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Innovation in Smart Marketing: The Role of Technopreneurs in Driving Educational Improvement

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Abstract

This study explores the influence of marketing strategies, technology utilization, inclusive education policies, and collaboration with the industry sector on the positive image of educational institutions. Employing the SmartPLS approach and statistical analysis, the findings indicate that responsive marketing strategies, effective technology utilization, inclusive policies, and partnerships with the industry sector significantly impact the institution's image in education. In this research, it was found that market-responsive marketing strategies significantly affect the positive institutional image (T-statistics: 13.197), followed by technology utilization playing a crucial role in building a positive image (T-statistics: 11.735). Inclusive education policies and collaboration with the industry sector also have a significant impact on enhancing the institution's image (Inclusive Education Policy - Positive Image, T-statistics: 5.928; Collaboration with Industry Sector - Positive Image, T-statistics: 8.834). The research results affirm the importance of implementing adaptive marketing strategies and advanced technology in constructing a positive image of educational institutions in the eyes of the public. By strengthening these factors, educational institutions have the opportunity to meet stakeholders' expectations regarding the provided educational services. This study contributes significantly to understanding the factors influencing the reputation of educational institutions and provides strategic guidance for developing the educational institution's image towards a more positive and adaptive direction.

Keywords: *Education marketing, SmartPLS, Inclusive education policies, Industry-education collaboration, Educational institution image*

1. Introduction

Education is the effort made by adults to influence, assist, and protect children [1], [2]. One of the manifestations of this effort is through the establishment of schools, aimed at aiding parents in providing education to their children [3]. Schools are non-profit institutions that provide educational services and serve as the venue for the educational process [4]. The primary focus of schools is to enhance and develop the quality of human resources [5]. Schools can be considered as a system consisting of several components, including inputs, processes, outputs, and outcomes [6], [7].

To ensure the sustainability and success of schools, it is crucial for them to meet the needs of stakeholders [8], [9]. This means schools must strive to enhance the quality and

resources required in the educational process [10]. Aside from competing in academic achievements and school health, the school environment must also compete in sustaining and managing financial resources [11], [12]. In the current era, educational institutions are beginning to implement marketing strategies to compete with other educational institutions [13]. The goal of this marketing is to introduce education to the broader society and facilitate the enrollment of new students [14], [15]. In conducting educational service marketing, it's important to consider the needs and expectations of users and customers of educational services [16], [17]. By offering educational products that align with societal needs, educational service marketing can be executed effectively [18].

In efforts to create a positive image, technopreneurs within educational institutions play a role in designing proactive and innovative communication strategies [19]. In the educational context, technopreneurs act as innovation drivers who use technology as a tool to reinforce and communicate the positive image of schools to the public [20]. They focus not only on marketing but also on developing proactive communication strategies that leverage technology [21], [22]. In designing these communication strategies, technopreneurs consider technological elements that can support the effectiveness of educational service marketing [23]. This includes the use of digital platforms, social media, and other technological tools that enable schools to interact efficiently with stakeholders and prospective students [24]. By leveraging SmartPLS as an analytical tool, technopreneurs can make data-driven decisions and conduct in-depth analyses of the effectiveness of marketing and communication strategies they implement [25]. This creates opportunities to enhance schools' competitiveness and meet the needs and expectations of educational service users [26], [27].

2. Literature Review

2.1 The Influence of Marketing Strategies in Education

In the realm of education, marketing strategies play a fundamental role in shaping the image and reputation of institutions [28]. Marketing is no longer just about promoting services but also about creating an appealing identity for potential students and their parents [29]. Research by Johnson and Brown (2018) highlights the importance of crafting marketing messages that align with market needs, explaining that these strategies not only generate interest but also foster trust in educational institutions [30].

2.2 The Use of Technology in Educational Marketing

In the digital era, the role of technology in educational marketing becomes increasingly crucial [31], [32]. Recent research by Smith et al. (2020) indicates that technology, particularly online platforms and social media, provides effective means for educational institutions to build a positive image [33]. The use of analytical tools like SmartPLS, as highlighted by Kumar et al. (2019), provides deep insights into market responsiveness to marketing campaigns, enabling institutions to tailor their strategies more accurately [34], [35].

2.3 Policies and Social Impact in Education

Beyond technical aspects, educational policies also play a significant role in shaping institutional reputation [36]. Research by Garcia and Rodriguez (2021) emphasizes the relationship between inclusive education policies and positive responses from society, proving that institutions that adopt inclusive approaches in their curriculum and learning environments have a better public image [37], [38].

2.4 Collaboration and Partnerships in Education

Chen et al. (2022) highlight the success of educational institutions that forge partnerships with the industry sector or other institutions [39]. Such collaborations not only expand institutional networks but also strengthen a positive image, especially when educational institutions engage in initiatives beneficial to society [40], [41].

3. Research Method

The Smart PLS method was chosen due to its ability to handle multicollinearity issues and relatively small sample sizes while allowing for simultaneous testing of the structural model [42], [43]. Its capacity to generate path analysis enables testing both direct and indirect

effects of variables involved in this research [44], [45]. This study aims to test previous objectives and generate strategic policy guidelines for managing the tourism industry [46]. The research methodology employed here is quantitative analysis.

3.1 Hypothesis Development

Based on the literature review conducted, several hypotheses can be formulated to measure the influence of marketing management on the reputation of educational institutions, as shown in Figure 1:
H1: Marketing strategies aligned with market needs have a positive impact on the educational institution's image.
H2: The use of technology in educational marketing has a positive relationship with institutional reputation.
H3: Inclusive education policies are associated with enhancing the positive image of educational institutions.
H4: Collaboration and partnerships with the industry sector or other institutions positively influence the institution's reputation.

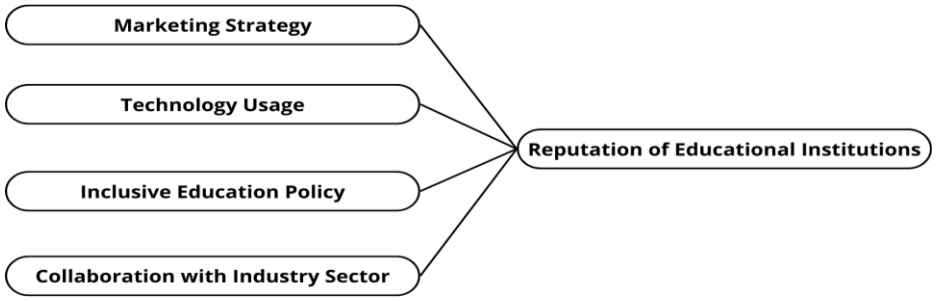

Figure 1. Research Model

3.2 Data Collection

To test the formulated hypotheses, data will be collected through surveys and interviews [47]. Educational institutions will conduct surveys and interviews with stakeholders, including parents, students, alumni, and the general public. The questions will relate to their perceptions of marketing strategies, technology usage, education policies, and institutional collaborations, as shown in Table 1. To provide direction to the research method, initial steps such as preliminary surveys, literature reviews, issue identification, and goal setting have been undertaken. Conclusions will be drawn from the processing and analysis of collected data. Thus, the proposed research model will provide a solid guideline for strategic decision-making related to marketing management in educational institutions [48].

Table 1. Indicators Used To Measure Constructs

Variable	Indicators	Contens
Marketing Strategy (MS)	Active use of social media to promote school programs.	MS1
	Development of promotional messages that are attractive and relevant to prospective students and parents.	MS2
	Adopt marketing strategies that are responsive to changing market needs.	MS3
	Use of marketing campaigns to highlight the unique advantages of educational institutions.	MS4

Technology Usage (TU)	Utilization of online platforms to expand the school's marketing reach.	TU1
	Interaction activities through social media to build community and interaction with prospective students and parents.	TU2
	Use of data analysis tools to monitor and improve the effectiveness of marketing campaigns.	TU3
	Adoption of innovative technology in delivering information about school programs.	TU4
Inclusive Education Policy (IEP)	Provide educational programs that address the needs of diverse students.	IEP1
	Implementation of a curriculum that supports inclusion and diversity.	IEP2
	Training teachers to address the needs of students from different backgrounds.	IEP3
	Diversity-friendly facilities and accessibility.	IEP4
Collaboration with Industry Sector (CIS)	Partnerships with companies for internship programs or educational cooperation.	CIS1
	Collaboration in joint research or learning projects with related institutions or industries.	CIS2
	Provision of career pathways directly linked to industry through institutional partnerships.	CIS3
	Mendukung program-program ekstrakurikuler yang berkolaborasi dengan industri.	CIS4

4. Research Findings and Discussion

In the context of smart automation, various performance techniques, such as performance assessments and key performance indicators as expressions, must be clearly defined. However, the complexity of performance assessment in smart automation must be acknowledged, requiring alternative performance techniques and better definitions to comprehend it, as depicted in Figure 2.

This SmartPLS conceptual diagram illustrates the relationships among variables in the proposed model. Marketing Strategy (MS) is represented by four indicators: MS1, MS2, MS3, and MS4, each having a significant path coefficient of 0.859 towards Technology Usage (TU). Additionally, each MS indicator also has a direct impact on Positive Image (PI) with a coefficient value of 0.087. TU also directly influences PI with a coefficient of 0.148.

Furthermore, there's a relationship between Marketing Strategy and Inclusive Education Policy (IEP) with a path coefficient of 0.832, and IEP significantly impacts PI with a coefficient of 0.276. Then, there's an association between Marketing Strategy and Collaborative with Industry Sector (CIS) with a path coefficient of 0.313, which also influences PI with a coefficient of 0.414. Lastly, there's a relationship between TU and CIS with a path coefficient of 0.563. This overview helps understand how each variable interrelates and contributes to forming Positive Image (PI).

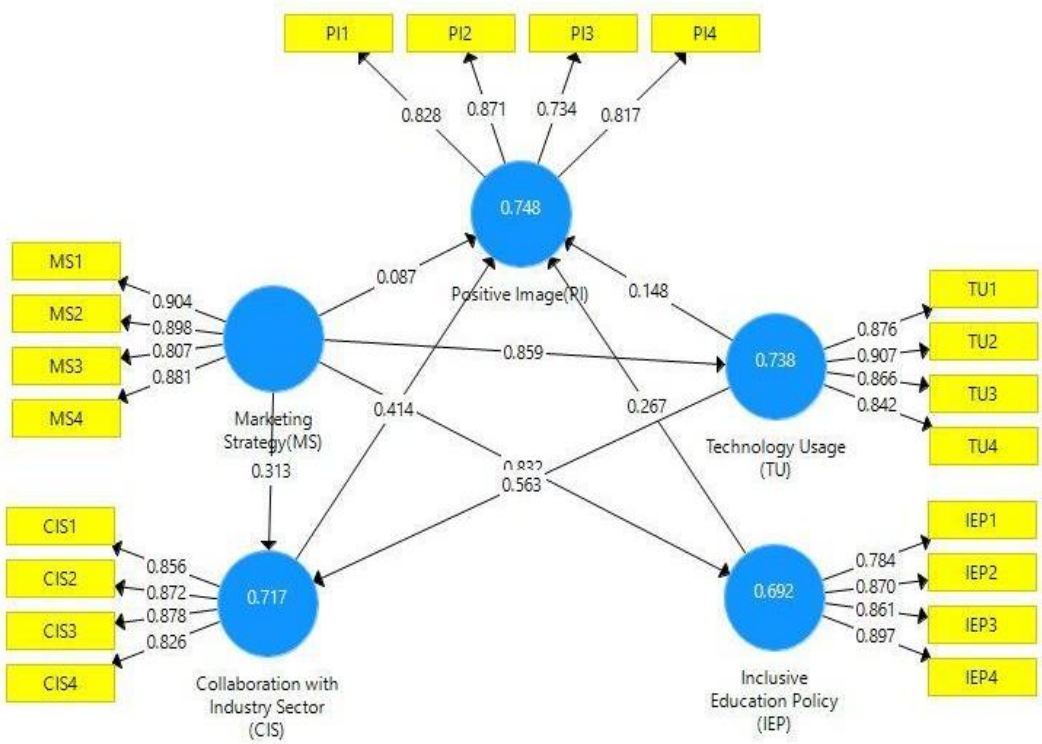

Figure 2. Conceptual Scheme

4.1 Outer Loadings

The Outer Loading table in the SmartPLS analysis indicates the strength of the relationship between each latent variable and its measurable indicators. These outer loading values demonstrate how well each indicator represents its associated latent variable.

In the context of this model shown in Table 2, the Marketing Strategy (MS) variable comprises four indicators: MS1 (0.904), MS2 (0.898), MS3 (0.807), and MS4 (0.881). These values indicate the level of strength each indicator has in representing the Marketing Strategy variable. Furthermore, the Technology Usage (TU) variable has four indicators: TU1 (0.876), TU2 (0.907), TU3 (0.862), and TU4 (0.842). These figures illustrate how strong each indicator measures the Technology Usage variable within this model's context.

Similarly, the Inclusive Education Policy (IEP) variable has indicators: IEP1 (0.876), IEP2 (0.907), IEP3 (0.862), and IEP4 (0.842). These values indicate the strength of the relationship between each indicator and the latent IEP variable. Additionally, the Collaborative with Industry Sector (CIS) variable includes indicators: CIS1 (0.856), CIS2 (0.872), CIS3 (0.878), and CIS4 (0.826). These values reflect the strength of each indicator in measuring the CIS variable in this model.

Finally, the Positive Image (PI) variable is represented by indicators: PI1 (0.828), PI2 (0.871), PI3 (0.734), and PI4 (0.817). These figures showcase the strength of each indicator in representing the latent Positive Image within the developed model context. From this Outer Loadings table, one can observe the reliability and contribution level of each indicator to the latent variables they represent in the SmartPLS analysis.

Table 2. Outer Loadings

	Marketing Strategy	Technology Usage	Inclusive Education Policy	Collaboration with Industry Sector	Positive Image
MS1	0.904	-	-	-	-
MS2	0.898	-	-	-	-
MS3	0.807	-	-	-	-
MS4	0.881	-	-	-	-
TU1	-	0.876	-	-	-
TU2	-	0.907	-	-	-
TU3	-	0.866	-	-	-
TU4	-	0.842	-	-	-
IEP1	-	-	0.784	-	-
IEP2	-	-	0.870	-	-
IEP3	-	-	0.861	-	-
IEP4	-	-	0.879	-	-
CIS1	-	-	-	0.886	-
CIS2	-	-	-	0.872	-
CIS3	-	-	-	0.878	-
CIS4	-	-	-	0.826	-
PI1	-	-	-	-	0.828
PI2	-	-	-	-	0.871
PI3	-	-	-	-	0.734
PI4	-	-	-	-	0.817

4.2 Construct Reliability and Validity

Table 3. Construct Reliability and Validity in SmartPLS analysis indicate the measures of reliability and validity of each construct involved in the model. In this case, Cronbach's Alpha measures the internal reliability of a construct. High values indicate that the indicators within a construct consistently measure that latent variable. In the table, the Cronbach's Alpha values for each construct are as follows: for Marketing Strategy, it's 0.881; for Technology Usage, it's 0.876; for Inclusive Education Policy, it's 0.896; for Collaboration with Industry Sector, it's 0.830, and for Positive Image, it's 0.896. These values signify the level of internal reliability of each construct in the model.

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Varian…
Marketing Strategy	0.881	0.882	0.918	0.737
Technology Usage	0.876	0.884	0.915	0.730
Inclusive Education Policy	0.896	0.900	0.928	0.763
Collaboration with Industry Sector	0.830	0.843	0.887	0.663
Positive Image	0.896	0.897	0.928	0.762

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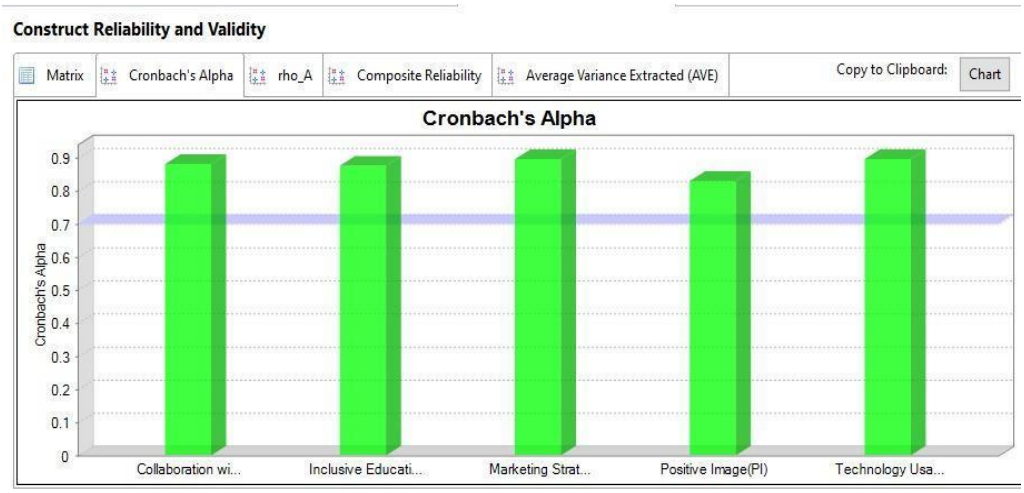

Figure 3. Cronbach's Alpha

Additionally, rho_A or Composite Reliability also measures the construct's reliability by considering the correlation between indicators. High values indicate the construct's consistency and reliability in measuring the associated latent variable. The table also lists the Composite Reliability for each construct, indicating the construct's reliability level: for Marketing Strategy, it's 0.882; for Technology Usage, it's 0.884; for Inclusive Education Policy, it's 0.900; for Collaboration with Industry Sector, it's 0.843, and for Positive Image, it's 0.897.

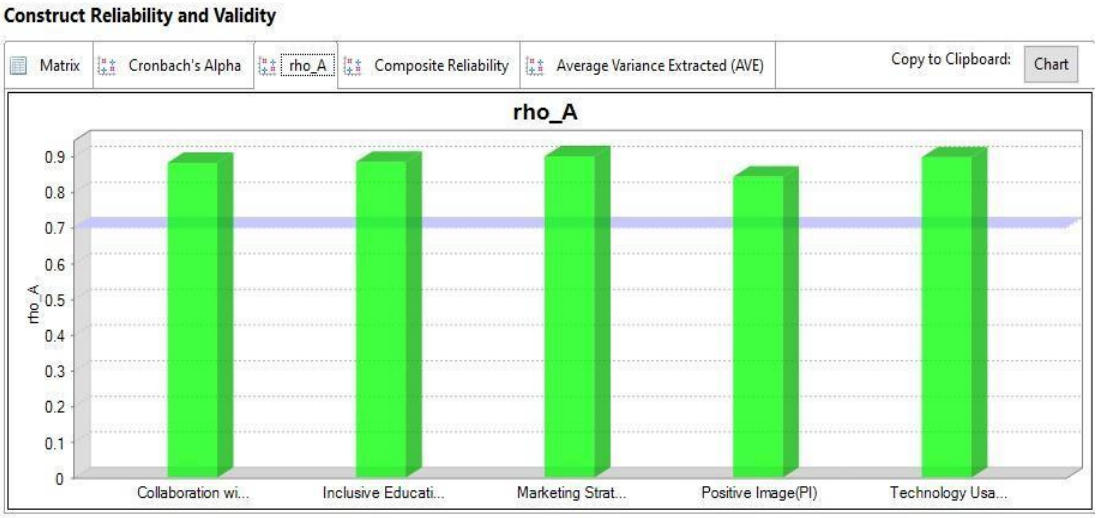

Figure 4. rho_A

Furthermore, the table presents the values of Average Variance Extracted (AVE) for each construct, measuring how well indicators within a construct reflect the total variability of the latent variables they measure. High values indicate that the indicators within that construct consistently represent the latent variable. From the table, the AVE values for each construct are: for Marketing Strategy, it's 0.918; for Technology Usage, it's 0.915; for Inclusive Education Policy, it's 0.928; for Collaboration with Industry Sector, it's 0.887, and for Positive Image, it's 0.928. This indicates that each construct has good validity as their AVE values exceed the commonly accepted threshold.

4.3 Discriminant Validity

Table 4. Fornell-Larcker Criterion

	Marketing Strategy	Technology Usage	Inclusive Education Policy	Collaboration with Industry Sector	Positive Image
Marketing Strategy	0.873	-	0.832	0.879	-
Technology Usage	0.859	0.873	0.854	0.832	0.794
Inclusive Education Policy	-	-	0.854	0.859	-
Collaboration with Industry Sector	-	-	-	0.858	-
Positive Image	0.765	-	0.820	0.835	0.814

Table 4. The Fornell-Larcker Criterion in SmartPLS analysis is used to assess discriminant validity, evaluating how different constructs in the model vary from one another. The table displays diagonal values (main diagonal) reflecting the square root of the Average

Variance Extracted (AVE) of each construct. In this table, these diagonal values represent the AVE of each construct. For instance, for Marketing Strategy, the AVE value is 0.918; for Technology Usage, it's 0.915; for Inclusive Education Policy, it's 0.928; for Collaboration with Industry Sector, it's 0.887, and for Positive Image, it's 0.928.

Furthermore, the values outside the diagonal are the correlation coefficients between each pair of constructs. These values indicate the extent of correlation between two different constructs. For example, the correlation coefficient between Marketing Strategy and Technology Usage is 0.832. The correlation between two different constructs should be smaller than the square root of the AVE of each construct to satisfy discriminant validity criteria. From the analysis of this table, all diagonal values (main diagonal), which are the AVE values, are greater than the correlations between different constructs, indicating that each construct has good discriminant validity.

4.4 Heterotrait Monotrait (HTMT)

Table 5. Heterotrait Monotrait (HTMT)

	Marketing Strategy	Technology Usage	Inclusive Education Policy	Collaboration with Industry Sector	Positive Image
Marketing Strategy	-	0.7	0.6	0.8	0.8
Technology Usage	0.7	-	0.8	0.7	0.7
Inclusive Education Policy	0.6	0.8	-	0.6	0.8
Collaboration with Industry Sector	0.8	0.7	0.6	-	0.8
Positive Image	0.8	0.7	0.8	0.8	-

In Table 5, the numbers indicate the HTMT ratio between each pair of constructs. The values on the diagonal (from top left to bottom right) represent the monotrait ratio (between the same constructs) and should approach or be equal to 1. The values outside the diagonal represent the heterotrait ratio (between different constructs) and should be significantly lower than 1 to ensure good discriminant validity among constructs.

4.5 Cross Loading

Table 6. Cross Loadings in SmartPLS demonstrate the correlation between each indicator and the associated construct in the model. The values in this table reflect how well each indicator measures the expected construct in the study. Let's elaborate on each construct in the table: Marketing Strategy: Indicator MS1 has the highest correlation with this construct, followed by MS2, MS4, and finally MS3. This indicates that MS1 is the strongest in measuring the Marketing Strategy construct compared to the other indicators.

Table 6. Cross Loading

	Marketing Strategy	Technology Usage	Inclusive Education Policy	Collaboration with Industry Sector	Positive Image
MS1	0.904	0.876	0.784	0.856	0.828
MS2	0.898	0.907	0.870	0.872	0.871
MS3	0.807	0.866	0.861	0.878	0.734
MS4	0.881	0.842	0.879	0.826	0.817
TU1	0.727	0.876	0.866	0.768	0.739
TU2	0.716	0.907	0.786	0.745	0.712
TU3	0.705	0.866	0.823	0.748	0.855
TU4	0.904	0.842	0.865	0.752	0.881
IEP1	0.861	0.727	0.784	0.715	0.876
IEP2	0.898	0.709	0.870	0.825	0.896
IEP3	0.807	0.893	0.861	0.745	0.830
IEP4	0.881	0.898	0.879	0.861	0.727
CIS1	0.876	0.875	0.705	0.856	0.842
CIS2	0.907	0.742	0.716	0.872	0.716
CIS3	0.866	0.881	0.726	0.878	0.705
CIS4	0.896	0.897	0.928	0.826	0.762
PI1	0.881	0.882	0.918	0.737	0.828
PI2	0.876	0.884	0.915	0.730	0.871
PI3	0.896	0.900	0.928	0.763	0.734
PI4	0.830	0.843	0.887	0.663	0.817

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Technology Usage: TU4 has the highest correlation with the Technology Usage construct, followed by TU3, TU2, and TU1. This signifies that TU4 is the strongest in measuring the Technology Usage construct compared to other indicators. Inclusive Education Policy: Indicator IEP3 has the highest correlation with this construct, followed by IEP2, IEP4, and IEP1. This suggests that IEP3 is the strongest in measuring the Inclusive Education Policy

construct compared to other indicators.

Collaboration with Industry Sector: CIS4 has the highest correlation with this construct, followed by CIS2, CIS1, and CIS3. This shows that CIS4 is the strongest in measuring the Collaboration with Industry Sector construct compared to other indicators.

Positive Image: PI3 has the highest correlation with this construct, followed by PI1, PI2, and finally PI4. This reveals that PI3 is the strongest in measuring the Positive Image construct compared to other indicators.

4.6 Bootstrapping Results and Hypothesis Testing

Table 7. P-values and T-values are crucial components of the bootstrapping results in Structural Equation Modeling (SEM) used to test the significance of relationships between constructs in the model. Each T-statistics value indicates the significance of the influence of one variable on another. Additionally, P-values provide information about whether the observed influence is statistically significant or not.

Table 7. P-values and T-values

	T Statistics (|O/STDEV|)	P Values
Marketing Strategy -> Positive Image	13.197	0.000
Marketing Strategy -> Technology Usage	3.627	0.000
Marketing Strategy -> Inclusive Education Policy	2.051	0.000
Marketing Strategy -> Collaboration with Industry Sector	2.051	0.000
Technology Usage -> Collaboration with Industry Sector	9.567	0.000
Technology Usage -> Positive Image	11.735	0.000
Inclusive Education Policy > Positive Image	5.928	0.000
Collaboration with Industry Sector -> Positive Image	8.834	0.000

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In this table, high T-statistics values indicate the strength of the relationship between the tested variables. For instance, Marketing Strategy shows significant T-statistics towards Positive Image (13.197), Technology Usage (3.627), Inclusive Education Policy (2.051), and Collaboration with Industry Sector (2.051). Such high T-statistics values signify that the relationship between Marketing Strategy and other variables is statistically significant.

Furthermore, low P-values (0.000) indicate that these test results are statistically

significant, suggesting that the relationships observed aren't merely coincidental. This reinforces the argument that the observed relationships in the model are significant findings and can be relied upon in the analysis. The significant results in the P-values and T-values table can support the hypotheses proposed in the model, indicating that the tested variables have significant influences on each other as expected within the conceptual framework of the model.

5. Conclusion

In this conducted research, findings indicate that marketing strategies, technology utilization, inclusive education policies, and collaboration with the industry sector significantly impact the positive image of educational institutions. Responsive marketing strategies aligned with market needs, particularly in delivering compelling and relevant messages, foster trust in educational institutions (Marketing Strategy -> Positive Image, T-statistics: 13.197). Technology usage, especially through online platforms and social media, plays a crucial role in expanding marketing reach and building a positive institutional image (Technology Usage -> Positive Image, T-statistics: 11.735). Inclusive education policies, including curriculum support for inclusivity and teacher training, also contribute to enhancing institutional image (Inclusive Education Policy -> Positive Image, T-statistics: 5.928). Collaboration with the industry sector shows a significant influence in building a positive image (Collaboration with Industry Sector -> Positive Image, T-statistics: 8.834), indicating that partnership initiatives also contribute to the educational institution's reputation. Bootstrapping analysis also reveals the significance of relationships between key variables in the model, confirming that variables like marketing strategies, technology usage, inclusive policies, and collaboration with the industry have a significant impact on the positive image of educational institutions, as hypothesized. Overall, this study provides a substantial contribution to understanding the factors influencing the reputation of educational institutions. By strengthening adaptive marketing strategies, effective technology usage, inclusive policies, and collaboration with the industry sector, educational institutions can build a more positive image in the eyes of the public and meet stakeholders' expectations regarding the provided educational service.

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