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Analysis of Technology and Organizational Readiness for Cloud-Based LMS Implementation in Higher Education

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ABSTRACT

This study examines the technological and organizational readiness of higher education institutions in Indonesia for the implementation of a cloud-based Learning Management System (LMS). A quantitative approach with a cross-sectional survey design was employed involving 155 respondents consisting of lecturers, academic and administrative staff, information technology personnel, and academic managers. Data were collected using a structured questionnaire measured on a five-point Likert scale and analyzed using IBM SPSS Statistics version 25. The analysis included descriptive statistics, validity and reliability tests, classical assumption tests, Pearson correlation, and multiple linear regression. The results indicate that technological readiness was categorized as high, with a mean score of 4.03, while organizational readiness recorded a mean score of 3.91. Overall cloud-based LMS implementation readiness also reached a high level, with a mean score of 3.98. Technological readiness had a positive and significant effect on LMS implementation readiness, while organizational readiness demonstrated a stronger significant effect. Together, both dimensions explained 61.5% of the variance in implementation readiness (R^2 = 0.615). These findings indicate that successful cloud-based LMS implementation requires not only adequate technological infrastructure but also strong managerial commitment, institutional policies, human resources, training, financial support, and inter-unit coordination.

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1. INTRODUCTION

Digital transformation has become a strategic imperative for higher education institutions as teaching, learning, academic administration, and student services increasingly rely on interconnected digital technologies. Within this transformation, Learning Management Systems (LMS) have evolved from supplementary instructional tools into critical components of institutional digital infrastructure, supporting course delivery, assessment, communication, learning analytics, and academic continuity [1], [2]. The increasing scale and complexity of digital learning have simultaneously encouraged higher education institutions to reconsider the technological architecture through which LMS platforms are operated.

Cloud computing has emerged as a particularly relevant alternative because it enables institutions to access scalable computing resources, centralized services, flexible storage, and remotely accessible applications without relying exclusively on locally maintained infrastructure [3], [4]. Consequently, cloud-based LMS platforms offer potential advantages in scalability, accessibility, resource optimization, system maintenance, and service continuity, particularly for institutions experiencing rapid growth in digital learning activities.

However, the technological advantages of cloud-based LMS do not automatically translate into successful institutional implementation. The effectiveness of such systems depends substantially on whether higher education institutions possess the technological capacity required to integrate, operate, secure, and maintain cloud-supported learning environments. Technological readiness therefore encompasses more than the availability of computers or internet connections; it involves network reliability, system compatibility, cybersecurity mechanisms, data management capability, technical expertise, application integration, accessibility, and the institution's capacity to maintain stable digital services [5], [6]. Weaknesses in these areas may generate system interruptions, integration failures, security vulnerabilities, limited accessibility, and declining user confidence. These concerns are especially consequential in higher education because technological disruptions can directly affect teaching continuity, assessment processes, academic administration, and student access to learning resources [7], [8]. Assessing technological readiness is therefore a prerequisite for understanding whether an institution can sustainably adopt a cloud-based LMS rather than merely acquire the technology.

Institutional preparedness, nevertheless, cannot be understood solely from a technological perspective because cloud-based LMS implementation represents an organizational transformation as much as a technological intervention. The adoption of an LMS can alter teaching practices, administrative procedures, information flows, staff responsibilities, communication structures, and relationships among lecturers, students, technical personnel, and institutional management [9], [10]. Organizational readiness consequently reflects an institution's collective capacity and willingness to accommodate these changes through management commitment, leadership support, institutional policies, financial resources, staff competence, training, technical assistance, communication mechanisms, and organizational openness toward innovation. Even institutions with sophisticated technological infrastructure may experience fragmented implementation when users lack competence, responsibilities are poorly defined, institutional policies remain unclear, or management support is insufficient. Conversely, strong organizational commitment cannot compensate indefinitely for unreliable connectivity, inadequate technical infrastructure, weak cybersecurity, or insufficient system integration [11], [12]. Cloud-based LMS implementation therefore requires alignment between technological capability and organizational preparedness.

This alignment is particularly relevant in the Indonesian higher education sector, which is characterized by substantial heterogeneity in institutional size, geographical location, financial capacity, governance structures, digital maturity, and access to information technology resources. Institutions operating in major urban areas may possess relatively advanced infrastructure and specialized technical personnel, whereas universities in other regions may encounter greater constraints in connectivity, system maintenance, technical expertise, and investment capacity. Such disparities imply that institutional readiness for cloud-based LMS implementation is unlikely to be uniform across the higher education system. More importantly, the presence of an LMS itself should not be interpreted as evidence of digital readiness [13], [14]. Institutions may formally adopt digital platforms while continuing to

experience limited system integration, inconsistent utilization, inadequate staff preparation, or insufficient organizational support. These conditions make the Indonesian context theoretically and practically important for examining how technological and organizational capabilities jointly shape institutional preparedness for cloud-supported learning.

Despite the growing literature on LMS and educational technology adoption, existing research has predominantly examined technology from the perspective of individual users, emphasizing constructs such as perceived usefulness, perceived ease of use, behavioral intention, student satisfaction, lecturer acceptance, engagement, and learning outcomes. Although this literature has generated valuable knowledge regarding individual responses to digital learning technologies, user acceptance alone does not establish whether an institution possesses the structural, technical, managerial, and human-resource capacity required to sustain a cloud-based LMS. A student or lecturer may perceive an LMS positively even when the institution supporting the platform faces inadequate infrastructure, weak system governance, limited technical support, or insufficient organizational resources. This distinction reveals an important analytical gap between technology acceptance and institutional readiness. Moreover, technological and organizational readiness are often examined separately, limiting understanding of their complementary role in institutional digital transformation. The present study addresses this gap by positioning cloud-based LMS implementation as an institutional-readiness problem in which technological capability and organizational preparedness constitute interconnected conditions for sustainable implementation.

Accordingly, this study examines technological and organizational readiness for cloud-based LMS implementation in Indonesian higher education institutions. It contributes to the literature in three principal ways. First, it shifts the analytical level from individual technology acceptance toward institutional preparedness, thereby extending the discussion of LMS adoption beyond user perceptions and behavioral intentions. Second, it integrates technological and organizational readiness within a common analytical framework, allowing institutional preparedness to be understood as the alignment of technical infrastructure, digital capabilities, managerial support, human resources, and organizational mechanisms rather than as a single-dimensional condition. Third, it provides context-specific empirical evidence from Indonesian higher education, where institutional heterogeneity makes readiness assessment particularly consequential for sustainable digital transformation. The findings are expected to provide an empirical basis for identifying readiness gaps and informing institutional priorities related to infrastructure, cybersecurity, integration, human-resource development, leadership support, and digital learning governance. On this basis, the study addresses three research questions: (1) What is the level of technological readiness for cloud-based LMS implementation in Indonesian higher education institutions? (2) What is the level of organizational readiness for cloud-based LMS implementation? and (3) How do technological and organizational readiness contribute to institutional preparedness for cloud-based LMS implementation?

2. LITERATURE REVIEW

2.1 Cloud-Based Learning Management Systems in Higher Education

Learning Management Systems (LMS) have become a core component of digital learning in higher education, supporting access to learning materials, assignments, assessments, communication, and academic monitoring. The development of cloud computing has further transformed LMS deployment by enabling applications,

storage, servers, and networks to be accessed on demand with greater scalability and reduced dependence on locally maintained infrastructure [15], [16]. Cloud-based LMS can therefore provide greater accessibility, flexibility, reliability, and resource efficiency for institutions facing fluctuating academic demands [3], [4]. However, successful implementation depends not only on technological functionality but also on system compatibility, security, data management, technical competence, institutional policies, financial resources, and organizational capacity [1], [17]. Thus, cloud-based LMS adoption should be understood as an institutional innovation process that requires alignment between technological infrastructure and organizational preparedness.

2.2 *Technology–Organization–Environment Framework*

The theoretical foundation of this study is the Technology–Organization–Environment (TOE) framework developed by [18], [19], which explains organizational technology adoption through technological, organizational, and environmental contexts. TOE is appropriate because cloud-based LMS implementation occurs at the institutional level and depends not only on technological characteristics but also on internal resources, management support, infrastructure, skills, and organizational capacity [18], [19]. Previous studies on cloud adoption in higher education also confirm the importance of technology readiness and organizational capability in supporting implementation [18], [19]. However, this study focuses specifically on technological readiness and organizational readiness because its objective is to assess internal institutional preparedness, while environmental factors remain outside the primary scope of analysis.

2.3 *Technological Readiness*

Technological readiness refers to an institution's capacity to support cloud-based LMS implementation through adequate infrastructure, connectivity, system compatibility, security, technical support, and digital competence. Effective readiness requires more than hardware availability, as institutions must ensure reliable internet access, integration with existing academic systems, data protection, system accessibility, and sufficient technical expertise [20], [21]. Previous research also highlights the importance of technological skills and equipment capability in supporting e-learning readiness [20], [21]. Accordingly, technological readiness in this study reflects the extent to which an institution possesses a stable, secure, integrated, and technically capable digital environment to sustain cloud-based LMS implementation.

2.4 *Organizational Readiness*

Organizational readiness refers to an institution's collective capacity and commitment to support the organizational changes required for cloud-based LMS implementation. Beyond technological capability, successful implementation

depends on top management support, strategic alignment, institutional policies, adequate financial and human resources, staff training, communication, coordination, and continuous technical assistance [22], [23]. Evidence from higher education also shows that leadership, organizational commitment, and digital culture are important components of readiness for LMS-related transformation [13], [24], [25]. Accordingly, organizational readiness in this study reflects the extent to which an institution possesses the managerial, human, financial, and organizational capacity necessary to implement and sustain a cloud-based LMS effectively.

3. METHODS

3.1 Research Design

This study employed a quantitative cross-sectional survey design to assess the technological and organizational readiness of Indonesian higher education institutions for cloud-based Learning Management System (LMS) implementation. The analysis focused on two dimensions: Technological Readiness (TR), covering infrastructure, connectivity, compatibility, security, technical competence, and support; and Organizational Readiness (OR), encompassing management commitment, institutional policies, human and financial resources, training, communication, coordination, and organizational support. Descriptive analysis was used to determine readiness levels, while inferential statistical analysis examined the relationships between the variables and their contribution to overall institutional readiness.

3.2 Research Population and Sample

The study involved 155 respondents affiliated with Indonesian higher education institutions who were engaged in teaching, academic administration, digital learning management, or information technology activities. Respondents were selected using purposive sampling based on their experience with LMS or other digital learning platforms and their ability to assess relevant technological and organizational conditions. This sampling technique was considered appropriate because the study required participants with sufficient knowledge to provide informed evaluations of institutional readiness for cloud-based LMS implementation.

3.3 Research Variables

This study examined Technological Readiness (TR), Organizational Readiness (OR), and Cloud-Based LMS Implementation Readiness (LMSR). Technological Readiness reflects the institution's technological capacity and was measured through ICT infrastructure, internet reliability, hardware and software availability, system compatibility, accessibility, data security, system reliability, technical personnel, and technical support. Organizational Readiness represents the institution's managerial, financial, structural, and human resource capacity, measured through management support, digital learning policies, financial resources, qualified personnel, training, communication, coordination, openness to technological change, and institutional support mechanisms. Cloud-Based LMS Implementation Readiness reflects the institution's overall preparedness to adopt, operate, and sustain a cloud-based LMS, including perceived implementation capacity, adequacy of institutional resources, ability to manage technological transition, and sustainability of system utilization.

Table 1. Operational Definition

Variable	Dimension/Indicators	Measurement
Technological Readiness (TR)	ICT infrastructure	Likert 1–5
	Internet connectivity	Likert 1–5

	Hardware and software availability	Likert 1–5
	System compatibility and integration	Likert 1–5
	System accessibility	Likert 1–5
	Data security and privacy	Likert 1–5
	System reliability	Likert 1–5
	Technical competence	Likert 1–5
	Technical support	Likert 1–5
Organizational Readiness (OR)	Management commitment	Likert 1–5
	Institutional policy and strategy	Likert 1–5
	Financial resource availability	Likert 1–5
	Human resource readiness	Likert 1–5
	Training and development	Likert 1–5
	Internal communication	Likert 1–5
	Inter-unit coordination	Likert 1–5
	Organizational openness to change	Likert 1–5
	Institutional support	Likert 1–5
Cloud-Based LMS Implementation Readiness (LMSR)	Overall institutional preparedness	Likert 1–5
	Implementation capability	Likert 1–5
	Resource adequacy	Likert 1–5
	Ability to manage transition	Likert 1–5
	Sustainability of LMS implementation	Likert 1–5

3.4 Data Collection Procedure

Data were collected through a structured electronic survey distributed to eligible respondents from higher education institutions in Indonesia. Participants were informed about the study objectives, voluntary participation, and confidentiality before completing the questionnaire. All responses were screened for completeness and consistency, resulting in 155 valid responses for final analysis. The data were then coded numerically and processed using IBM SPSS Statistics version 25.

3.5 Data Analysis Technique

Data were analyzed using IBM SPSS Statistics version 25 through descriptive and inferential statistical procedures [26]. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize respondent characteristics and readiness levels. Instrument quality was assessed using item-total correlation with a validity threshold of > 0.30 and Cronbach's Alpha with a reliability threshold of ≥ 0.70. Regression assumptions were evaluated through normality, multicollinearity (Tolerance > 0.10; VIF < 10), and heteroscedasticity tests. Pearson correlation analysis was used to examine relationships among Technological Readiness (TR), Organizational Readiness (OR), and Cloud-Based LMS Implementation Readiness (LMSR), while multiple linear regression ($LMSR = \alpha + \beta_1 TR + \beta_2 OR + \varepsilon$) assessed the effects of TR and OR on LMSR. Hypotheses were tested using the t-test for individual effects and the F-test for simultaneous effects at $p < 0.05$, while R^2 and Adjusted R^2 were used to evaluate the model's explanatory power.

4. RESULTS AND DISCUSSION

4.1 Respondent Characteristics

A total of 155 valid respondents from various professional roles in Indonesian higher education institutions were included in the analysis. Their demographic and professional characteristics are presented in Table 2.

Table 2. Respondent Characteristics

Characteristic	Category	Frequency	Percentage (%)

Gender	Male	82	52.9
	Female	73	47.1
Age	≤ 30 years	31	20.0
	31–40 years	58	37.4
	41–50 years	42	27.1
	> 50 years	24	15.5
Position	Lecturer	76	49.0
	Academic/Administrative Staff	31	20.0
	IT Personnel	25	16.1
	Academic Manager/Other	23	14.8
Institution Type	Public Higher Education Institution	69	44.5
	Private Higher Education Institution	86	55.5
LMS Experience	≤ 2 years	34	21.9
	3–5 years	67	43.2
	> 5 years	54	34.8
Total		155	100.0

The 155 respondents were relatively balanced by gender, with 52.9% male and 47.1% female. Most were aged 31–40 years (37.4%) and worked as lecturers (49.0%). Respondents were drawn from both private (55.5%) and public (44.5%) higher education institutions, while the majority had 3–5 years of LMS experience (43.2%), followed by more than five years (34.8%), indicating that most participants had sufficient familiarity with digital learning systems.

4.2 Validity and Reliability of the Research Instrument

Instrument validity and reliability were assessed using Corrected Item-Total Correlation (> 0.30) and Cronbach's Alpha (> 0.70), with the results presented in Table 3.

Table 3. Validity and Reliability Test Results

Variable	Items	Corrected Item-Total Correlation	Cronbach's Alpha	Result
Technological Readiness (TR)	9	0.561–0.781	0.903	Valid and Reliable
Organizational Readiness (OR)	9	0.548–0.806	0.916	Valid and Reliable
LMS Implementation Readiness (LMSR)	5	0.629–0.794	0.887	Valid and Reliable

Table 3 confirms that all measurement constructs demonstrated satisfactory validity and reliability. The Corrected Item-Total Correlation values ranged from 0.561–0.781 for Technological Readiness, 0.548–0.806 for Organizational Readiness, and 0.629–0.794 for LMS Implementation Readiness, all exceeding the recommended threshold of 0.30. In addition, Cronbach's Alpha coefficients were 0.903, 0.916, and 0.887, respectively, indicating strong internal consistency. These results demonstrate that all questionnaire items adequately measured their intended constructs and were sufficiently reliable for subsequent statistical analysis.

4.3 Descriptive Analysis of Research Variables

Descriptive statistics were used to assess readiness levels, with mean scores of 3.41–4.20 classified as high and 4.21–5.00 as very high readiness, as presented in Table 4.

Table 4. Descriptive Statistics of Research Variables

Variable	N	Min	Max	Mean	Std. Deviation	Category

Technological Readiness	155	2.44	5.00	4.03	0.56	High
Organizational Readiness	155	2.33	5.00	3.91	0.59	High
LMS Implementation Readiness	155	2.40	5.00	3.98	0.55	High

All three variables demonstrated a high level of readiness, with mean scores of 4.03 for Technological Readiness, 3.91 for Organizational Readiness, and 3.98 for LMS Implementation Readiness. Technological Readiness recorded the highest mean, indicating that institutional technological capacity was slightly stronger than organizational preparedness.

Table 5. Mean Scores of Readiness Indicators

Variable	Indicator	Mean	Interpretation
Technological Readiness	ICT Infrastructure	4.11	High
	Internet Connectivity	3.94	High
	Hardware and Software Availability	4.05	High
	System Compatibility and Integration	3.90	High
	LMS Accessibility	4.18	High
	Data Security and Privacy	3.88	High
	System Reliability	4.02	High
	Technical Competence	4.06	High
	Technical Support	4.13	High
Overall Technological Readiness		4.03	High
Organizational Readiness	Management Commitment	4.12	High
	Institutional Policy and Strategy	3.95	High
	Financial Resource Availability	3.72	High
	Human Resource Readiness	3.89	High
	Training and Development	3.84	High
	Internal Communication	3.90	High
	Inter-unit Coordination	3.97	High
	Organizational Openness to Change	4.02	High
	Institutional Support	3.78	High
Overall Organizational Readiness		3.91	High
LMS Implementation Readiness	Overall Institutional Preparedness	4.01	High
	Implementation Capability	3.96	High
	Resource Adequacy	3.91	High
	Ability to Manage Transition	3.94	High
	Sustainability of Implementation	4.08	High
Overall LMS Implementation Readiness		3.98	High

Table 5 indicates consistently high readiness across all indicators. Technological Readiness achieved an overall mean of 4.03, with LMS accessibility scoring highest (4.18) and data security and privacy lowest (3.88). Organizational Readiness recorded an overall mean of 3.91, led by management commitment (4.12), while financial resource availability was the weakest indicator (3.72). LMS Implementation Readiness also remained high (3.98), with sustainability of implementation scoring highest (4.08) and resource adequacy lowest (3.91). Overall, the results suggest that institutions are relatively well prepared technologically and organizationally, although financial resources, institutional support, and data security remain areas requiring further strengthening.

4.4 Classical Assumption Tests

Before multiple linear regression analysis was performed, several classical assumptions were examined, including normality, multicollinearity, and heteroscedasticity.

Table 6. Classical Assumption Test Results

Test	Indicator	Result	Criterion	Interpretation
Normality	Kolmogorov–Smirnov Sig.	0.200	> 0.05	Normal
Multicollinearity – TR	Tolerance	0.616	> 0.10	No Multicollinearity
	VIF	1.623	< 10.00	No Multicollinearity
Multicollinearity – OR	Tolerance	0.616	> 0.10	No Multicollinearity
	VIF	1.623	< 10.00	No Multicollinearity
Heteroscedasticity – TR	Glejser Sig.	0.284	> 0.05	No Heteroscedasticity
Heteroscedasticity – OR	Glejser Sig.	0.361	> 0.05	No Heteroscedasticity
Autocorrelation	Durbin–Watson	1.947	Approximately 2	No indication of problematic autocorrelation

Table 6 confirms that the regression model satisfied the classical assumptions. The Kolmogorov–Smirnov significance value of 0.200 indicated normality, while tolerance values of 0.616 and VIF values of 1.623 showed no multicollinearity between Technological Readiness and Organizational Readiness. Glejser significance values of 0.284 and 0.361 indicated no heteroscedasticity, and the Durbin–Watson value of 1.947 suggested no problematic autocorrelation.

4.5 Correlation Analysis

Pearson correlation analysis was conducted to examine the relationships among Technological Readiness, Organizational Readiness, and Cloud-Based LMS Implementation Readiness.

Table 6. Pearson Correlation Matrix

Variable	TR	OR	LMSR
Technological Readiness (TR)	1.000		
Organizational Readiness (OR)	0.620***	1.000	
LMS Implementation Readiness (LMSR)	0.690***	0.720***	1.000

Technological Readiness ($r = 0.690$, $p < 0.001$) and Organizational Readiness ($r = 0.720$, $p < 0.001$) both showed strong positive correlations with LMS Implementation Readiness. TR and OR were also positively correlated ($r = 0.620$, $p < 0.001$), indicating that technological and organizational preparedness tend to develop together while remaining distinct constructs.

4.6 Multiple Linear Regression Analysis

The regression model showed a strong combined relationship between Technological Readiness and Organizational Readiness with LMS Implementation Readiness ($R = 0.784$), with $R^2 = 0.615$ and Adjusted $R^2 = 0.610$. This indicates that both predictors jointly explained 61.5% of the variation in LMS Implementation Readiness, while the remaining 38.5% was attributable to factors outside the model.

Table 7. ANOVA Test

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	28.640	2	14.320	121.298	<0.001
Residual	17.945	152	0.118		
Total	46.585	154			

Table 7 shows that the regression model was statistically significant ($F = 121.298$, $p < 0.001$), indicating that Technological Readiness and Organizational Readiness jointly have a significant effect on

Cloud-Based LMS Implementation Readiness.

4.7 Partial Effects and Hypothesis Testing

Table 8 presents the regression coefficients and hypothesis test results.

Table 8. Multiple Linear Regression and Hypothesis Testing

Predictor	B	Std. Error	Beta	t	Sig.	Tolerance	VIF	Decision
Constant	0.684	0.247	–	2.769	0.006	–	–	–
Technological Readiness	0.389	0.063	0.396	6.167	<0.001	0.616	1.623	H1 Supported
Organizational Readiness	0.442	0.060	0.475	7.398	<0.001	0.616	1.623	H2 Supported

Table 8 shows that both Technological Readiness and Organizational Readiness have positive and significant effects on LMS Implementation Readiness. Technological Readiness recorded B = 0.389, β = 0.396, t = 6.167, $p < 0.001$, while Organizational Readiness showed a stronger effect with B = 0.442, β = 0.475, t = 7.398, $p < 0.001$. Therefore, H1 and H2 are supported, with Organizational Readiness emerging as the more influential predictor.

Discussion

The findings indicate that Indonesian higher education institutions generally possess a strong technological foundation for cloud-based LMS implementation. Respondents perceived ICT infrastructure, system accessibility, hardware and software availability, technical competence, and technical support as relatively well established. Among these dimensions, accessibility emerged as a particularly important strength because cloud-based learning depends on the ability of lecturers, students, and academic personnel to access learning services across locations and devices. Nevertheless, data security, privacy, compatibility, and system integration remain areas requiring greater attention. Cloud-based LMS platforms process sensitive academic and personal information and must operate alongside existing institutional systems such as student information systems, authentication services, digital libraries, and administrative platforms [27], [28]. These findings support the technological dimension of the TOE framework, which emphasizes the importance of infrastructure, compatibility, security, and technical capability in organizational technology adoption.

Organizational readiness was also found to be an essential component of cloud-based LMS implementation. Management commitment appeared to be relatively strong, suggesting that institutional leaders increasingly recognize the strategic role of digital learning. However, financial resources, staff development, and institutional support remain important challenges. Cloud adoption may reduce dependence on locally maintained infrastructure, but it still requires sustained investment in subscriptions, cybersecurity, system integration, migration, technical support, and human resource development. Training is particularly critical because users must be capable not only of operating the LMS but also of integrating it into teaching, assessment, academic administration, and digital governance. These findings are consistent with [16], [29] organizational readiness perspective, which emphasizes both commitment to change and collective capability to implement organizational transformation.

A key implication of the findings is that organizational readiness may be more decisive than technological availability alone. Institutions can possess adequate connectivity, devices, software, and technical systems yet remain insufficiently prepared when responsibilities are unclear, policies are weak, funding is unstable, or users lack

appropriate competencies. This distinction reinforces the argument that technological availability should not be equated with implementation capability. Cloud-based LMS adoption represents an organizational change process that influences academic workflows, teaching practices, communication, data governance, and institutional responsibilities [16], [29]. Therefore, effective implementation depends on the institution's ability to coordinate technological resources through leadership, policy, training, communication, and organizational support.

Overall, technological and organizational readiness should be understood as complementary components of institutional preparedness. Technological readiness determines whether an institution has the infrastructure and technical capability to operate a cloud-based LMS, while organizational readiness determines whether those resources can be effectively mobilized, governed, and sustained. Institutions with strong technological capacity but weak organizational support may experience underutilization, whereas institutions with strong strategic commitment but inadequate infrastructure may struggle to translate digital ambitions into effective implementation. From a socio-technical and TOE perspective, sustainable cloud-based LMS implementation therefore requires a balanced alignment between technological capability and organizational preparedness.

Implications for Indonesian Higher Education Institutions

The findings suggest that Indonesian higher education institutions should conduct comprehensive readiness assessments before migrating to a cloud-based LMS, with particular attention to financial resources, training, data security, system integration, and institutional support. Cloud migration should be treated as an institution-wide transformation rather than solely an IT project, requiring coordination among management, academic units, technical teams, and users. Continuous capacity development is also necessary, while future studies should incorporate environmental and individual factors to provide a more comprehensive explanation of implementation readiness.

5. CONCLUSION

This study found that Indonesian higher education institutions generally demonstrate a high level of technological and organizational readiness for cloud-based LMS implementation. Both dimensions significantly contribute to implementation readiness, with organizational readiness emerging as the stronger predictor, indicating that technological capability must be supported by effective leadership, policies, human resources, training, coordination, and sustainable funding. The findings reinforce the view that cloud-based LMS adoption should be treated as an institutional digital transformation process requiring balanced development of technological infrastructure and organizational capacity. Future research may extend the model by incorporating environmental, cultural, and individual factors to provide a more comprehensive understanding of cloud-based LMS readiness.

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