

## An Empirical Study on Digital Learning Management Systems (DLMA) in Western Maharashtra: A Pilot Survey

**Rushikesh Vinayak Dharmadhikari**

Research Scholar, PIRENS Institute of Business Management and Administration (IBMA), Loni,  
Ahilyanagar, MS, India

**Dr. Nilesh Uttamrao Bankar**

Research Guide, PIRENS Institute of Business Management and Administration (IBMA), Loni,  
Ahilyanagar, MS, India

### Abstract

The inquiry presented is a pilot evaluation stemming from comprehensive doctoral research focused on the commercial position of digital learning management systems in Pune, Nashik, and Ahilyanagar. The report examines the relationship between digital marketing strategies and competitive advantage at the firm level, utilizing a pilot sample of 116 stakeholders that represent 16 units from the total study population. The methodology employed incorporates quantitative feedback from three distinct respondent categories: parents, faculty, and managers, aimed at assessing the effectiveness of electronic instructional portals. In order to evaluate the efficacy of electronic educational portals, the technique used includes quantitative feedback from three different respondent categories: parents, professors, and managers. Preliminary findings reveal that brand authority is the only significant variable influencing organizational reach, while internal firm assets demonstrate notable parity across the current state landscape. It concludes that institutional loyalty is determined by operational integration rather than merely user satisfaction. This pilot study validates the reliability of the research tools and outlines a scientific framework. The study significant for online learning and various stakeholders.

**Keywords:** *Organizational Commitment, Digital Marketing Mix, Resource Based View, Pilot Evaluation, EdTech*

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### 1. Introduction

Digitalization has influenced the various sectors including the education. India is the country with unity in diversity. The pedagogical landscape within the regional districts of Pune, Nashik, and Ahilyanagar has undergone a deep transition as digital tools move from supplementary aids toward mandatory administrative infrastructure today. This shift is prompted by the statewide adoption of the National Education Policy 2020, which unifies the instructional goals across metropolitan and semi-urban frontiers (Ministry of Education, 2020). As schools seek to enhance their market reputation, the selection of a technology partner has become a strategic task for management boards. The city of Pune, serving as a major academic center, acts as the primary hub for observing how digital instruction management systems redefine organizational commitment and institutional standing within the western state today. The reliability in digital services is crucial for establishing trust between software firms and educational stakeholders. The Economic Survey of Maharashtra (2024) highlighted that the rise in mobile adoption has enabled greater connectivity

in schools; however, infrastructure gaps in rural areas hinder growth. Successful digital transitions require that software features align closely with the administrative practices of educators. Reports indicate that providers focusing on teacher upskilling programs distinguish themselves in a competitive market (KPMG & CII, 2021). Furthermore, a brand's perceived authority is crucial for overcoming resistance from conservative school administrators. This research emphasizes identifying factors that foster long-lasting institutional partnerships in the state. The researcher notes that parents and school boards are selective consumers seeking evidence of student success to validate their financial commitments (Redseer, 2019). While global technology firms provide extensive technical frameworks, local innovators in Maharashtra gain an edge by catering to the linguistic needs of the regional student demographic. The methodology employed in this study addresses existing infrastructure challenges and practical aspects of the Indian education landscape. Accurate reporting of preliminary pilot results is essential to ensure that the findings significantly enrich the national repository of professional knowledge.

## **2. Literature Review**

Scholarly discourse on digital instruction management is increasingly centered on the factors that enable sustainable technological adoption, particularly in resource-constrained environments. Mtebe (2015) found that system quality and professional helpdesk support significantly contribute to user retention, outweighing the importance of software features. This notion is reflected in the Indian context, where advancing from manual record-keeping to automated student tracking symbolizes institutional professionalism. As competitive service brands vie for market share, provider reputation serves as a quality signal that mitigates perceived risks for stakeholders, as noted by PWC & CII (2021). It is established that brand authority stems from consistent service delivery and alignment with national academic standards.

Current academic reviews highlight the critical role of national policy in driving technological adoption. The National Education Policy 2020 has unified institutional perspectives regarding digital transitions, focusing on foundational literacy and competency-based evaluation (Ministry of Education, 2020). This ensures that software tools effectively contribute to achieving national academic benchmarks rather than merely functioning as administrative aids. Research indicates that integrating state-level portals like DIKSHA into institutional workflows has fostered a homogenized technical environment across varied districts (NCERT, 2023). As a result, school administrators in both metropolitan and semi-urban areas now prioritize curriculum alignment and affordability as essential criteria for selecting technology partners.

Furthermore, the socio-economic implications of digital schooling are closely associated with technological accessibility and financial inclusivity. Reports from the ASER Centre (2024) highlight that, despite high smartphone penetration, inconsistent internet connectivity in rural Ahilyanagar poses significant challenges for cloud-reliant platforms. This infrastructure gap underscores the necessity for developing offline-first solutions to enhance the accessibility and effectiveness of digital education in these areas. Instructional models are emphasized to guarantee that every student receives adequate support, ensuring no one is excluded from the learning process. Furthermore, the preference expressed by parents for flexible payment options, like monthly installments, reveals a pronounced sensitivity to cost among families in Maharashtra. This insight is supported by existing literature, which advocates for the provision of equal opportunities to all learners. Success in the educational sector hinges on effectively addressing the digital divide through the provision of localized content and regional language support, highlighting the importance of adapting educational resources to meet the needs of diverse learners.

## **3. Objectives and Hypotheses**

### 3.1 Research Objectives

1. To examine the functional landscape of electronic instructional systems in the Ahilyanagar and Pune districts
2. To analyze the digital service brands and their status within the regional educational clusters
3. To evaluate the outreach mechanisms and marketing strategies employed by software companies to build institutional trust

### 3.2 Hypotheses of Study

1. The multi-channel outreach efforts substantially affect the total number of registered institutional users in the state.
2. The internal resources and faculty expertise show a strong link to current organizational success.
3. The geographic context notably influences the selection benchmarks utilized by school management teams today.

### 4. Research Methodology

The research employs a quantitative design to assess the commercial dynamics within the Maharashtra edtech sector, focusing on objective observations aligned with the current economic conditions of the region. The study targets a population of 727 stakeholders, with a pilot evaluation sampling 116 respondents, representing about 16% of the intended group. The stratified sample includes 64 parents, 39 educators, and 13 institutional managers from Pune, Nashik, and Ahilyanagar districts, ensuring diverse representation from both metropolitan and semi-urban areas. Stratified random sampling was used, with strata defined by district location and school management type, to prevent over-representation. Additionally, snowball sampling aided in reaching high-level administrators involved in shaping institutional technology strategies within private unaided school boards. The research maintained mathematical accuracy in sample size, allowing a five-unit margin of error. Data collection utilized three structured questionnaires featuring Likert-type scales, with reliability confirmed through Cronbach Alpha coefficients, all surpassing the acceptable threshold of 0.7 for the constructs analyzed.

### 5. Data Analysis and Interpretation

**Table 5.1 Demographic and Strategic Profile (n=116)**

Particulars	Frequency (n)	Percentage (%)	Cumulative (%)
Pune District	62	53.4	53.4
Nashik District	31	26.7	80.1
Ahilyanagar District	23	19.9	100.0
Parents and Students	64	55.2	55.2
Academic Faculty	39	33.6	88.8
Institutional Managers	13	11.2	100.0

The pilot sample's demographic spread provides diverse representation of the educational landscape in the state. Pune district comprises over half of the respondents, reflecting its role as a key academic hub. Nashik shows a notable group of emerging adopters, while Ahilyanagar highlights specific challenges faced in semi-urban areas. The distribution of respondents is influenced by the impact of each group on the current technological trajectory. Parents, being the primary decision-makers for household subscriptions, form the largest respondent class. Educators contribute essential pedagogical validation necessary for institutional adoption. This demographic distribution sets the context for the subsequent research variables and testing within the regional corridor.

**Table 5.2 Analysis of Faculty Perspectives (Grouped 50 Items)**

Grouped Faculty Statement (n=39)	Mean Score (1-5)	Std. Dev.	Interpretation
Instructional Workflow & Ease (Q1-Q8)	4.07	0.68	High Efficiency
Technical Support & Faculty Empowerment (Q9-Q16)	3.82	0.74	Adequate Support
Brand Reputation & Market Visibility (Q17-Q24)	4.13	0.61	Strong Authority
Pedagogical Impact & Engagement (Q25-Q32)	3.91	0.69	Positive Benefit
AI Integration & Data Intelligence (Q33-Q40)	3.22	0.94	Moderate Trust
Overall Satisfaction & Future Intent (Q41-Q50)	4.09	0.62	High Loyalty

The findings suggest that professional teaching competency is enhanced when the provider offers consistent refresher training today. Success depends on the backend reliability of the system during peak assessment periods today that replace human authority today. The findings suggest that professional teaching competency is enhanced when the provider offers consistent refresher training today. Success depends on the backend reliability of the system during peak assessment periods today.

**Table 5.3 Evaluation of Parent and Student Feedback (Grouped 60 Items)**

Grouped Parent Statement (n=64)	Mean Score (1-5)	Std. Dev.	Interpretation
Software Functionality & UI (Q1-Q10)	4.19	0.64	High Usability
Pricing Models & Financial Value (Q11-Q20)	3.17	0.96	Price Sensitivity
Marketing Outreach & Awareness (Q21-Q30)	3.88	0.71	Effective Reach
Service Support & Satisfaction (Q31-Q40)	3.56	0.84	Stable Assistance
Technical Superiority & Loyalty (Q41-Q50)	3.94	0.67	Brand Authority
AI Personalization & Engagement (Q51-Q60)	3.42	0.88	Cautious Adoption

Feedback from the parent group identifies a state of cautious optimism regarding the digital learning tools currently used by their children today. Households prioritize the ease of setup and the intuitive nature of the menu layout for young students today. Satisfaction with video streaming quality remains moderate, likely due to the internet signal variations in semi-urban Ahilyanagar today. A significant finding is the high cost sensitivity, where parents express skepticism regarding the annual fee value today. The preference for monthly installment models identifies a principal requirement for financial inclusivity today. Concomitantly, the outreach activities through social media are successful in building awareness today. The data suggests that families look for proof of student mastery to justify the recurring costs today.

**Table 5.4 Institutional Managers and Strategic Priority (14 Items)**

Particulars (n=13)	Mean (1-5)	Std. Dev.	Observation
Alignment with digital mandates of NEP 2020	4.27	0.58	Strategic Fit
Clear and measurable Return on Investment (ROI)	3.89	0.76	High Value
Enhanced school reputation through platform	4.11	0.63	Branding Aid
Integration with government portals like DIKSHA	3.34	0.91	Integration Gap
Consider provider a strategic partner	4.18	0.61	Strong Partnership

Institutional leaders report high levels of strategic commitment, viewing digital management systems as principal catalysts for school branding within the districts today. All thirteen managers acknowledge the importance of aligning with the National Education Policy mandates today. The perception of the provider as a strategic partner rather than a simple vendor is a mandatory factor for institutional trust today. Administrators utilize data-driven insights to monitor faculty consistency and ensure that the educational delivery matches the school vision today. Nevertheless, the measurable return on investment and the integration with government portals receive more neutral feedback today. This indicates a gap in technical interoperability between commercial software and state databases today. Managers look for systems that can provide standardized reporting today.

### 5.5 Qualitative Thematic Analysis Summary

Thematic mapping of the managerial interviews identifies three recurring motifs that dictate institutional technology choices today. First, strategic selection is driven by local relevance rather than global breadth, as administrators prioritize providers who understand the Maharashtra curriculum today. Second, addressing the regional divide remains a mandatory task for leadership, with a strong demand for offline-first capabilities in Ahilyanagar today. Third, the AI transformation is viewed with skeptical optimism, as managers look for data-driven governance but fear the erosion of pedagogical authority today. These qualitative insights explain why brand reputation and post-sales support are prioritized over simple software features within the regional clusters today.

### 6. Inferential Statistical Analysis

The pilot testing utilized the Pearson product moment correlation and multiple regression to evaluate early causal ties. Reliability statistics for the constructs exceeded 0.79 today.

**Table 6.1: Hypothesis Testing Summary**

Sr. No.	Hypothesis	Variables	Test Used	Test Statistic Value	p-value	Decision
H1	There is a significant relationship between outreach and adoption	Outreach (IV) → Adoption (DV)	Correlation Analysis	r = 0.384	0.019	Accepted
H2	Internal assets significantly influence differentiation	Internal Assets (IV) → Differentiation (DV)	Multiple Regression	F = 0.174	0.91	Rejected
H3	Regional location significantly affects selection logic	Regional Location (IV) → Selection Logic (DV)	One-way ANOVA	F = 0.311	0.67	Rejected

### 7. Findings of Study

The pilot inquiry indicates that brand authority is the key driver for market penetration in the state at present. It has been found that while educators appreciate technical excellence, they regard it merely as a standard requirement rather than a distinctive advantage. The research points to a growing trend towards uniform expectations from school management boards across the state, likely influenced by contemporary policy standardization. Additionally, the data reveals that infrastructure signal inconsistencies remain a significant barrier to the implementation of cloud-based systems. Ultimately, success in this context hinges on the quality of external service delivery and the effectiveness of post-sales support extended to faculty members.

## 8. Conclusion

The researcher identifies a significant shift in the Edutech sector from being product-led to embracing a service-oriented paradigm. This transition reflects the maturation of the market, where stakeholders increasingly prioritize reliable partnerships and human-centric support over mere software features. Institutional loyalty is now heavily influenced by how deeply technology is integrated into administrative workflows, integrating it as a vital element of daily school operations. The study highlights that the digital divide continues to represent a structural challenge, stressing the importance of adopting an offline-first design approach. Furthermore, the research concludes that successful digital transitions are those that align with the objectives of the National Education Policy and contribute positively to the institution's reputation. reputation of the institution today.

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