SUSTAINABLE HIGHER EDUCATION INSTITUTION AND THE INFLUENCE ON THE BRAND AND THE MANAGEMENT OF THE RELATIONSHIP WITH THE STUDENT

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ABSTRACT

Higher Education Institutions (HEIs) are drivers of sustainable knowledge and play a relevant role in promoting social, environmental, and economic well-being. Thus, this study investigates the influence of HEIs' initiatives aimed at sustainability on the brand and on the management of student relationships in public HEIs in the state of Maranhão. Specifically, it investigates the influence of sustainable initiatives on green image, brand image and student relationship management, in addition to the influence of brand image on student relationship management. This is a quantitative, cross-sectional research with primary data with 40 students from public HEIs. Structural Equation Modeling was used to explain the relationships of the proposed conceptual model. The evidence shows the important role of both the green image and the brand image of these educational institutions in the relationships between the Sustainable Higher Education Institution and the relationship with the student. In other words, they are catalysts for relationships with students through the implementation of sustainable initiatives in these educational institutions. Thus, this study presents contributions to the literature in the area of Administration and points out another strategic option for sustainability in higher education.

Keywords: Sustainability. Higher Education Institutions (HEIs). Sustainable higher education. Social, environmental and economic well-being. Sustainable strategy.

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INTRODUCTION

In the globally competitive economy we live in, where change is a daily reality, the importance of student relationship management is widely recognized by both institutions and academics (Azizi et al., 2023). Having a unique and critical role in supporting the face of the challenge of climate change. The higher education sector is an important player in the global search for solutions to environmental challenges and the development of more sustainable ways of life (Ramaswamy et al., 2021).

In recent years, a considerable number of studies have assessed the impacts of higher education on sustainability (e.g., Tapia-Fonllem et al., 2017; Stough, et al., 2018; Shields, 2019; Sanchez-Carrillo & Cadarso, 2021; Wang et., 2022) educational institutions are seen as "agents of change" and "catalysts" in encouraging sustainability-related issues (Shehi & Hagen, 2018).

These debates on sustainable actions in Higher Education Institutions have become one of the main themes in the United Nations Sustainable Development Programme (UN, 2015) In order to reinforce this issue, UNESCO states that education is the "key instrument" to achieve the 17 sustainable development goals of the 2030 Agenda (UNESCO, 2020). Quality education (Goal 4) is key to achieving all the SDGs Act for sustainable development (Shields, 2019). Education is at the forefront of any development, from primary school to higher education and lifelong learning (Yang & Xiu, 2023; Hinduja et al., 2023).

It is verified that the relationship between HEIs and student relationship management has been explored from theoretical and empirical perspectives, but there is still a lack of studies focusing on the competencies of Higher Education Institutions focused on sustainability for the formation of the image with an impact on their management of the relationship with the student (Crockett & Grier, 2020).

Thus, the objective of this research is to identify the influence of the initiatives of HEIs aimed at sustainability on the brand and on the management of student relationships in public HEIs in the state of Maranhão. With this, the study sought to answer the following question: Do HEIs train sustainability-oriented students with an impact on their management of the relationship with the student?

The research is justified by seeking to identify whether the conclusions about the relevance of sustainable HEI initiatives to boost the management of the relationship with the student are similar in higher education institutions in Brazil, since Brazil is a developing country, whose educational market is very competitive (Winfield & Ndlovu, 2019). In addition, the education sector corresponds to a substantial portion of the global economy

and is constantly evolving, seeking to meet the expectations of students and the market through mutually valuable and sustainable training (Fuchs et al., 2020).

As theoretical implications, this study broadens the understanding of student relationship management in the context of Higher Education Institutions from the incentive to sustainability, particularly highlighting the Brazilian scenario, which is characterized by its unique socioeconomic conditions (Winfield & Ndlovu, 2019). Thus, it aims to fill a knowledge gap that can be applied more directly and effectively in the country's higher education landscape, promoting a broader understanding of the interactions between the sustainable perspective of the education sector and the management of students' student relationships and enriching academic knowledge (Winfield & Ndlovu, 2019).

In a practical way, the results can contribute to managers of HEIs that operate in Brazil to practice and encourage sustainability initiatives, aiming to increase their level of relationship management with the student's student. Managers can also implement actions that directly reflect on the students' perception of marketing management. This highlights the relevance of these results as a practical and valuable resource that can have a positive impact on educational institutions.

SUSTAINABLE HIGHER EDUCATION INSTITUTION

Because education is the basis for the formation of a society, it has been considered the main force for achieving sustainability (Fuchs et al., 2020). In this process of promoting a sustainable orientation, Higher Education Institutions stand out for being key agents capable of casting an analytical and questioning look at the directions of the society in which they are inserted and not just helping them to follow them, serving as a model and living laboratory for the implementation of greener practices (Žalėnienė, 2021).

The transformation to sustainability requires that universities have a unique potential to socialize the next generation of citizens for attitudes that are more conducive to the sustainability of societies and the planet (Ezquerra-Lázaro et al., 2021). Increasing knowledge, skills, values, attitudes, critical thinking, competencies, systems thinking, accountability, and empowering future generations to have the capacity to make the transformational change needed in our world (Wang et al., 2022).

In this context, Wang et al., (2022) in their study examined whether the development of students' sustainability competencies depends on the way courses are taught in Higher Education Institutions (HEIs). It also investigated the extent to which such skills can affect students' belief in the new environmental paradigm and pro-environmental behaviors. And they found that the strength of universal and widely applicable pedagogies

is positively related to the development of students' sustainability mindset/framework, as well as their sustainability action/communication. The results also reveal that the development of students' skills on the sustainability mindset is directly related to their belief in the new environmental paradigm and pro-environmental behaviors (Wang et al., 2022).

Thus, the transformation to sustainability requires that universities have a unique potential to socialize the next generation of citizens for attitudes that are more conducive to the sustainability of societies and the planet (Ezquerra-Lázaro et al., 2021). Finally, universities have the power to influence their communities through proactive engagement with stakeholders, which raises awareness and initiates changes in modal practices (Menon & Suresh, 2020).

BRAND IMAGE AND GREEN IMAGE OF THE IES

The brand defined by Kotler as a set of ideas, beliefs, and impressions that a customer has about a particular product or brand (Parris & Guzmán, 2023). Brand image, in turn, is a dimension of brand value, it has evolved from being understood only as a tool to help sell more products and becomes the most valuable intangible asset for companies (Oh et al., 2020).

The evolution of brand image boundaries and expectations have led to a more holistic view of the role of brands in society, which includes many stakeholders, co-creation, co-ownership, and social impact (Parris & Guzmán, 2023). The purpose of brand image has evolved beyond maximizing shareholder wealth to be viewed holistically, with responsibilities to many stakeholders, the environment, economic development, and human well-being (Bhagwat et al., 2020).

Brand image is being held accountable for its social impact (Crockett & Grier, 2020). The green brand image, in turn, is the accumulation of green initiatives by companies, at the same time, when environmental or green aspects are involved in a product, the belief and impression towards that product.

The concept of green image can be divided into two components, one can be the functional and tangible component and the other can be the psychological component. Both have equal importance. The perception of functional and psychological components is formed through the consumer's interaction with the product or brand. It is the customer's experience that determines how they perceive a particular brand (Zameer et al., 2020).

For the purposes of sustainable positioning, several recent studies have examined the role of a green brand image. For example, to develop a test model that can contribute

conceptually to the formation of a green image for the hotel market. Bashir et al., 2020, found that increased functional and emotional benefits perceived by the consumer will initially increase their green image and eventually increase their green brand preferences, trust, loyalty, and corporate image. In addition, the role of green brand image as a mediator exists between the benefits perceived by consumers and their green brand preferences, trust, loyalty, and corporate image.

Chairy et al., 2019 also showed that the green image has become one of the indicators of success for several organizations, including educational institutions. They reinforce that the green image influences the reputation of the university and the satisfaction of the students, thus confirming that the reputation of the university mediates the effect of the green image on the satisfaction of the students.

Based on this argument, the following hypotheses were proposed:

- Hypothesis (H_1): Sustainable Higher Education Institution positively influences the green image of these institutions.
- Hypothesis (H_2): Sustainable Higher Education Institution positively influences the brand image of these institutions.
- Hypothesis (H_3): The green image of HEIs positively influences the brand image of these institutions.

STUDENT RELATIONSHIP MANAGEMENT

Student relationship management (SRM) is the implementation of the "Customer Relationship Management (CRM)" strategy, which is adjusted to fit the context of education that aims to build and maintain relationships between students and the institution evaluating from the loyalty and satisfaction of students (Dewi, 2019). The application of student relationship management with Higher Education Institutions results in good experiences received by students and satisfaction in campus life. The behavior of students, reflected in different ways, is an indicator of the image of the higher education institution, both in the organizational culture and in its ability to manage students.

Student relationship management often focuses on higher education, such as strategies, processes, and philosophies that will lead to the achievement of academic goals and student needs. The value of student relationship management is that it would develop the competence of the higher education institution. Because it helps to promote understanding between students and the higher education institution (Bangun et al., 2018) and also prevents the risk of student dropout before graduation. For this, the higher

education institution has to develop the strategy for the effective management of the relationship with students (Rigo et al., 2016).

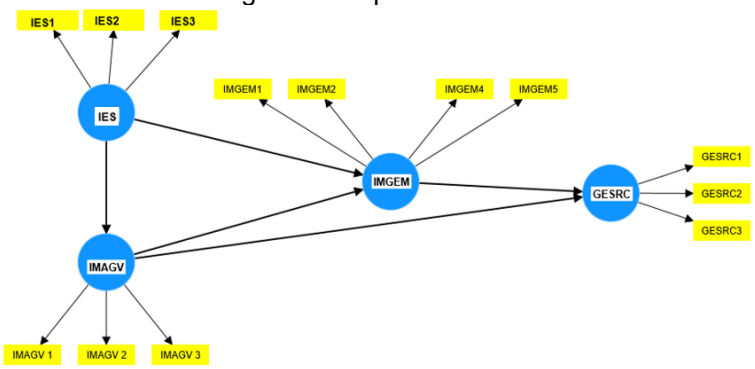
The loyal student will continuously support and contribute to building the university's reputation during and after their graduation (Endarwan & Murtiningsih 2019). Thus, the management of the relationship with the student provokes in the student the feeling of loyalty, it concerns the attitudes and attachment of the students to the university that will be expressed through the pattern of behavior that exists even after graduation, such as the desire to continue studying or attend other training programs offered by the university, satisfaction and trust in the university, desire to recommend the university to others, intention to continue studying at the same institution (Phuengrod et al., 2021). The student's desire to recommend the university to others, the intention to continue studying at the same university (Snijders et al., 2020). Thus, the following hypotheses are proposed:

- Hypothesis (H_4): The green image of HEIs positively influences the management of relationships with students.
- Hypothesis (H_5): The brand image of the HEIs positively improves the management of the relationship with the students.

CONSOLIDATION OF THE PROPOSED MODEL

The proposed model, in Figure 1, consolidates the factors influencing sustainability in the brand and in the management of the relationship with the student in public institutions of higher education in the Cocais region of Maranhão, evidencing the fundamental role of both the green image and the image in the brand of these organizations in the relations between sustainable practices and the relationship with the student. These factors are represented by 4 constructs: a) HEI: Sustainable Higher Education Institution; b) IMAGV: Green image; c) IMAGE: Brand image; d) GESRC: Relationship management with the student.

Figure 1: Proposed model.



Note: GESRC: Student relationship management; IMAGV: Green image; IMAGE: Brand image; IES: Sustainable Higher Education Institution.

Source: Survey data.

METHOD

The target population was formed by students and former students of public HEIs in the region of Cocais Maranhense. All responses are self-declaratory, which includes the perception of sustainable actions in public institutions of higher education.

A questionnaire was developed with scales validated in different researches: Sustainable Higher Education Institution and green image (Chen, 2010; Jeong et al., 2014); brand image through the commitment to social responsibility (Phuengrod et al., 2021) and the performance of student relationship management (Wang et al., 2004). To measure the statements, a Likert scale was used, ranging from 1 [strongly disagree] to 5 [strongly agree].

The data collection instrument was created in Google Forms and to validate it, a pre-test was carried out and there was no observation that implied a change in the semantics of the statements or a complaint regarding the response time. After this approval, data collection began. The questionnaire was applied from 10/23/2023 to 11/06/2023 via WhatsApp. After data collection, 40 responses were obtained.

Likely respondents were clarified that the study was anonymous. There were no incentives for participation. Participants were asked to click on the *link* provided and complete the survey about their experiences as a student or former student of a public HEI.

The sampling method used was non-probabilistic and accessible, since the sample was composed of respondents, who were accessible and willing to participate (Hair et al., 2009). Table 1 details the sample profile.

TABLE 1: DEMOGRAPHICS OF THE SAMPLE

	n = 40	Quantity	Percentage
Gender	Female	29	72,5%
	Male	11	27,5%
Age	21 to 30 years old	15	37,5
	31 to 40 years old	16	40,0%
	41 to 50 years old	5	12,5%
	51 to 60 years old	3	7,5%
	Over 60 years old	1	2,5%
Schooling	Graduation	28	70,0%
	Specialization	4	10,0%
	Masters	6	15,0%
	Doctorate	2	5,0%
Marital status	Single	25	62,5%
	Married	12	30,0%
	Divorced	1	2,5%
	Widower	2	5,0%

Source: Survey data. Prepared by the author.

For the hypothesis tests, he used Structural Equation Modeling (SEM), through SmartPLS, version 4, based on Partial Least Squares (PLS), to explain the relationships between multiple variables. To evaluate the proposed model, the construct validation process was carried out through Confirmatory Component Analysis (ACC).

The validation of the measurement model encompasses both the convergent validity of the constructs and the discriminant validity between the constructs (Hair et al., 2019). Regarding convergent validity, four criteria – external loads, Composite Reliability (CR), Cronbach's Alpha, and Extracted Mean Variance (AVE).

However, discriminant validity addressed three criteria – Fornell and Larcker (1981), Chin (1998) cross-loads, and Henseler et al.'s (2015) Heterotrait-Monotrait Ratio (HTMT). Finally, for the analysis of significance in the structural relationships proposed in the model, the values of the Variance Inflation Factor (VIF) and the Adjusted Coefficients of Determination (R^2) were analyzed (Bido & Silva, 2019; Sarstedt et al., 2022).

DATA ANALYSIS

VALIDATION OF THE MEASUREMENT MODEL

The analysis was initially carried out by verifying the criteria of the factor loadings of the constructs, since the values should preferably be above 0.70 (Hair et al., 2019). As shown in Table 2, the factor load of the variable IES4 – "The university offers sustainable landscaping on campus" was excluded from the model, as it presented a value below 0.70 (IES4 = 0.554). In addition, the variables IMGEM1 - "When thinking about the Higher Education Institution where I studied/studied and its commitment to environmental sustainability" and IMGEM3 - This educational Higher Education Institution has a good image, as they have a Variance Inflation Factor (VIF) higher than 5, respectively, 5,801 and 7,683, respectively.

TABLE 2: MATRIX OF FACTOR LOADINGS AND VIF

CONSTRUCTS	CODE		*Factorial loading*	*BRIGHT*
	IMAGV 1	- The Higher Education Institution where I study/studied behaves in a socially conscious way.	0,833	1,930
Green Image (Eunha et al., 2014	IMAGV 2	I have the impression that the Higher Education Institution where I study/studied responds very well to environmental issues.	0,923	2,642
	IMAGV 3	The Higher Education Institution where I study/studied is	0,889	2,245

		concerned with the preservation of the environment.		
	IES1	The university provides students with facilities for environmental sustainability practices	0,743	1,430
	IES2	As far as I know, my university is concerned with achieving the sustainable development goals.	0,897	2,131
Sustainable University Institution (Yadav et al., 2024)	IES3	The university is actively engaged in the recycled waste management system and energy conservation practices	0,765	1,980
	IES4	The university offers sustainable landscaping on campus	0,554	1,429
	IMGEM1	When thinking about the Higher Education Institution where I studied/studied and its commitment to environmental sustainability.	0,889	5,801
Brand Image	IMGEM2	I trust this Higher Education Institution.	0,910	4,322
(Vesal et al., 2021)	IMGEM3	This educational Higher Education Institution has a good image.	0,952	7,683
	IMGEM4	This educational Higher Education Institution has a good reputation.	0,816	2,972
	IMGEM5	This educational Higher Education Institution has a good reputation.	0,873	3,641
	GESRC1	I would like to buy or repurchase the services/products of the Higher Education Institution where I study/studied.	0,912	3,267
Student relationship management (Wang, 2004)	GESRC2	I would recommend the services/products of the Higher Education Institution where I studied/studied to other people.	0,910	2,081
	GESRC3	I would like to maintain a close relationship for a longer period with the Higher Education Institution where I studied.	0,857	2,655

Note: The means of the variables for the constructs: Green Image, Sustainable Higher Education Institution, Brand Image, Customer Relationship Management, should be interpreted according to the five-point Likert scale, which ranges from 1 [strongly disagree], 2 [partially disagree], 3 [neither disagree nor agree], 4 [partially agree] and 5 [strongly agree].

Source: Survey data. Prepared by the author.

Next, the internal consistency of the model constructs was observed according to the criteria of Cronbach's alpha coefficient, which should include values greater than 0.70 (Hair et al., 2019). It was noted that the values ranged from 0.750 to 0.901, shown in Table 3. The internal consistency of the model was also verified using the Composite Reliability (CR) coefficients, which must be within the parameter, recommending values above 0.70 (Sarstedt et al., 2022). To conclude the analysis, the Extracted Mean Variance (AVE) was evaluated, which, according to (Hair et al., 2019), in order to have a construct with

convergent validity, the stroke must be greater than 0.50. Thus, all constructs presented values above the recommended level, ranging from 0.660 to 0.799. Therefore, the convergent validity of the model was sustained.

TABLE 3: CONVERGENT VALIDITY AND INTERNAL CONSISTENCY

	Cronbach's alpha	CR	Average variance extracted (AVE)
GESRC	0,879	0,922	0,799
IMAGV	0,859	0,913	0,779
IMGEM	0,901	0,931	0,771
COMING	0,750	0,853	0,660

Note: GESRC: Student relationship management; IMAGV: Green image; IMAGE: Brand image; HEI: Sustainable Higher Education Institution; CR: Composite Reliability; AVE: Extracted Mean Variance. The means of the constructs should be interpreted according to the five-point Likert scale, which ranges from 1 [strongly disagree], 2 [partially disagree], 3 [neither disagree nor agree], 4 [partially agree], and 5 [strongly agree]. In diagonal and bold, the square root of the AVE. Source: Research data. Prepared by the author.

Next, the criterion of cross loads of Chin (1998) was used, shown in Table 4. It was observed that the values of the factor loadings of the respective constructs are higher than the distribution of the loads in the other constructs.

TABLE 4: FACTOR LOADING MATRIX

	GESRC	IMAGV	IMGEM	COMING
GESRC1	0,912	0,536	0,621	0,304
GESRC2	0,910	0,756	0,889	0,350
GESRC3	0,858	0,409	0,542	0,213
IMAGV 1	0,508	0,835	0,509	0,233
IMAGV 2	0,624	0,923	0,705	0,454
IMAGV 3	0,626	0,887	0,596	0,345
IMGEM1	0,669	0,700	0,872	0,542
IMGEM2	0,671	0,589	0,913	0,419
IMGEM4	0,643	0,456	0,836	0,341
IMGEM5	0,818	0,656	0,890	0,229
IES1	0,302	0,293	0,436	0,806
IES2	0,263	0,448	0,366	0,903
IES3	0,264	0,168	0,225	0,719

Source: Survey data. Prepared by the author.

Subsequently, the criterion of Discriminant Validity - Fornell-Larcker was used. It was observed that the √stroke of each construct is higher than its highest correlation with any other construct.

TABLE 5: CORRELATION MATRIX BETWEEN LATENT VARIABLES

	GESRC	IMAGV	IMGEM	COMING
GESRC	0,894			
IMAGV	0,669	0,883		
IMGEM	0,800	0,692	0,878	
COMING	0,336	0,401	0,439	0,813

Source: Survey data. Prepared by the author.

Finally, the Heterotrait-Monotrait Ratio (HTMT) criterion of correlations defined by Henseler et al. (2015) was used, as shown in Table 6. According to the author, in a practical way, values lower than 0.90 are accepted. Thus, the discriminant validity of the model was also sustained.

TABLE 6 – INTERNAL CONSISTENCY, CONVERGENT & DISCRIMINANT VALIDITY (HTMT)

	GESRC	IMAGV	IMGEM	COMING
GESRC				
IMAGV	0,721			
IMGEM	0,854	0,767		
COMING	0,406	0,448	0,507	

Source: Survey data. Prepared by the author.

HYPOTHESIS TESTING

Table 7 shows the direct effects indicative of the hypotheses of the proposed model.

TABLE 7 – RESULT OF THE STRUCTURAL MODEL (DIRECT EFFECTS WITHOUT CONTROL)

	Hippot,	*BRIGHT*	Path Coefficient (α)	*Standard deviation*	*is, T*	*p-value*	R^2
IES -> IMAGV	H1 (+)	1,000	0,401	0,144	2,779	0,005	
IES -> IMGEM	H2	1,192	0,192	0,160	1,197	0,232	
IMAGV -> IMGEM	H3	1,192	0,615	0,115	5,346	0,000	0,139
IMAGV -> GESRC	H4	1,921	0,220	0,134	1,646	0,100	0,648
IMGEM -> GESRC	H5	1,921	0,648	0,147	4,417	0,000	0,484

Note: GESRC: Student relationship management; IMAGV: Green image; IMAGE: Brand image; HEI: Sustainable Higher Education Institution; H: Hypotheses; VIF: Variance Inflation Factor; f^2 = size of the Cohen effect (1988); *Adjusted* R^2 : Coefficient of Determination of the proposed model, Source: Research data. Prepared by the author.

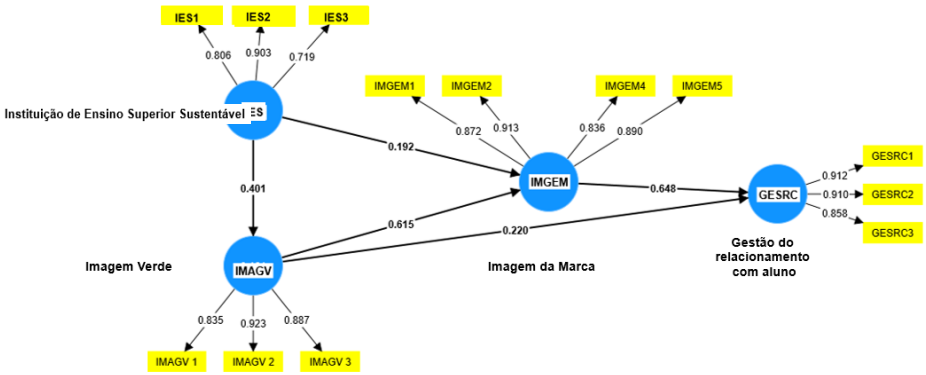
Regarding the Higher Education Institutions positively influencing (α=0.401, p-value = 0.005) the green image of these institutions, the survey indicates that the H_1 was supported, with a confidence of 99%. However, these practices (α= 0.192, p-value = 0.232) do not influence the brand image of HEIs, as it was not statistically significant at a significance greater than 10. Thus, the hypothesis H_2 – Sustainable Higher Education Institution, although positively influencing the brand image of these institutions, was not supported.

Regarding the positive effects of the green image on the brand image, the hypothesis H_3 – the green image of HEIs positively influences the brand image of these institutions – was supported, as it is statistically significant at a 99% confidence interval (α= 0.615, p-value = 0.000).

Regarding the green image positively influencing (α= 0.220, p-value = 0.100) the relationship management with the student, the study indicates that the hypothesis H_4– The green image of the HEIs positively influences the relationship management with the students – was supported by being a statistically positive and significant relationship at a confidence interval of 90%. In addition, the brand image of the HEIs was positively associated with the management of the relationship with the students (α= 0.648, p-value = 0.000), thus indicating that the hypothesis H_5 – the brand image of the HEIs positively the management of the relationship with the students – was supported, as it is statistically significant at a confidence interval of 99%.

Concluding the analysis of the significance of the structural relations proposed in the model (Sarstedt et al., 2022), with regard to the Variance Inflation Factor (VIF), the values for all proposed relationships are below 5.0, indicating that there are no collinearity problems between the constructs. In relation to the Adjusted Coefficient of Determination (R^2), it is high for the relationship between the green image and the management of the relationship with the students (R^2 = 0.648) and moderate for the other relationships.

Figure 2: Final structural model.



Note: GESRC: Student relationship management; IMAGV: Green image; IMAGE: Brand image; IES: Sustainable Higher Education Institution. Source: Survey data

The structural model was produced to test the hypotheses proposed and already signaled by this study.

FINAL CONSIDERATIONS

By investigating the influence of sustainability on branding and student relationship management in sustainable public higher education institutions, the evidence from this research shows the key role of both green and brand image in these institutions in the relationships between sustainable practices and student relationships. In other words, although there is no direct influence of Sustainable Higher Education Institutions on the brand image, the commitment of HEIs to environmental concerns and the application of

Sustainable Higher Education Institutions contribute positively to a green image of the institution (Famiyeh et al., 2018).

In addition, the green image influences the brand image of these institutions. In fact, the perception of a green image in an HEI provokes trust and customer satisfaction, collaborating to increase brand value (Bashir et al., 2020). The brand image of HEIs, in turn, influences the management of relationships with students. In this way, it strengthens the brand image, promoting this relationship, thus contributing to improving the reputation among stakeholders (Bangun et al., 2018).

In summary, by implementing sustainable practices, Higher Education Institutions not only position themselves as contributing agents of sustainability (Yousaf, 2021) but also assist in the development of strategies for the effective management of the relationship with students (Snijders et al., 2020). In this sense, strategic decisions to invest in green actions to leverage both the green image and the institution's brand image, as they enable relationships with students. In other words, they contribute to channeling closer and more lasting relationships between students and public HEIs. In this way, it is observed that sustainability actions in public HEIs are fundamental to add value and build a green image in the minds of consumers, as they add value to the brand image and, consequently, to a green reputation (Phuengrod et al., 2021).

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