creation, and the mediating variable as institutional green image. The underpinning theory for this study is S-O-R model.

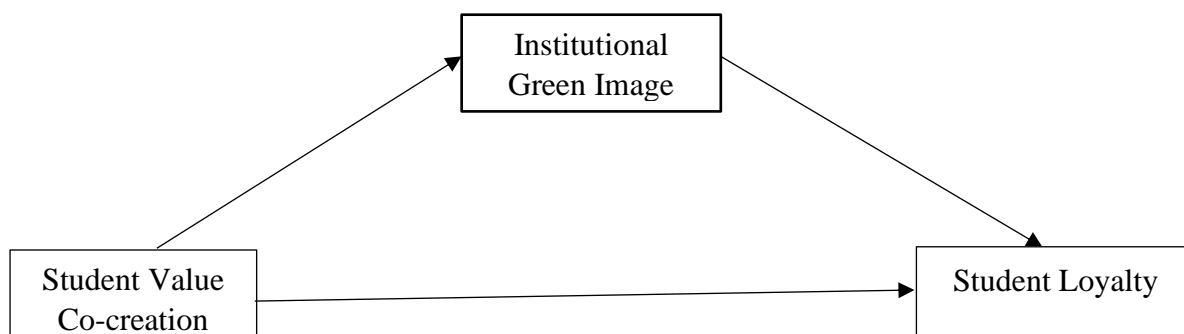


Figure 2: Conceptual Framework

Methodology

Sampling

This study employed a positivistic paradigm to scrutiny the relationship between students' value co-creation, student loyalty, and the mediating role of institutional green image. The judgments were derived from quantifiable facts, specifically quantitative data, thereby maintaining objectivity in accordance with the ontological postulate. As the researchers, we adopted a realist perspective and maintained objectivity by distancing themselves from personal values and opinions throughout the research endeavor. Moreover, the objective of this study was to elucidate the impact of specific variables. Consequently, the most suitable method for theory construction in this research is deductive. This entails formulating hypotheses based on existing literature and subsequently evaluating them using empirical data from private higher education institutions in Kuala Lumpur, Malaysia. The data collection process involved the administration of a cross-sectional questionnaire survey, which utilized a metric scale to measure the variables. Utilizing a quantitative survey as a research approach is deemed suitable for attaining the aims of this study, since it holds significant value in examining issues such as public opinion, while also possessing the

capability to reach a substantially broader demographic. In alternative terms, the convenience of generalizing conclusions is increased. This approach can be employed to interpret statistical analysis with the aim of making future predictions or describing historical traits. The population under study was not disclosed. The sample size of 327 was achieved using the G*power statistical analysis. To ensure the inclusion of a varied range of respondents, the study employed a nonprobability sampling technique, specifically targeting undergraduate students from 12 private higher education institutions located within the Kuala Lumpur hub.

Measurement Instruments

The survey questionnaire was developed by incorporating items from prior studies within the relevant topic. This measure was implemented in order to enhance the reliability of the questionnaire and increase the applicability of the findings across various contexts. To evaluate the content validity of the items, three academic professors with expertise in the field of student loyalty were consulted. Adjustments were made to the questionnaire based on their feedback to guarantee its applicability within the cultural context of Malaysia. Furthermore, the measurement of student loyalty was conducted by adapting a four-item scale (Helgesen & Nettet, 2007; Rojas-Méndez et al., 2009). The eight-item scale was utilized to assess the institutional green image (Chen, 2008). Finally, the present study made use of an adapted scale consisting of eighteen items to assess the concept of student value co-creation (Ranjan & Read, 2016). The respondent's replies to the questionnaire items were assessed using a seven-point Likert scale, which provided a range of alternatives from "1 = Strongly disagree" to "7 = Strongly agree."

Results and Discussion

Descriptive Analysis

A total of 340 questionnaires were distributed, and 327 questionnaires were subsequently collected, resulting in a response rate of 92 percent. In the process of refining the data, a total of 13 questionnaires were excluded from the study, while 314 questionnaires were subjected to coding in order to facilitate subsequent data analysis. Among the participants, the male respondents accounted for 188 individuals, representing 59.9 percent of the total, while the female respondents accounted for 126 individuals, representing 40.1 percent. The largest percentage of responders, specifically 36.3%, was seen among individuals aged between 21 and 25 years. The second highest percentage, amounting to 22.6%, was found among individuals aged between 18 and 20 years. The respondents in this study are students who are currently enrolled in private higher education institutions obtaining their university degrees.

Assessment of Measurement Model

Measurement models encompass the assessment of multiple factors, including internal consistency reliability, convergent validity, and discriminant validity. Convergent validity includes factor loading, Cronbach Alpha, composite reliability and AVE. Furthermore, the evaluation of discriminant validity entails considering multiple aspects, including cross-loading, Fornell and Larcker's criterion, and the heterotrait-monotrait ratio of correlations (HTMT). However, a total of 12 items pertaining to student value co-creation have been deleted from the study as their scores were found to be below the established threshold of 0.5.

Table 1

Convergent Validity and Reliability

Constructs	Item Code	Factor Loading	Cronbach Alpha	CR	AVE
Institutional Green Image	IGI1	0.865	0.930	0.941	0.666
	IGI2	0.726			
	IGI3	0.800			
	IGI4	0.815			
	IGI5	0.807			
	IGI6	0.875			
	IGI7	0.855			
	IGI8	0.777			
Student Loyalty	SL1	0.856	0.892	0.925	0.755
	SL2	0.859			
	SL3	0.890			
	SL4	0.870			
Student Value Co-creation	SVC10	0.752	0.922	0.933	0.537
	SVC11	0.718			
	SVC12	0.750			
	SVC13	0.747			
	SVC14	0.755			
	SVC15	0.742			
	SVC16	0.653			
	SVC18	0.752			
	SVC19	0.660			
	SVC20	0.699			
	SVC22	0.750			
	SVC24	0.798			

Previous study has proposed that item loading should be larger than cross-loading (Chin, 2010). Using HTMT, cross-loadings, and the Fornell–Larcker criterion, the study demonstrated discriminant validity. The present study showed that item factor loadings above cross-loadings were indicative of discriminant validity.

Table 2
Cross Loadings

Item Code	IGI	SL	SVC
IGI1	0.865	0.380	0.660
IGI2	0.726	0.188	0.404
IGI3	0.800	0.292	0.611
IGI4	0.815	0.348	0.649
IGI5	0.807	0.220	0.456
IGI6	0.875	0.393	0.503
IGI7	0.855	0.387	0.682
IGI8	0.777	0.201	0.422
SL1	0.380	0.856	0.648
SL2	0.358	0.859	0.639
SL3	0.263	0.890	0.628
SL4	0.345	0.870	0.634
SVC10	0.320	0.621	0.752
SVC11	0.273	0.681	0.718
SVC12	0.324	0.516	0.750
SVC13	0.329	0.402	0.747
SVC14	0.316	0.514	0.755
SVC15	0.351	0.591	0.742
SVC16	0.332	0.442	0.653
SVC18	0.580	0.361	0.752
SVC19	0.480	0.292	0.660
SVC20	0.316	0.348	0.699
SVC22	0.576	0.393	0.750
SVC24	0.577	0.425	0.798

Fornell and Larcker (1981) it is advisable that the attained value of AVE should not be lower than 50 percent of the variance of the relevant indicator. The present study indicated that value is above the threshold of 50 percent. Thus, discriminant validity was successfully established.

Table 3

Fornell-Larcker

Item Code	IGI	SL	SVC
IGI	0.816		
SL	0.386	0.869	
SVC	0.779	0.708	0.733

HTMT value equal to or less than 0.90 is considered suitable for constructs that exhibit conceptual similarity (Hair et al., 2019). The present study demonstrated that the observed values fall below the threshold of 0.90, thereby satisfying the HTMT criteria. Therefore, discriminant validity has been effectively established.

Table 4

HTMT

Variables	IGI	SL	SVC
IGI			
SL	0.404		
SVC	0.765	0.800	

Hair et al (2019) suggested that a VIF value of below five (5) demonstrate the absence of collinearity problems. Hence, the present study shows that the collinearity value is below five (5).

Table 5

Collinearity Assessment

Predictors	Collinearity
IGI -> SL	2.548
SVC -> IGI	1.000
SVC -> SL	2.548

Assessment of Structural Model

This study employed Smart PLS 4, a method based on partial least squares (PLS) component structural equation modeling (SEM), to assess hypotheses and the proposed measurement model. The hypothesis test was conducted by examining the t-statistic derived from the bootstrapping test using the Smart PLS tool. The estimation of path coefficients was conducted using a bootstrapping approach. The study utilized the bootstrapping technique in order to accurately represent the construct correlations within the model. The results of the statistical t test are presented in Table 6, with a significance level of 95% (t-table value of 1.96). The established criteria for categorizing R square values were as follows: values less

than 0.02 were considered weak, values greater than 0.15 were considered moderate, and values greater than 0.35 were considered strong (Sarstedt et al., 2021).

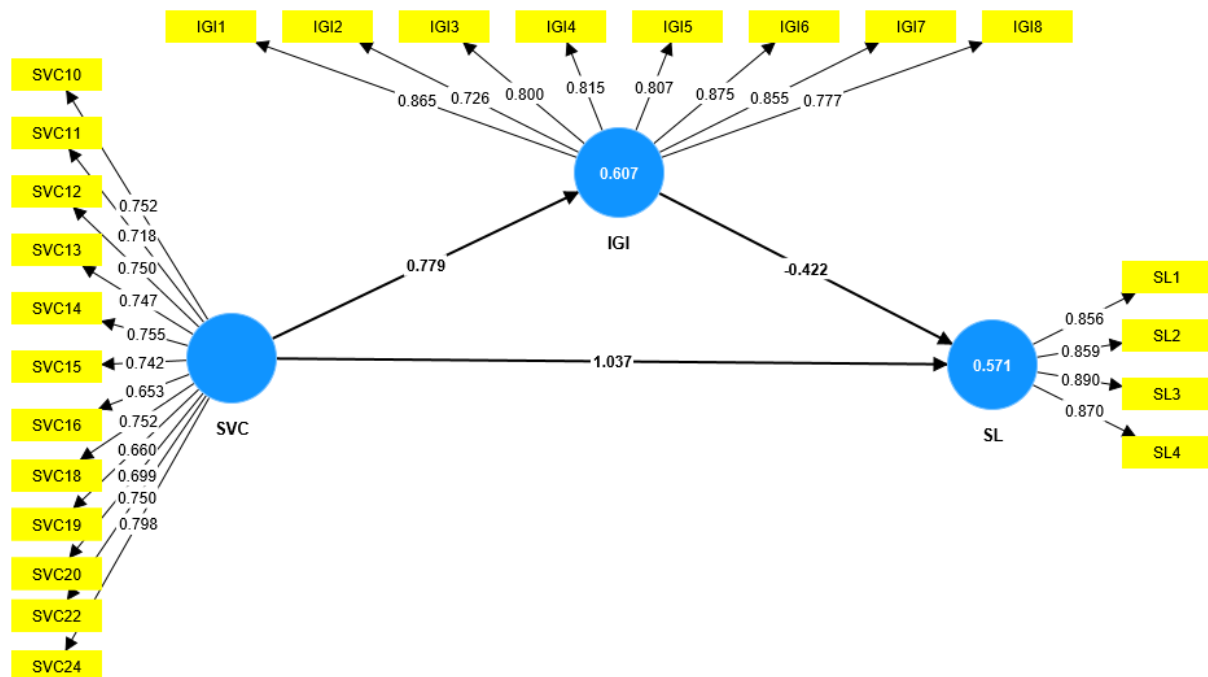


Figure 3: Measurement model

Significant values pertaining to direct connections in the structural model of the study were emphasized in Table 6. The three hypotheses (H₁, H₂, H₃) were found to be accepted as the p-values did not exceed the threshold of 0.05.

Table 6
Direct Effects

Hypothesis	Relationship	Standard deviation	T values	P values	Decisions
H ₁	SVC -> SL	0.059	23.815	0.000	Accepted
H ₂	SVC -> IGI	0.017	45.469	0.000	Accepted
H ₃	IGI -> SL	0.030	7.102	0.000	Accepted

According to Sarstedt et al (2020), it has been proposed in prior research that R² values of 0.75, 0.5, and 0.25 should be categorized as substantial, moderate, and weak, respectively. Table 7 presents the outcomes of the coefficient of determination. The research model shown a high level of explanatory capability (more than 0.35) in relation to both institutional green image and student loyalty. This finding suggests that there are other criteria that may be used as predictors, explaining 60.7% of the institutional green image and 57.1% of student loyalty.

Table 7

Variables	R-square	R-square adjusted
IGI	0.607	0.606
SL	0.571	0.568

The results of the bootstrapping analysis, as depicted in Figure 4.2, indicated that the mediation role of institutional green image in the relationship between student value co-creation and student loyalty (H4) was supported, as shown in Table 8. The findings from the mediation study conducted on the institutional green image reveal a significant association between student value co-creation and student loyalty, as evidenced by a t-value of 7.233 and a p-value of 0.000.

Tables 8

Indirect Effects

Hypothesis	Relationship	Standard deviation	T values	P values	Decision
H ₄	SVC -> IGI -> SL	0.045	7.233	0.000	Accepted

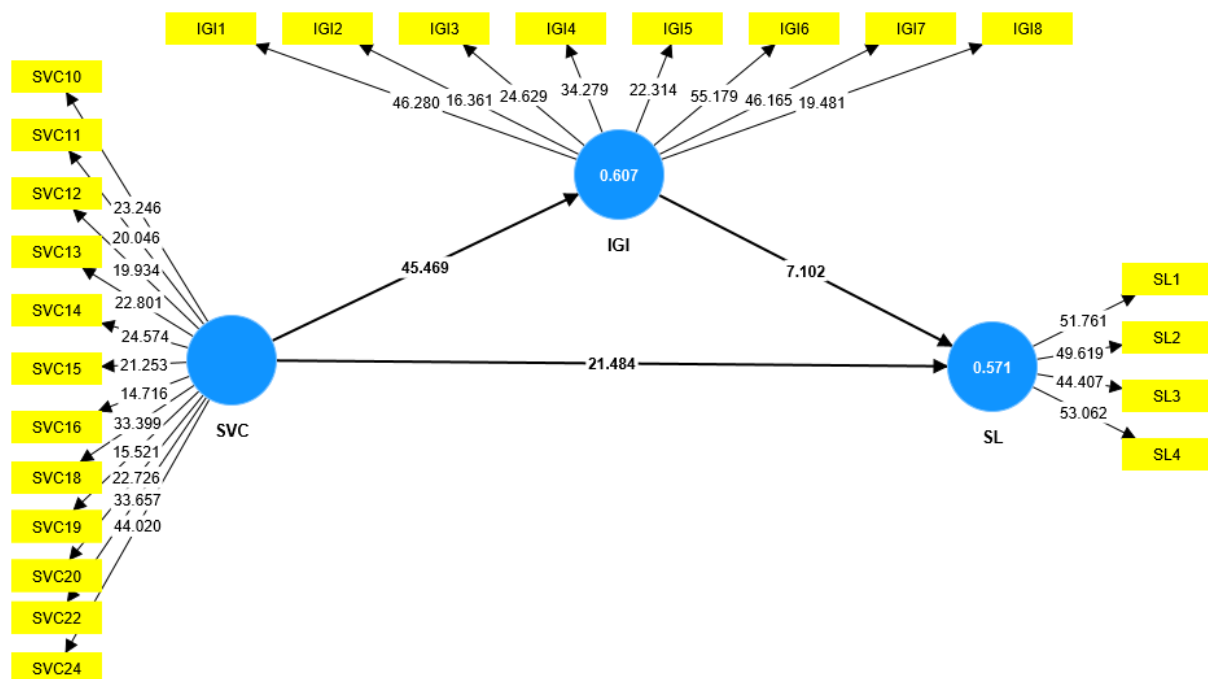


Figure 4: PLS Bootstrapping findings for the Structural model

Discussion and Conclusions

Discussion

The findings of this study provide support for the H₁, which posits that there is a substantial relationship between student value co-creation and student loyalty. Based on the findings obtained from conducting Partial Least Square (PLS) analysis to test H₁, provides support for the statement made in H₁, which posits that student value co-creation exerts a

substantial influence on student loyalty. Thus, an increase in the amount of student value co-creation will indicate a greater degree of student loyalty. However, the results ($\beta=0.708$, $t\text{-value}=23.815$, $p\text{-value}=0.000$) of this hypothesis in the present study are consistent with prior studies (Arissaputra et al., 2023; Baehaqi et al., 2023; Jhantasana, 2022).

The second hypothesis (H_2) proposed that there is a favorable relationship between student value co-creation and institutional green image. However, the results ($\beta=0.779$, $t\text{-value}=45.469$, $p\text{-value}=0.000$) provide support for the stated hypothesis, which corresponds with prior studies (Abror et al., 2019; Jhantasana, 2022). Thus, this finding demonstrates that the incorporation of green images within a private educational institution leads to a greater impact on the co-creation of value by students. This finding suggests that the involvement of students in co-creating value contributes positively to the perception of an institution as environmentally conscious. Hence, the aforementioned variable accounts for 52.8% of the variance observed in the green image.

The third hypothesis (H_3) posited a positive correlation between institutional green image and student loyalty. However, the obtained results ($\beta=-0.422$, $t\text{-value}=7.102$, $p\text{-value}=0.000$) offer empirical support for the postulated hypothesis, corresponding with past study findings (Jhantasana, 2022; Lin et al., 2017; Watson et al., 2023; Wong et al., 2023; Wu et al., 2021). Additionally, it is important to highlight that the factors of student value co-creation and institutional green image accounted for 60.3% variance of student loyalty. This finding suggests that the capacity of private institutions to engage in sustainability initiatives positively influences the institution's image among students, resulting in increased student loyalty and confidence in their choice of institution. Ultimately, these fosters continuing loyalty from students.

The fourth hypothesis (H_4) postulated the positive mediating role of institutional green image relationship between student value co-creation and student loyalty. However, the results obtained ($\beta=-0.329$, $t\text{-value}=7.233$, $p\text{-value}=0.000$) provided support for the hypothesis, suggesting a significant mediation effect of institutional green image.

Conclusion

The findings indicated a strong and statistically significant relationship between student value co-creation and both green image and student loyalty. The green image has a good and significant influence on student loyalty. Furthermore, the institutional green image plays a mediating role in the connection between students' value co-creation and their loyalty towards the institution. Students generally contribute to and uphold the values of private higher education institutions (HEIs) that place a strong priority on sustainability. Furthermore, it is imperative for the private higher education institution (HEI) to cultivate a sustainable environment by implementing eco-friendly practices and offering environmentally conscious services to its student body. When the private higher education institution (HEI) prioritizes environmental sustainability, it enhances the effectiveness of green marketing initiatives. Establishing a sustainable environment is a complex endeavor that necessitates a significant commitment from private higher education institutions (HEIs) in order to foster ecological consciousness and practices. Higher education institutions (HEIs) should enhance their dedication to preserving the ecological environment. Furthermore, the private higher education institution (HEI) is anticipated to enhance the image of its establishment through the implementation of environmentally conscious marketing strategies. The creation of a green environment will have a substantial impact on student loyalty through the formation of an image. Moreover, it is imperative to enhance students' faith in the institution by

investing significantly in sustainability initiatives. Therefore, the presence of these values will contribute to the ongoing growth of student loyalty. The active involvement of students in green projects is expected to have a substantial impact on enhancing student loyalty. The private higher education institution (HEI) that prioritizes sustainability is an establishment that demonstrates a strong commitment to environmental stewardship and the well-being of its student body.

Theoretical and Managerial Implications

The present study aims to explore the factors that influence student loyalty in higher education institutions (HEIs) by proposing a framework that incorporates student value co-creation, institutional green image, and student loyalty. This study identifies green image as a component that promotes student loyalty in higher education institutions, which differs from previous studies. The results of this investigation include significant consequences for both theoretical and managerial implications. On theoretical implication, the present study contributes to the expanding body of knowledge that examines the concept of green image within the context of higher education. The present study posits that the institutional green image has a direct impact on student loyalty, as well as the mediating factor affecting student value co-creation on student loyalty. The concept of institutional green image can be regarded as a form of corporate image that is demonstrated via the actions and policies of a corporation in relation to sustainability conservation.

HEI policymakers may utilize this study to create retention and recruitment policies. Green products and services have gained popularity as students become more environmentally conscious. Many institutions now highlight their green qualities in addition to their green products or services. HEI students want to learn in a clean, green atmosphere and be proud of their university's environmental achievements. This allows HEIs to publicize their environmental initiatives and attract and retain students using green image. Secondly, student value co-creation is important, even though many HEIs prioritize green image. Student value co-creation has a substantial impact on student loyalty and institutional green image. This implies that student value co-creation is crucial to student enrollment and retention, resulting in excitement and fulfillment. In order to improve students' experiences, HEIs must create an instructional atmosphere. Student value co-creation allows HEIs to develop personalized green images by associating their service, atmosphere, co-production, and other factors. These qualities are vital to HEIs because they can give students stimulating experiences that encourage student loyalty. The dynamic nature of tertiary industry requires HEIs to examine student behavior continuously. This study shows that student value co-creation affects green image and student loyalty. To create student loyalty, HEIs must understand students' sustainability concerns while studying. In conclusion, this study allows future researchers to analyze how green image affects student loyalty in other nations and situations, including online and distance learning.

Limitations and Future Directions

The present study possesses certain limitations. This limitation presents an opportunity for future research that may yield more fascinating findings. Further study is required to clarify and refine this study, employing a more comprehensive and holistic model. The study primarily examined the concepts of student value co-creation, institutional green image, and student loyalty. The empirical research conducted in this study specifically focuses on private

higher education institutions (HEIs) located in Kuala Lumpur city, Malaysia. Therefore, it is important to note that the findings may not be generalizable to other areas or nations. Further studies may endeavor to scrutinize the conceptual research model created inside the framework of this study, thereby applying it to diverse public or private higher education institutions situated in different cities or countries. Moreover, because this study only included undergraduates, the outcomes may alter for graduate and postgraduate students. Additional study could be conducted in a variety of student demographics and environments. The present study used Smart-PLS as a methodology to investigate the proposed hypotheses, hence facilitating comprehension of causal links. Nevertheless, the usability of the research data in this study is contingent upon certain conditions. Further studies could employ longitudinal and experimental data in order to yield a more robust and dependable outcome. In light of the growing desire among students for an environmentally sustainable setting, it is anticipated that next research will examine the efficacy of green student value co-creation, institutional green image, and green student loyalty. Therefore, future studies should closely examine further institutional green image determinants and identify which ones have a major effect on the formation of students' perception of institutional green image.

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