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Influence of Digital Marketing Activities on University Enrollment Intention in Karachi: Mediating Role of Institutional Brand Image and Moderating Role of Student Digital Literacy

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ABSTRACT

Communication technology has been digitalised at a breakneck pace, transforming how higher education institutions market themselves to prospective students. Higher education marketing has changed dramatically with the digitalisation of communication technologies, with universities reaching prospective students through social media, search engines, institutional websites, and video. This research aims to examine the effect of DMS on EI in universities in Karachi, mediated by IBI and moderated by SDL. The data were gathered using a structured questionnaire, which was administered to 307 students from public and private universities in Karachi. The model results obtained through descriptive statistics, reliability and validity test, Pearson correlation analysis, Confirmatory Factor Analysis (CFA), mediation analysis, hierarchical moderation regression (Hayes PROCESS Macro), and robustness diagnostics showed that digital marketing strategies had a significant effect on both student engagement ($\beta = 0.612$, $R^2 = .374$, $p < .001$) and enrollment intentions ($\beta = 0.658$, $R^2 = .433$, $p < .001$). The effect of DMS on EI is partially mediated by institutional brand image (indirect $\beta = 0.278$, 95% CI [0.198, 0.361]) and is further amplified by student digital literacy (interaction $\beta = 0.187$, $p < .001$). The overall model accounts for 51.5% of the variance in enrollment intention. The study extends the Stimulus–Organism–Response (S-O-R) framework to emerging-market higher education contexts and offers practical implications for university marketing managers and policymakers.

Keywords: Digital marketing; enrollment intention; institutional brand image; student digital literacy; higher education; Karachi; S-O-R framework

1 | INTRODUCTION

Communication technologies are rapidly digitising, fundamentally changing the marketing of higher education worldwide. This is no longer the era of relying solely on print ads, brochures, education fairs, or in-person counselling to attract prospective students to a university. The advent of internet-based platforms, mobile technologies, search engines, and social media networks has revolutionised the way higher education institutions (HEIs) communicate with and engage potential applicants(Alalwan, 2022). As a result, digital marketing has become more than just a communication tool; it is a strategic imperative and a crucial

mechanism that affects students' awareness, engagement, perceptions of the institution's quality, and final enrollment.

Social media marketing, search engine optimisation (SEO), management of institutional websites, email marketing, pay-per-click marketing, collaborating with influencers, and video storytelling are examples of digital marketing strategies used by higher education institutions (Li et al., 2021). The digital platform, unlike traditional mass-communication methods, can engage audiences in real time across geographic boundaries, monitor their interactions, and tailor content to large audiences on a mass scale(Shneikat, 2024). Digital transformation has been extremely rapid in developing countries like Pakistan, with more than 4 billion Pakistanis using smartphones and the internet, and a wide range of social media applications that have transformed how teachers and students communicate in education (Capriotti & Zeler, 2023). The capital city of Pakistan, Karachi, is a major educational hub with numerous public and private universities that compete for students in a digitally mediated environment(Szymkowiak et al., 2021). In today's highly competitive higher education landscape, it is no longer just about the quality of the academic offering; it is about who is there, how well they communicate, how they are perceived online, and what makes students trust them more in their personal communication. The shift to AI-powered recruitment tools, algorithmic ads, and social media engagement has made digital marketing a pivotal part of student recruitment.

Furthermore, prospective students in emerging markets frequently face informational uncertainty, making institutional credibility and digitally communicated trust essential determinants of enrollment decisions.

Despite the growing role of digital marketing in this context, there are few empirical studies on its effectiveness in influencing students' enrollment intentions, especially in a developing-country setting (Shneikat, 2024). Previous research mostly focuses on the direct links between digital marketing and enrolment outcomes, while neglecting to investigate the psychological and perceptual pathways that mediate this link, such as institutional brand image. Likewise, there are individual-level moderating factors that influence the processing and response to digital marketing content, but these are not well studied within a unified model(Szymkowiak et al., 2021; Van Laar et al., 2020).

These gaps have been addressed in this study through a theoretical background based on the Stimulus–Organism–Response (S-O-R) framework(Reinhard et al., 2026). Digital marketing strategies act as external stimuli (S); institutional brand image is an internal psychological stimulus (O) through which these stimuli are arranged; and enrollment intent is the behavioural response (R). The concept of student digital literacy is suggested as a boundary condition that could moderate the stimulus-to-organism and stimulus-to-response pathways.

1.1 | Research Objectives

The purpose of this study is to achieve four goals:

1. To investigate how digital marketing strategies are influencing the engagement of students in the universities of Karachi.
2. To find out the impact of Digital Marketing Strategies on students’ intention to enrol.

3. Mediating effect of the institutional brand image between digital marketing strategies and intention to enrol.
4. To explore how student digital literacy will moderate the relationship between digital marketing strategies and enrollment intention.

1.2 | Research Questions

In keeping with this, the study considers the following issues:

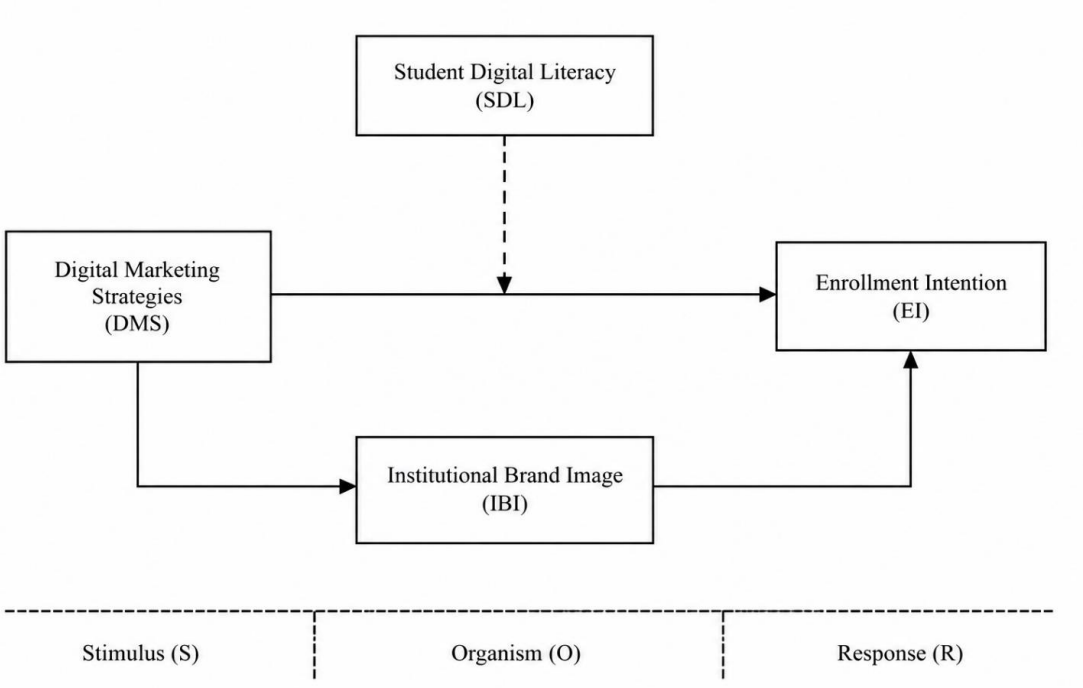
1. What are the impacts of digital marketing strategies on students' engagement towards universities in Karachi?
2. What are the effects of digital marketing on the students' intention to enrol in the universities of Karachi?
3. Does the institutional brand image act as a mediator between the digital marketing strategies and intention to enrol?
4. Is there an interaction effect between digital marketing strategies and students' enrollment intention regarding digital literacy?

1.3 | Theoretical Framework and Significance

The overall theoretical perspective is the S-O-R (stimulus-organism-response) framework. Signalling theory offers a second explanation: that universities build credibility and a quality reputation through consistent digital communications, and that these digital signals ultimately build institutional reputation, which is an important factor in student trust and preference for enrollment (Simões & Soares, 2019).

Figure 1

Conceptual Framework Based on the S-O-R Theory



Note. "Direct effects" are shown with solid arrows, "Direct effects through" Institutional Brand Image (IBI) are shown with medium arrows, and the moderating effect of "Direct effects through" Student Digital Literacy (SDL) is shown with dashed

arrows linking Digital Marketing Strategies (DMS) and Enrollment Intention (EI). In theory, this study extends the S-O-R theory to the field of Higher Education Enrollment in an emerging market and incorporates mediation and moderation within a single study. As far as the practical aspect is concerned, it provides a valuable perspective for the Higher Education Commission (HEC) of Pakistan and university marketing managers in developing effective and fair digital marketing strategies and policies.

2 | LITERATURE REVIEW

2.1 | Digital Marketing and Student Engagement

Digital marketing has been identified as one of the main factors promoting students' involvement in higher education activities, and it involves cognitive, emotional and behavioural participation in communication and digital content with the institution. Engagement through content should be relevant, interactive and visually appealing (Kibria et al., 2026)The current literature shows significant differences in students' engagement with digital marketing across geographical contexts. While personalisation, interactivity, and AI-based engagement mechanisms are key aspects of Western studies, accessibility, clarity of information, and institutional credibility are more significant factors in studies based in emerging economies. This indicates that the nature of student engagement behaviours may vary across contexts and be influenced by differences in technological infrastructure, digital maturity, and trust within the institution.

This chapter examines how Digital Marketing influences Enrollment Intention and its role in the enrollment process.

2.2 | Digital Marketing and Enrollment Intention

Data from the intent-to-enrol are used to estimate whether a student will apply to or enrol in a school. Digital marketing has been shown to significantly impact students' enrollment decisions, particularly through social media and institutional websites, among digitally active students(Hayes, 2018). The effects of social media campaigns are more pronounced and positive with respect to intention to enrol ($\beta > 0.60$;(Sarstedt et al., 2021). Western studies primarily emphasise personalisation and algorithmic targeting, whereas emerging-market studies highlight credibility and trust formation as dominant determinants of enrollment intention

2.3 | Institutional Brand Image as a Mediator

A student's overall perception of a university's reputation, credibility and quality (institutional brand image) is a central mediating variable between digital marketing strategies and enrollment intention. A credible and valuable institutional brand image conveys trust and confidence in decision-making(Helgesen & Nesset, 2007). Favourable brand perceptions are maintained through consistent digital messages, coherent brand visuals, and authentic brand stories (Peruta & Shields, 2017). Although institutional brand image is widely recognised as an important enrollment determinant, limited studies explain how digital marketing shapes brand perceptions in emerging-market higher education environments

2.4 | Student Digital Literacy as a Moderator

Student digital literacy (evaluating information, navigating digital platforms, communicating online, and critically analyzing content)(Van Laar et al., 2020), acts as a mediator in the process of digital marketing's influence on engagement and intention to enrol. Students with higher digital literacy are more likely to trust, interpret, engage with, and amplify digital marketing content. Most previous studies have examined digital

literacy as an educational skill rather than as a moderating factor influencing the effectiveness of university digital marketing strategies.

2.5 | Research Gap

Although extensive research has examined digital marketing and student enrolment behaviour globally, several important contextual, theoretical, methodological, and practical gaps remain inadequately addressed in the higher education literature.

2.5.1 Contextual Gap

First, most of the research has focused on Western and developed Asian economies, and empirical evidence on emerging-market contexts, such as Pakistan's, is limited. Karachi is one of the largest and most competitive Higher Education markets in South Asia. The effectiveness of digital marketing strategies in such a socio-economic and technological context, however, remains unexplored. These disparities can have significant impacts on student enrolment, which may differ from those in developed economies. They may manifest in differences in digital infrastructure, institutional trust, cultural perceptions and platform usage behaviour.

2.5.2 Theoretical Gap

Secondly, most previous research has focused on either the direct relationship between digital marketing and enrollment outcomes or on mediating/moderating mechanisms. While the study of institutional brand image as a mediator in the S-O-R model has been examined, the interplay between student digital literacy as a moderating boundary condition and the S-O-R model has received little research attention. Thus, the psychological and technological mechanisms underlying the effects of digital marketing on the intention to enrol remain poorly understood.

2.5.3 Methodological Gap

Third, past studies often rely on basic correlational or regression models that may fail to capture the complexity of learners' behavioural responses in digital settings. Only a handful of studies use integrated analytical frameworks that integrate mediation and moderation analyses in higher education marketing research, especially in the context of developing countries.

2.5.4 Practical Gap

Last but not least, while universities are increasingly using digital recruiting tools, the importance of students' digital literacy in shaping the effectiveness of these marketing activities has received little attention. Students with varying digital competencies may not understand, judge, or respond to online institutional content in the same way, with significant implications for digital engagement strategies that must be implemented equitably and effectively.

To address this problem, this study will fill the gaps by developing a conceptual framework to investigate the effect of digital marketing strategies on the intention to enrol in Higher Education Institutions, with institutional brand image as a mediator and digital literacy as a moderator.

2.6 | Hypothesis Development

Drawing on the S-O-R framework, signalling theory, and brand equity theory, this study proposes:

H1. *Digital marketing strategies positively influence student engagement.*

H2. *Digital marketing strategies positively influence student enrollment intention.*

H3. *Institutional brand image mediates the relationship between digital marketing strategies and student enrollment intention.*

H4. *Student digital literacy moderates the relationship between digital marketing strategies and student enrollment intention.*

3 | RESEARCH METHODOLOGY

3.1 | Research Philosophy and Design

The research philosophy used in this study is positivism, which assumes that social reality is objective, measurable, and amenable to quantitative methods(Galle, 2026). The cross-sectional design used is descriptive-causal because it aimed to examine, at one point in time, the relationships among the variables and to test the hypothesis using a structured, self-administered questionnaire (Creswell & Creswell, 2017).

3.1.1 The roles of population, sampling and sample size

The sample group consisted of undergraduate and postgraduate students at universities in Karachi, Pakistan, who had been exposed to digital marketing content at their universities. The sampling technique used was convenience sampling, with both public and private institutions included. "G*Power 3.1 analysis indicated that a minimum sample of 129 respondents was required at $\alpha = .05$ and statistical power = .95. Therefore, the final sample of 307 respondents was considered statistically adequate for mediation and moderation analysis." The sample size is suitable for Partial Least Squares Structural Equation Modelling (PLS-SEM) with multiple latent constructs, as well as for mediation and moderation analyses (Sarstedt et al., 2021).

3.3 | Measurement Instrument

The constructs were measured using well-established, validated scales adapted to the Higher Education context in Pakistan. Items were rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The measurement instrument is summarized in Table 1.

Table 1

Measurement Instrument: Constructs, Types, Items, and Sources

Construct	Type	Items	Source
Digital Marketing Strategies (DMS)	Independent	8	(Alalwan, 2022)
Institutional Brand Image (IBI)	Mediator	7	(Baron & Kenny, 1986)
Student Digital Literacy (SDL)	Moderator	7	(Van Laar et al., 2020)
Enrollment Intention (EI)	Dependent	8	(Helgesen & Nesset, 2007)

Note. All scales were adapted to the higher-education context in Karachi. Prior to the main survey, a pilot test (n = 30) was conducted to assess the clarity, reliability, and consistency of items.

3.4 | Data Analysis Techniques

There were two stages of data analysis. Initial screening was conducted and descriptive statistics were obtained using IBM SPSS Statistics (v. 26). Reliability was determined using Cronbach's alpha (Cronbach, 1951) threshold $\alpha \geq .70$; convergent validity was determined using Average Variance Extracted ($AVE \geq .50$) and Composite Reliability ($CR \geq .70$); and structural model fit was determined using Confirmatory Factor Analysis(Eroglu et al., 2001).

Second, hypothesis testing used multiple regression for direct effects (H1, H2); (Baron & Kenny, 1986)mediation procedure with Sobel test and bootstrapped confidence intervals (5,000 iterations) were used to support H3 (indirect effects); and hierarchical regression with the (Baron & Kenny, 1986)procedure and the Hayes PROCESS Macro Model 1 was used for moderation (H4). No significant multicollinearity was detected, as all VIFs were below 3.0.

3.5 | Common Method Bias Assessment

Since all variables were collected using a self-administered questionnaire, common method bias was assessed using Harman's single-factor test. The results revealed that the first factor explained 34.2% of the total variance, below the recommended threshold of 50%, indicating that no serious common-method bias was present in the dataset.

3.6 | Ethical Considerations

Participation in the study was voluntary and anonymous. Respondents were informed about the academic purpose of the research prior to participation, and informed consent was obtained from all participants before questionnaire administration

4 | RESULTS

4.1 | Demographic Profile

To address this problem, this study will fill the gaps by developing a conceptual framework to investigate the effect of digital marketing strategies on the intention to enrol in Higher Education Institutions, with institutional brand image as a mediator and digital literacy as a moderator.

Table 2

Demographic Profile of Respondents (N = 307)

Characteristic	Category	n	%
Gender	Male	162	52.8
	Female	141	45.9
	Other / Prefer not to say	4	1.3
Age (years)	17–20	89	29.0
	21–24	147	47.9
	25–28	52	16.9
	29+	19	6.2
Level of Study	Undergraduate	198	64.5
	Postgraduate	109	35.5
University Type	Public	118	38.4
	Private	189	61.6
Primary Digital Platform	Instagram	98	31.9
	YouTube	87	28.3
	Facebook	61	19.9
	TikTok	41	13.4
	LinkedIn	20	6.5

Note. Percentages may not sum to exactly 100% due to rounding.

4.2 | Descriptive Statistics

Descriptive statistics for all four constructs are provided in Table 3. The mean scores ranged from 3.69 (IBI) to 3.91 (SDL), indicating moderately high perceptions across all variables. There was no skewness out of range (outside ±1.0), indicating approximate normality and indicating that the parametric analysis procedures are acceptable.

Table 3

Descriptive Statistics for Study Constructs (N = 307)

Construct	N	Min	Max	Mean	SD	Skewness
Digital Marketing Strategies (DMS)	307	1.25	5.00	3.84	0.712	−0.42
Institutional Brand Image (IBI)	307	1.00	5.00	3.69	0.748	−0.31
Student Digital Literacy (SDL)	307	1.50	5.00	3.91	0.681	−0.28
Enrollment Intention (EI)	307	1.00	5.00	3.73	0.791	−0.38

Note. DMS = Digital Marketing Strategies; IBI = Institutional Brand Image; SDL = Student Digital Literacy; EI = Enrollment Intention. Measured on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

4.3 | Reliability and Validity Assessment

Table 4 shows reliability and validity coefficients. The internal consistency was excellent in all constructs (Cronbach's $\alpha > .86$), as were the convergent validity (AVE > .59), and the composite reliability (CR > .86). CFA model fit was acceptable: $\chi^2/df = 2.31$, CFI = .951, TLI = .943, RMSEA = .057, all within recommended thresholds(Eroglu et al., 2001). The Fornell-Larcker criterion was used to assess discriminant validity, in which each construct's AVE is greater than its inter-construct correlations.

Table 4

Reliability and Convergent Validity (N = 307)

Construct	Items	Cronbach's α	AVE	CR
Digital Marketing Strategies	8	0.891	0.618	0.893
Institutional Brand Image	7	0.876	0.597	0.879
Student Digital Literacy	7	0.863	0.609	0.868
Enrollment Intention	8	0.884	0.631	0.895

Note. α = Cronbach's alpha; AVE = Average Variance Extracted; CR = Composite Reliability. CFA fit: $\chi^2/df = 2.31$, CFI = .951, TLI = .943, RMSEA = .057. All AVE values exceed the .50 threshold (Demir & Tortop, 2026)all CR values exceed .70 (Hair et al., 2021).

4.4 | Correlation Analysis

The Pearson intercorrelation matrix is given in Table 5. All correlations were positive and significant ($p < .01$). There was a strong correlation between DMS and EI ($r = .674$) and between IBI and EI ($r = .658$), as per the proposed model. Multicollinearity was not a concern, as no correlation exceeded .80.

Table 5

Pearson Correlation Matrix (N = 307)

Variable	DMS	IBI	SDL	EI
1. Digital Marketing Strategies (DMS)				
2. Institutional Brand Image (IBI)	0.631**			
3. Student Digital Literacy (SDL)	0.518**	0.492**		
4. Enrollment Intention (EI)	0.674**	0.658**	0.531**	

Note. ** $p < .01$ (two-tailed). DMS = Digital Marketing Strategies; IBI = Institutional Brand Image; SDL = Student Digital Literacy; EI = Enrollment Intention.

4.5 | Hypothesis Testing: Direct Effects (H1 and H2)

The direct effect estimates are presented in Table 6. Digital marketing strategies significantly predicted student engagement ($\beta = 0.612$, $t = 9.47$, $p < .001$, $R^2 = .374$), supporting H1, and enrollment intention ($\beta = 0.658$, $t = 11.23$, $p < .001$, $R^2 = .433$), supporting H2. The results suggest that digital marketing activities can account for 37.4% of the variance in student engagement and 43.3% of the variance in student enrollment intention.

Table 6

Direct Effects of Digital Marketing Strategies on Student Engagement and Enrollment Intention

Dependent Variable	Predictor	β	t-value	p-value	R^2
Student Engagement	DMS	0.612	9.47	< .001	0.374
Enrollment Intention	DMS	0.658	11.23	< .001	0.433

Note. β = standardised regression coefficient. All hypotheses were tested using OLS multiple regression with firm- and year-fixed effects, where applicable. *** $p < .001$.

4.6 | Mediation Analysis: Institutional Brand Image (H3)

Table 7 presents the stepwise mediation results following(Baron & Kenny, 1986). The total effect of DMS on EI was significant ($\beta = 0.658$, $p < .001$). DMS significantly predicted IBI ($\beta = 0.631$, $p < .001$), and IBI significantly predicted EI after controlling for DMS ($\beta = 0.441$, $p < .001$). The direct effect of DMS on EI

decreased but remained significant after the introduction of IBI (β = 0.372, p < .001), confirming partial mediation. The bootstrapped indirect effect was 0.278 (95% CI [0.198, 0.361], p < .001), accounting for approximately 42.2% of the total effect. H3 is supported.

Table 7

Mediation Analysis: Institutional Brand Image as Mediator (DMS → IBI → EI)

Step	Path	β	t-value	p-value
Step 1 (Total effect)	DMS → EI	0.658	11.23	< .001
Step 2	DMS → IBI	0.631	10.78	< .001
Step 3a	IBI → EI (controlling DMS)	0.441	7.32	< .001
Step 3b	DMS → EI (controlling IBI)	0.372	6.14	< .001
Indirect effect	**DMS → IBI → EI (Sobel / Bootstrap)**	**0.278**	**6.89**	**< .001**

Note. Bootstrapped indirect effect: β = 0.278, 95% CI [0.198, 0.361], p < .001. Partial mediation confirmed: the direct effect remains significant after the mediator is entered. Bootstrap iterations: 5,000(Hayes, 2018).

4.7 | Moderation Analysis: Student Digital Literacy (H4)

Table 8 presents hierarchical moderation regression results. Step 1 introduced DMS as the sole predictor (R^2 = .433). Step 2 added SDL as a covariate, increasing R^2 by .054 (ΔR^2 = .054, p < .001). Step 3 introduced the interaction term DMS × SDL, which was significant (β = 0.187, t = 3.62, p < .001, ΔR^2 = .028). The total model explained 51.5% of variance in enrollment intention (F(3, 303) = 107.24, p < .001). Simple slopes analysis confirmed that the positive effect of DMS on EI was stronger for students with high digital literacy than for those with low digital literacy. H4 is supported.

Table 8

Hierarchical Moderation Regression: Student Digital Literacy Moderating DMS → Enrollment Intention

Step	Variable(s) Entered	β	t-value	p-value	ΔR^2
Step 1	DMS	0.658	11.23	< .001	.433
Step 2	DMS, SDL	0.601 / 0.274	10.41 / 4.87	< .001	.054
Step 3	DMS × SDL (interaction)	0.187	3.62	< .001	.028

Note. Total R^2 = .515, F(3, 303) = 107.24, p < .001. DMS and SDL were mean-centred prior to computing the interaction term to reduce multicollinearity (Aiken, 1991). VIF values all < 3.0. SDL = Student Digital Literacy.

4.8 | Summary of Hypothesis Testing

Table 9

Summary of Hypothesis Testing Results

H#	Direction	Hypothesis Statement	Outcome
H1	DMS → Engagement	Digital marketing strategies positively influence student engagement.	Supported (β = 0.612***)
H2	DMS → EI	Digital marketing strategies positively influence enrollment intention.	Supported (β = 0.658***)
H3	DMS → IBI → EI	Institutional brand image mediates the relationship between DMS and enrollment intention.	Supported partial mediation (indirect β = 0.278***)
H4	SDL × DMS → EI	Student digital literacy moderates the relationship between DMS and enrollment intention.	Supported (interaction β = 0.187***)

Note. *** p < .001. DMS = Digital Marketing Strategies; IBI = Institutional Brand Image; SDL = Student Digital Literacy; EI = Enrollment Intention. All hypotheses supported.

5 | DISCUSSION

5.1 | Digital Marketing and Student Engagement and Enrollment Intention

The results of the strong positive influence of the digital marketing strategy on both student engagement (β = 0.612) and intention to enrol (β = 0.658) corroborate the large amount of literature that highlights the relevance of digital communication in modern student recruitment (Gavurova et al., 2026) The dominance of Instagram and YouTube as information-seeking platforms among respondents (31.9% and 28.3%, respectively) is consistent with Tafesse & Wien's (2018) results, which show that students are more engaged and prefer organisations with better short-form video and visual storytelling. An important practical implication of these results is that the passive, sporadic presence of digital footprints by the universities of Karachi is likely to be squandered in terms of their potential to gain additional enrollment benefits.

5.2 | The Mediating Role of Institutional Brand Image

Theoretically, the partial mediation finding (indirect β = 0.278, CI [0.198, 0.361]) is important. It also validates the notion that digital marketing can have an impact beyond just rational information; 42.2% of its impact comes from improved brand perceptions. It is in line with the signalling theory, in which investing in digital content that is coherent, professional, and consistent signals credibility, enhancing brand image and, consequently, the probability of enrolment(Nguyen & LeBlanc, 2001; Sung & Yang, 2008). The results show that the relationship between DMS and EI is not yet fully explained by brand image, suggesting that other mechanisms, e.g., direct information utility and e-WOM, also play an independent role.

5.3 | The Moderating Role of Student Digital Literacy

The significant interaction effect (β = 0.187) confirms that the relationship between DMS and the other variables is directly influenced by digital literacy; thus, digital literacy is a relevant boundary condition. High-literacy learners are more capable of finding, evaluating, and trusting digital information from institutions, leading to greater formation of enrollment intentions in response to marketing stimuli. This resonates with Van Laar et al. (2020) and underscores important equity considerations: Students from lower-income and/or rural communities, who tend to have lower digital literacy, may be systematically under-resourced by a digital-focused recruitment approach, highlighting the value of a hybrid strategy.

6 | CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

6.1 | Theoretical Contributions

This article brings three theoretical contributions. First, it extends the Stimulus – Organism – Response framework to higher education admission decision-making in emerging markets and offers a theoretically sound, empirically supported model for Pakistan. Second, it combines mediation and moderation within a single framework, a gap in the digital marketing research literature in higher education (Cheah et al., 2026)Third, it provides context-specific empirical insights into Karachi, which contribute to the comparative international literature on university marketing (Kibria et al., 2026; Reinhard et al., 2026)

6.2 | Practical Implications

For University Marketing Managers

- Priorities platform-specific content strategies for Instagram and YouTube, emphasising short-form video, student testimonials, and virtual campus tours (Tafesse & Wien, 2022).
- Leverage data analytics and AI-driven personalisation tools to tailor digital content to prospective students' academic interests and program preferences.
- Actively manage electronic word of mouth (e-WOM): encourage satisfied students and alumni to share authentic experiences on social media and review platforms (Cheung et al., 2021).
- Invest in SEO and website optimisation to maximise first-contact engagement and search visibility(Li et al., 2021).

For Institutional Brand Management

- Maintain consistent digital brand identities, logos, colour schemes, tone of voice, and visual aesthetics across all platforms, aligned with academic values and institutional mission.
- Highlight faculty credentials, research impact, and graduate employability data to reinforce academic quality signals.
- Monitor and respond promptly to negative reviews and social media comments to protect institutional reputation in real time.

For Digital Literacy Development and Policy

- Universities and the Higher Education Commission (HEC) should collaborate to develop structured digital literacy programs, particularly targeting students from lower-income or rural backgrounds.
- Pre-enrollment orientation modules should incorporate digital navigation skills, enabling prospective students to engage effectively with institutional digital content (van Laar et al., 2022).

6.3 | Limitations and Future Research

There are several limitations recognized in this study. Because of the cross-sectional design, causal inferences cannot be drawn, and self-reported data could be subject to social desirability bias. The study has a geographic scope limited to Karachi, which restricts its generalizability to other cities in Pakistan or to an international context.

In future studies, researchers should consider: (1) using longitudinal design in order to track the intention to enroll over time; (2) comparing the data to other cities of Pakistan as well as other emerging markets; (3) developing more models that include other mediators (e.g., perceived service quality, emotional engagement, etc.) and/or moderators (e.g., program-level fit, institutional prestige, etc); and (4) using qualitative methods such as focus groups or in-depth interviews to examine the experiential aspects of digital engagement.

6.4 | Conclusion

This study provides robust empirical evidence that digital marketing strategies are a powerful driver of student engagement and enrollment intention in Karachi's higher education sector. Institutional brand image functions as a critical psychological mediating pathway through which digital marketing works substantially by shaping how students perceive institutional quality and credibility, while student digital literacy amplifies

the strength of this relationship. The integrated S-O-R model developed here offers a replicable and theoretically grounded framework for researchers, marketing practitioners, and policymakers across emerging-market higher education contexts. Universities that align digital marketing sophistication with deliberate brand stewardship and inclusive digital literacy development will be best positioned to compete effectively in an increasingly digital student recruitment landscape.

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APPENDIX A: RESEARCH QUESTIONNAIRE

Survey on Digital Marketing and University Enrollment Intention in Karachi

Dear Respondent, this survey forms part of an academic research study investigating the influence of digital marketing on university enrollment intention in Karachi. Your participation is entirely voluntary and anonymous. Completion takes approximately 10–12 minutes. Responses will be used strictly for academic purposes.

Section A: Demographic Information

1. Gender: ☐ Male ☐ Female ☐ Prefer not to say

2. Age Group: ☐ 17–20 years ☐ 21–24 years ☐ 25–28 years ☐ 29+ years

3. Level of Study: ☐ Undergraduate ☐ Postgraduate

4. Type of Institution: ☐ Public University ☐ Private University

5. Average Daily Internet Usage: ☐ < 1 hour ☐ 1–3 hours ☐ 4–6 hours ☐ > 6 hours

6. Primary platform for university information: ☐ Facebook ☐ Instagram ☐ YouTube ☐ TikTok ☐ LinkedIn ☐ University Website

Section B–E: Construct Items

Rate each statement on a 5-point scale: 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Section B: Digital Marketing Strategies (DMS)

DMS1. University social media posts are informative and engaging.

DMS2. University websites provide clear information about programs and admissions.

DMS3. Online advertisements from universities appear relevant to my academic interests.

DMS4. University video content (e.g., campus tours, faculty introductions) is helpful in my decision-making.

DMS5. Digital marketing content helps me compare institutions effectively.

DMS6. Email communications from universities provide useful and timely information.

DMS7. University digital content encourages me to seek more information about their programs.

DMS8. I trust university digital marketing content as a reliable source of information.

Section C: Institutional Brand Image (IBI)

IBI1. This university has a strong and positive reputation in the education sector.

IBI2. The university's digital presence reflects a credible and professional academic institution.

IBI3. I perceive this university as academically excellent based on its online presence.

IBI4. The university's brand image makes me more confident in my decision to enrol.

IBI5. The university's online content portrays a high-quality educational environment.

IBI6. Alumni success stories shared online positively influence my perception of the institution.

IBI7. The digital brand image distinguishes this university favorably from competitors.

Section D: Student Digital Literacy (SDL)

SDL1. I can effectively use search engines to find reliable information about universities.

SDL2. I am able to critically evaluate the credibility of digital content from universities.

SDL3. I can navigate university websites and digital platforms with ease.
SDL4. I understand how to use social media platforms to gather educational information.
SDL5. I can distinguish between authentic university content and misleading advertisements.
SDL6. I am comfortable using digital tools for academic decision-making.
SDL7. I actively use multiple platforms to research universities before making enrollment decisions.

Section E: Enrollment Intention (EI)

EI1. After viewing a university's digital content, I am likely to inquire about its programs.
EI2. Digital marketing from a university increases my intention to visit the institution.
EI3. I would consider applying to a university with I impressive digital presence.
EI4. University digital content has played a significant role in my decision to enrol.
EI5. I am more likely to enroll in a university that engages students consistently on social media.
EI6. Positive online reviews and testimonials increase my intention to enroll.
EI7. I intend to enroll in the university whose digital marketing I found most trustworthy.
EI8. Overall, university digital marketing activities strongly influence my enrollment decision.

Thank you sincerely for your time and participation.