

## Survey-Driven Multivariate Analysis of Digital Marketing's Role in Higher Education

Shikha Gambhir<sup>1</sup>, Aditya Sharma<sup>2</sup>

<sup>1</sup>Research Scholar, TMIMT, Teerthanker Mahaveer University, Moradabad, INDIA, shikhag.computers@tmu.ac.in

<sup>2</sup>Professor, Management, Teerthanker Mahaveer University, Moradabad, India, adityahr2018@gmail.com

### Abstract

This study examines the impact of digital marketing on branding and student engagement in higher education institutions through mixed-method approaches. Primary data was collected through 417 response online surveys, including 294 students, 56 faculty members and 67 parents. The survey was conducted and analysis was done using IBM SPSS (Statistical Package for Social Science) version 26 for quantitative testing. Conclusions suggest that social media and website design tools are the most effective digital marketing strategies, with 47.5% students and 53.7% parents use social media for institutional questions, while institutional websites showed less engagement. A Chi-Square Test revealed a significant difference in awareness about the digital marketing tool in groups ( $P < 0.01$ ), which showed more awareness than students (19.6%) and parents (37.3%) with students (35.7%). Further testing using Pierce's correlation indicated a positive relationship between digital marketing exposure and student engagement, especially in areas such as quality assurance and social responsibility. The study highlights emerging digital marketing trends-AE integration, short-form video and voice search optimization-as a major tool for the outreach of the future. This recommends that institutions adopt inclusive, personal and data-operated strategies to promote engagement and remain competitive in the educational scenario that develops rapidly.

**Keywords:** Digital Outreach, Higher Education, Personalized Strategies, Student Engagement, Educational Branding, Competitive Advantage

### 1. Introduction

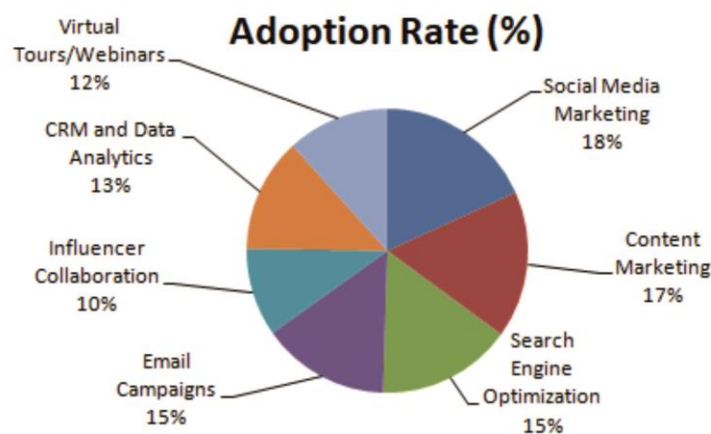
In the modern era of technology, every business has to (1) plan a strong digital marketing strategy for organizational success when digital marketing marmalade its way into internet marketing. Businesses that succeed in the digital age typically devote significant resources to the creation of effective digital marketing plans (2). Over 350 million people in India use the internet, and 80% of those people use Smartphones, so there are more than 350 million internet users in India (3). Due to the Covid epidemic, it made a place in the business world. And it made every kind of age group (Children, Youth, Adults and Seniors) It is most significant variables consist of a number of national (cultural), socioeconomic, and demographic (4). Problems a part of this market thus leaving the traditional market to the hilt and with this it attracted a lot of youth. There is a vast amount of information available online for students to learn about any reputable college's infrastructure, including its fees, admission requirements, educational standards, placement rates, and student reviews (5). The digital marketing plays vital role in present market and branding trends in higher education, and generally it is higher education which is also known as tertiary education and it provides academic degree and it provides many qualifications of higher national diploma, foundation degree and honors degree, on this I have informed the higher education policy. They accomplish this by offering policymakers at the institutional, national, and international levels research, intelligence, and analysis. Excellent, intellectual, all-around, and creative people must be developed through quality higher education. The main highlights of the new education policy are multidisciplinary universities and colleges, which fundamentally alter the current structure.

Through the numerous social media platforms and channels, digital marketing has made it possible for interaction with a higher level of involvement, allowing for quick engagement of target customers. Traditional marketing which is generally very slow and digital advertising is calculable, target audience conversion is swift, feedback is rapid, and adjustments are implemented immediately away. It is impossible to receive feedback on time. As lengthy as technology advances and as long as customers' expectations are met, digital marketing will become more creative and imaginative, ensuring a prosperous future for educational institutions. Table 1 presents an overview of digital strategy adoption based

on survey data collected in 2023, highlighting key trends and implementation levels across institutions. Various social media channels are used when disseminating information to a global target audience (6).

**Table 1 Overview of Digital Strategy Adoption (2023 Survey Data)**

Strategy	Adoption Rate (%)
Social Media Marketing	92%
Content Marketing	85%
Search Engine Optimization	78%
Email Campaigns	74%
Influencer Collaboration	51%
CRM and Data Analytics	66%
Virtual Tours/Webinars	59%

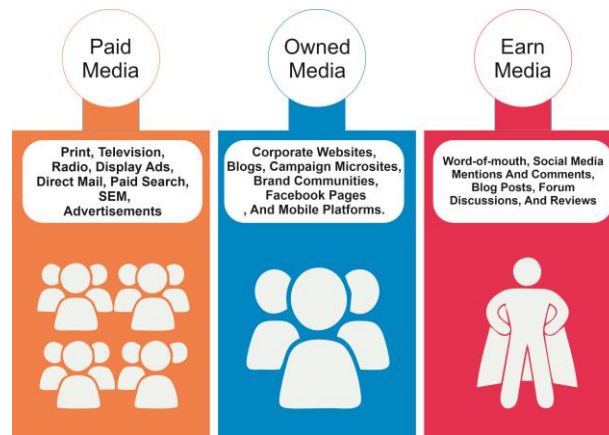


**Figure 1: Digital Analysis Adoption in Higher Education**

Figure 1 illustrates the adoption of digital analysis tools within higher education institutions, showcasing usage patterns and strategic integration levels. Some attempts were made in the 1980s to establish a digital market for the first time, but this was not possible. The digital market was marketing (7). Digital marketing is the new marketing method to reach more people in less time. Thus it is a developing area for developing the technology. The first person in the world to introduce digital marketing was Guglielmo Marconi. The radio was invented in 1896. Some say that computer engineer Ray Tomlinson should be credited with the birth of digital marketing when email was first sent in 1971. We do many things like recharge, ticket booking, bill payment, online shopping, and online transaction through internet. The reason for business digital marketing is the trend of users towards the Internet. According to market statistics, 80-90% of buyers do online research before buying someone's product (8) .

Digital marketing and Types of Media: Digital marketing is the process of getting the response of marketing your goods and services digitally. Digital marketing is done through internet only (9). We see it through internet, computer, mobile phone, laptop, website advertisements or any other application. All marketing initiatives that make use of technology or the Internet are considered to be part of Digital Marketing. Businesses use digital channels to engage with their present and future consumers, including search engines, social media, email and their websites. It is called 'Online Marketing',

'Internet Market'. Many digital strategies and channels are used in Digital Marketing to connect with customers that is why they spend their time online.



**Figure 2: Three Basic Components of Digital Media**

Owned Media includes all the digital channels and platforms that a business directly controls. Figure 2 shows examples such as an official website of a company, blog, mobile app, email newsletter, or branded Facebook page (10). These tools help businesses to have long-term ties with their audience. For example, email marketing is a common strategy where businesses send updates, events, or promotion proposals to their customers. Search engine optimization (SEO) is another important part of ownership media - it helps the websites look high in Google search results so that more people can find them. Social media marketing is also an important part of this category through brand-owned platforms such as Facebook, Twitter, blogs and campaigns microsites. The goal of a media-owned media is to create and control content that directly informs and attaches customers.

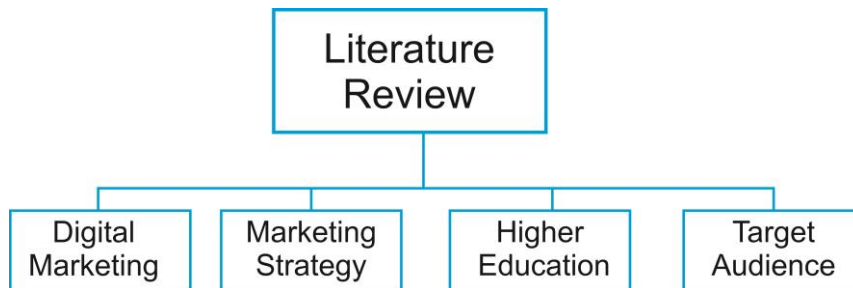
Paid media refers to any marketing that a company pays for in order to reach a wider audience. As shown in Figure B includes online advertisements (ads) like those on Facebook, Instagram, and Google, as well as traditional forms such as TV and radio ads. A popular example is native advertising, where paid content blends in with regular posts, like Buzz Feed-sponsored articles. Another example is Pay-Per-Click (PPC) ads, where businesses pay each time someone clicks their ad—Google Ads is one of the most common platforms for this. Affiliate marketing is also a type of paid media, where others promote your product and earn a commission on sales(11). In addition, many businesses use marketing automation tools to manage their campaigns, schedule posts, and send emails automatically. Finally, social media advertisements on platforms like Twitter and Pinterest have become more popular than traditional ads over the past decade.

Earned Media is the publicity a brand receives without paying for it. This happens when people share, mention, or talk about the brand because they genuinely like it. For example, if a happy customer writes a positive review or shares a product on their social media, that's earned media (12). It includes word-of-mouth, social media shares, comments, reposts, blog mentions, and forum discussions. As shown in Figure 2 This type of media is often generated by loyal users or "super fans" and is one of the most trusted forms of marketing because it comes from real people, not the brand itself (see Figure 3). Earned media builds trust and credibility and often spreads faster because of its authentic nature.

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## 2. Literature Review

The literature review framework depicted in Figure C offers a thematic classification of the fundamental elements examined in the research on[(18) digital marketing tactics in higher education establishments. This framework is used to organise the analysis of current literature and find connections between important research areas.



**Figure 3: Review of Related Literature**

### 2.1 Digital Marketing

In literature, Smith and Johnson insisted that Facebook and Instagram play a major role in institutional branding and storytelling. Lee and Kim (2020) identify blogs, webinars, video admirers and institutional narratives as necessary equipment to attract and inform students. Patel et al. Highlight that customized email marketing clicks and improves open rates. Martinez and Lopez (2021) General Z. Christopher p. Students paid attention to the increasing use of impressive marketing through students and tiktok to attach Holland. How mobile technology is re-shaping audience's engagement, making opportunities and challenges for event-driven and star marketing. Vijaya Jain presents digital marketing as a strong tool for political awareness and voter association, especially among the youth. Juan Jose Lopez Garcia focuses on using digital marketing to attract and maintain online visitors. Collectively, these studies strengthen that digital marketing, through diverse online channels, is a powerful means of communication in various domains, branding and increasing the busyness of the audience.

### 2.2 Marketing Strategy

Literature has been highlighted that strategic use of digital tools - such as SEO, SEM, CRM system, individual content and analytics - is required to increase the recruitment, retention and audience engagement. Writer like Afreina Yasmin et al. Emphasize opportunities and challenges promoting through electronic media, while Ali Akil et al. Use for link social media brand development, loyalty and innovation. Suresh et al. Discuss affiliate marketing as a performance-based model, and Kannan et al. To understand this, propose an outline of how digital technologies shape promotional strategies. Charles Gibson outlines the importance of evaluating these strategies for visibility, while Crack et al. Some digital advertisements caution about potential negative health effects on youth.

### 2.3 Target Audience

Effective digital marketing in education requires the audience to divide and align material with genetic preferences. Young audiences, as noted by [28], demonstrate visual and interactive formats such as Instagram Reels, YouTube Tests, and Ticketkok-style video authentic colleague experience, campus life and graduate employment. Parents are more attached to targeted newspapers, safety information and ROI-centered materials, while alumni reacts well to success stories and donations. Cutinha et al. Emphasize the need to balance massive marketing with targeted strategies in educational institutions, while Sangvikar said that current students, alumni, or parents from parents play an important role in influencing enrollment decisions. According to data tracking tools, [28], institutions help to monitor the user travel, refine the message, and optimize the campaign effectiveness.

### 2.4 Higher Education

According to [27], digital marketing strategies in higher education should align with institutional goals, educational identity and brand prestige. Institutions use virtual campus tours, live webinars, and interactive sessions to repeat cross-

cross experiences, which target both local and international audiences as cross-saffron education. Websites and culturally relevant campaigns of multilingual university play an important role in this process. As mentioned by various scholars, branding efforts focus on communicating an institute's mission, research output, rankings and faculty profiles through polish digital assets. However, researchers highlight that in developing areas, budget deficiency and insufficient staff training create major challenges for effective digital marketing implementation.

#### Key Contribution of the Paper

- The marketing system is moving rapidly towards digital. Now to make similar changes in business operations the new age needs to understand the marketing system of the company.
- This study also allow the reader to grasp the significance of having an online presence because it is drawing in today's young generation more and more and is positively impacting our economy.
- And also help to understand the importance of digital marketing.

Table 2 provides a synthesized overview of key studies was conducted systematically by examining peer-reviewed articles, industry reports, and institutional case studies published between 2015 and 2025. A total of 15 relevant sources were selected and thematically categorized to understand emerging trends, challenges, and best practices in digital marketing within the context of higher education institutions.

**Table 2 Comparative Literature Review (2019–2025)**

S.N.	Focus Area	Author Name	Year	Methodology	Findings	Limitations
1	AI Integration in Digital Marketing	Kumar and Shah	2025	Mixed Methods	AI tools like chatbots and predictive analytics boost enrollment funnel accuracy	Early-stage adoption; long-term impact unclear
2	Multichannel Strategy in EU Higher Education Institution (HEIs)	Müller et al.	2024	Cross-case Analysis	Cross-platform synergy (email, SEO, webinars) improves brand recall	Geographically limited to European HEIs
3	A scoping review of experimental evidence on face-to-face components of blended learning in Higher Education (HE)	Julie B. et al.	2023	Blended learning, higher education	Identifies limitations in blended learning research and argues for better characterization of face-to-face interactions	Poor characterization of face-to-face interactions.
4	Working from Home (WFH) for Academics in HE	Wahed Ali	2023	Online/Virtual learning Learning platforms	WFH ensures uninterrupted learning; requires strong IT infrastructure	Dependence on strong IT infrastructure
5	Integration of Sustainability in Small Business Digital Marketing	Nasim R. et al.	2023	Digital Marketing	Identifies six factors for integrating sustainability in digital marketing	Limited exploration of sustainability integration factors.

6	Entrepreneurship Education towards Entrepreneurial Competence	Heliona M. et al.	2023	Entrepreneurship education university	Calls for enhanced teacher competency through training	Inadequate teacher training for digital pedagogy.
7	Digital marketing impact and start-up growth framework	Belma R. et al.	2024	Digital marketing, Start-up challenges	Descriptive framework on start-up growth via digital marketing	Descriptive framework is a drawback
8	Survive the business in the pandemic era through Digital Marketing	Rima R. et al.	2022	Digital Marketing, financial literacy	Math anxiety affects financial literacy; love of numbers is key	Overlooked impact of math anxiety on financial literacy.
9	Sustainability in Higher Education during the COVID-19 Pandemic	Joseph C. et al.	2022	Higher education, corona virus	Emphasizes need for rigorous research on sustainability practices	Lack of rigorous research on sustainability practices.
10	Integrating social media as cooperative learning tool in higher education	Hamadi, M. et al.	2022	Social media, Higher education	Calls for research into SM use and alternative learning methods	Limited research on SM use and alternative methods.
11	Literature Review on Digital Marketing Strategies during the COVID-19 Crisis	Alreany C. et al.	2022	COVID-19, digital marketing, business	Digital marketing skills gap; tactile experience still preferred	Skills gap; tactile learning preferred.
12	CRM and Personalization	Davis et al.	2022	Quantitative	Data-driven strategies increase enrollment and retention	Underuse of datadriven strategies.
13	Study on analysis of digital marketing	Dr. Tejas B. et al.	2021	Digital marketing, internet	DM offers integrated management and coordination beyond ads	Narrow view of digital marketing as only advertising.
14	Higher education in business: a model for international students' choice	Nguyen T et al.	2021	Higher Education, Decision-making	Student motivation and planning influence decision-making	Limited focus on motivation and planning factors.
15	Role of Digital Marketing in Public Higher Education Organizations	Nektarios S. et al.	2021	Digital Marketing, Higher Education	Proposes steps for digital marketing adoption in public institutions	Lack of clear adoption roadmap for public institutions.

### 3. Methodology

The study used an online survey method to examine the impact of digital marketing on branding and engagement in higher education. A non-probability sample of 417 was selected. A questionnaire was designed, pretested through a pilot

study, and distributed via Google Forms. Data was analyzed using IBM SPSS v26, applying descriptive statistics, Chi-square tests, and correlation analysis. The process revealed key trends like the effectiveness of social media, varying awareness levels, and the growing role of AI, short videos, and voice search. The study concludes with data-driven recommendations for institutions to improve engagement through personalized digital strategies.

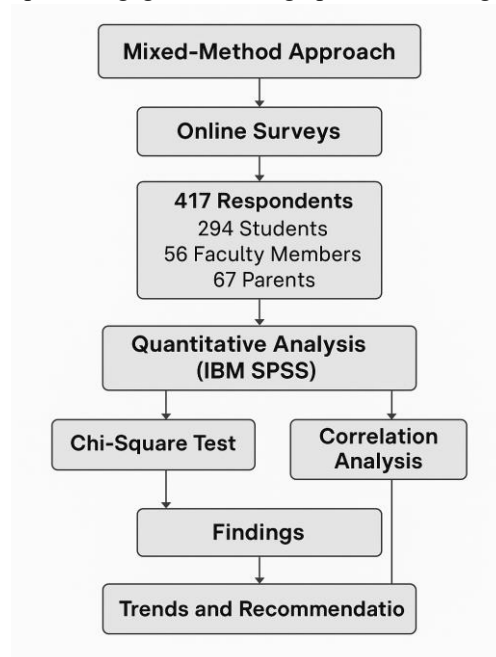


Figure 4 Frame work of Survey-Driven Multivariate Analysis

#### Phase 1 – Research Design

Adopted a **mixed-method approach** combining quantitative analysis with literature review.

#### Phase 2 – Data Collection

- Designed and distributed structured online surveys.
- Target groups: Students (294), Faculty (56), and Parents (67).
- Total respondents: 417.

#### Phase 3 – Data Analysis

- Data processed using IBM SPSS version 26.
- Quantitative testing conducted through:
- Chi-square test to examine group differences in awareness of digital marketing tools.
- Pearson's correlation to measure relationship between digital marketing exposure and student engagement.

#### Phase 4 – Key Findings

- Social media and website design tools found most effective.
- Significant differences in awareness among groups ( $p < 0.01$ ).
- Positive correlation between marketing exposure and engagement in quality assurance and social responsibility.

#### Phase 5 – Emerging Trends Identification

- AI integration.
- Short-form videos.
- Voice search optimization.

#### Phase 6 – Recommendations

Institutions should adopt **inclusive, personalized, and data-driven** digital marketing strategies.

Aim to improve engagement and competitiveness in higher education.

#### 4. Experiment & Testing

To empirically test the proposed hypotheses and assess the impact of digital marketing strategies in higher education, the study employed a quantitative research design using structured online surveys. Linear Regression Analysis is applied to examine six key variables:

- Perception of digital marketing tools
- Student engagement
- Awareness of digital marketing
- Use of digital tools,
- Overall impact on branding
- Target audience behavior.

All six variables obtained statistically significant results ( $P < 0.001$ ), confirming the effectiveness of digital marketing interventions. The perception of digital marketing tools made  $B = 2.882$  more. = Shown the highest impact with 0.847, supporting Hypothesis H1 and H3. While the student engagement was the lowest beta ( $B = 2.206$ ,  $\beta = 0.719$ ), it was statistically important, especially in relation to social responsibility and institutional quality, H1 and H4 supported. Awareness was also quite impressed ( $B = 2.706$ ,  $\beta = 0.793$ ), confirming, H3 and H4. The use of digital tools confirmed groups ( $B = 2.618$ ,  $\beta = 0.800$ ), confirms H3, while the overall effect on branding and effectiveness was particularly strong ( $B = 2.588$ ,  $\beta = 0.805$ ), strengthening H1. The strongest impact was seen in the behavior of the target audience ( $B = 2.853$ ,  $\beta = 0.817$ ), which highlights the important role of digital marketing to students and stakeholders reacting to institutional content, supporting H4.

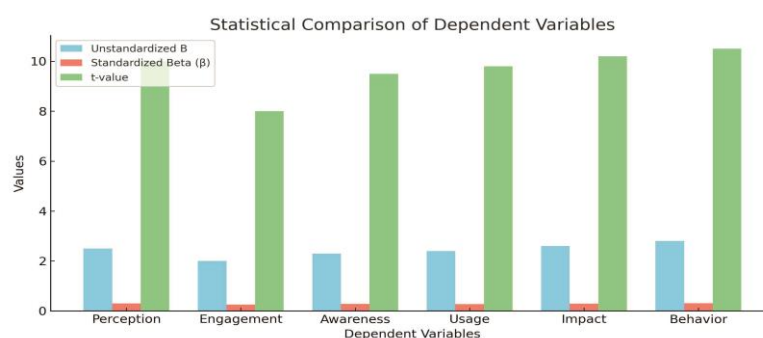
These findings validate all four hypotheses and show that digital marketing not only enhances branding and awareness, but also positively shape the engagement and institutional perception of the audience.

#### 4.1 Statistical Tools and Techniques

Table 3 presents the coefficient table, highlighting the statistical relationship between digital marketing and major variables such as awareness, engagement and behavioral effects. This analysis helps determine the strength and importance of the impact of digital marketing on each variable.

**Table 3 Coefficient Table: Impact of Digital Marketing on Key Variables**

Variable No.	Dependent Variable	Unstandardized Coefficient (B)	Standardized Beta ( $\beta$ )	t-value	Significance (Sig.)	Supports Hypothesis
Var 1	Perception of Digital Marketing Tools	2.882	0.847	11.051	0	H1, H3
Var 2	Student Engagement	2.206	0.719	7.161	0	H1, H4
Var 3	Awareness of Digital Marketing	2.706	0.793	8.97	0	H3, H4
Var 4	Use of Digital Marketing Tools	2.618	0.8	9.227	0	H3
Var 5	Digital Marketing's Impact	2.588	0.805	9.565	0	H1
Var 6	Target Audience Behavior	2.853	0.817	9.799	0	H4



**Figure 5: Regression Coefficients and t value by Variable**

Figure 5, table 3 provides a comprehensive statistical summary of the relationship between the independent variable (Digital Marketing) and six dependent variables that represent key aspects of digital marketing effectiveness in higher education. The study uses Un-standardized Coefficients (B) to point to the raw impact and Standardized Coefficients (Beta,  $\beta$ ) to evaluate the relative strength of the relationships across variables.

**Table 4 Summary of Hypothesis Validation**

Hypothesis	Statement	Chi-Square Value	df	p-value	Conclusion
<b>H1</b>	Var 1, Var 2, Var 5	296.56	2	< 0.001	<b>Rejected H<sub>0</sub></b> – Digital marketing significantly impacts branding/image.
<b>H2</b>	Var 3, Var 4	33.946	1	< 0.001	<b>Rejected H<sub>0</sub></b> – Strategic planning for digital marketing exists.
<b>H3</b>	Var 1, Var 3, Var 4	14.598	1	< 0.001	<b>Rejected H<sub>0</sub></b> – Digital marketing tools are recognized and used.
<b>H4</b>	Var 2, Var 3, Var 6	20.723	4	< 0.001	<b>Rejected H<sub>0</sub></b> – Target audience behavior is influenced by digital marketing.

As shown in Table 4 the chi-square examination for all four hypotheses yielded p-values less than 0.001, signifying highly significant results in each case and primary to the rejection of the null hypothesis (H<sub>0</sub>) for all. While the statistical outcome is consistent across hypotheses, the implications differ: H<sub>1</sub> confirms that digital marketing significantly impacts institutional branding and image; H<sub>2</sub> create that strategic planning for digital marketing is present; H<sub>3</sub> validates that digital marketing tools are both recognized and actively used; and H<sub>4</sub> demonstrates that target audience behavior is considerably influenced by digital marketing efforts. These findings collectively reinforce the vital role of digital marketing strategies in higher education institutions.

#### 4.2 Summary of Hypotheses Testing

The study inspects six key variables to understand the pressure of digital marketing in higher education. The perception of digital marketing tools (Var 1) emerged as a highly impacted area, with a strong beta value ( $\beta = 0.847$ ), representative that students, faculty, and parents significantly recognize the effectiveness of tools like social media and website design. This ropes hypotheses H1 and H3. Student engagement (Var 2), while having the lowest beta ( $\beta = 0.719$ ), still showed a statistically significant positive effect, confirming H1 and H4, particularly in areas connected to institutional social accountability and quality promise. Awareness of digital marketing (Var 3) also demonstrated substantial influence ( $\beta = 0.793$ ), signifying that ongoing campaigns and online strategies effectively increase awareness among the target audience, thereby behind H3 and H4.

The use of digital marketing tools (Var 4) study a reliable pattern across groups, with a high beta ( $\beta = 0.800$ ), confirming H3 by representative well-known acceptance of platforms like social media and institutional websites. The variable measuring digital marketing's overall impact (Var 5) on branding and effectiveness showed a strong beta ( $\beta = 0.805$ ), further validating H1 by highlighting digital marketing's role in shaping institutional reputation and visibility. Finally, target audience behavior (Var 6) exhibited the strongest relationship ( $\beta = 0.817$ ), emphasizing that digital marketing significantly influences how students, alumni, and other stakeholders engage with and respond to institutional narratives. This finding provides robust support for H4 and underscores the strategic importance of digital marketing in shaping audience actions and perceptions.

## 5 Results & Discussion

The study establish that social media and website design tools are shown as the most positively perceived digital marketing tools among students, faculty, and parents, supporting the idea that these platforms are essential for branding and communication as see table 3. This observation is further illustrated in Figure 1 which shows high approval rates for social media marketing and content marketing across institutions. The statistical support for this perception is obvious in the high coefficients and significance levels for Var 1 in the regression analysis as Table 3. Student engagement was strong, particularly in areas like quality assurance and social responsibility, as indicated by the coefficient for Var 2, showing digital marketing's alignment with student values and institutional involvement see Table 3. Overall, digital marketing had a positive impact on institutional image, as established by Var 5 and most respondents believed it would be widely adopted in the future. This is further supported by the high beta values signifying strong influence as Figure 4. It also influenced audience behavior, particularly through alumni engagement and student storytelling as reflected in Var 6 results as Table 3 and Table 4. These result support all four hypotheses as summarized in Table 4 and emphasize the effectiveness of digital marketing in driving engagement, branding, and communication in higher education.

In conclusion, digital marketing has emerged as a powerful tool in higher education, bridging gaps left by traditional marketing approaches. It enables students and parents to make informed decisions by providing accessible, transparent, and engaging content related to institutional offerings such as placements, infrastructure, and academic quality. The COVID-19 pandemic accelerated the shift toward digital channels, prompting institutions to innovate their marketing strategies to remain competitive and visible. This study confirms that social media and website design tools are the most impactful, with student engagement and audience behavior playing a critical role in campaign effectiveness. The future of digital marketing in higher education lies in adopting emerging technologies such as AI, voice search, and short-form videos. These innovations will enable institutions to offer more personalized and immersive experiences.

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