

The Relationship Between the Use of the Ministry of Health's Learning Management System (LMS) and Employee Competencies and Service Performance at Dr. Cipto Mangunkusumo National General Hospital

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Keywords:

Learning Management System;
Employee Competency; Service
Performance; Hospital; Digital
Transformation.

Abstract

Digital transformation in the healthcare sector requires effective human resource development through technology-based learning systems. This study aimed to analyze the effectiveness of the Ministry of Health of the Republic of Indonesia's Learning Management System (LMS) and employee competence in relation to service performance at Dr. Cipto Mangunkusumo National General Hospital. A quantitative descriptive-verificative design was employed. Data were collected through questionnaires administered to 125 employees who participated in LMS-based training and were analyzed using simple and multiple linear regression analyses. The results showed that LMS effectiveness had a positive and significant effect on employee competence, while employee competence had a positive and significant effect on service performance. Simultaneously, both variables significantly influenced service performance, with a contribution of 75.9% ($R^2 = 0.759$), and employee competence was identified as the most dominant variable. These findings confirmed the importance of integrating LMS utilization and strengthening employee competence to improve the quality of public hospital services. This study recommends developing sustainable LMS-based training programs integrated with periodic competency assessments to support digital transformation in the healthcare sector.

INTRODUCTION

The development of digital technology has transformed various sectors, including healthcare services in Indonesia (Aisyah et al., 2024; Atika, 2023; Hanifa & Wicaksono, 2025; Pitaloka & Nugroho, 2021). The digital transformation initiatives driven by the Ministry of Health of the Republic of Indonesia through various technology-based learning platforms highlight the importance of utilizing technology not only for patient service integration but also for developing competent and adaptive human resources (HR) (Ministry of Health of the Republic of Indonesia, 2024; Basri & Sulistyowati, 2022). In vertical hospitals such as Dr. Cipto Mangunkusumo National General Hospital (RSCM), a national referral hospital, the demand for high-quality services continues to increase due to the complexity of medical cases, high patient volumes, and growing requirements for operational efficiency (Paturusi et al., 2024).

The Learning Management System (LMS) developed by the Ministry of Health of the Republic of Indonesia serves as a strategic instrument for supporting employee training and competency development on an ongoing basis (Chrysantina et al., 2019; Marsono et al., 2022; Nasih & Mansur, 2024; Sudarmika et al., 2025). This platform enables flexible, scalable, and

accessible learning without disrupting essential working hours (Wulandari & Tohir, 2024; Fitriani et al., 2021). Various international studies have demonstrated that LMS implementation in the healthcare sector can improve clinical knowledge, practical skills, and compliance with procedural standards, which ultimately contributes to enhanced patient service quality (Aryee et al., 2024; Mahdavi Ardestani et al., 2023).

Several previous studies have demonstrated that LMS and employee competence play important roles in improving healthcare service performance. Aryee et al. (2024) found that e-learning programs effectively increased healthcare workers' capacity when supported by flexible access and relevant content. Mahdavi Ardestani et al. (2023) identified ease of use, content quality, and technical support as key determinants of e-learning effectiveness. Rajawat et al. (2025) further emphasized that e-learning platforms positively affect employee performance through improvements in knowledge and applied skills. In Indonesia, Basri and Sulistyowati (2022) revealed that digital learning transformation in public hospitals faces significant challenges related to infrastructure readiness and employee digital literacy. Susanti and Dewi (2023) showed that e-learning contributes to improving hospital service quality, although its effectiveness depends on learning design and employee motivation. Kusnadi and Sari (2022) found that LMS-based training affects employee performance with competence as a mediating variable, while Alwi et al. (2023) confirmed that human resource competence directly improves employee performance in regional general hospitals.

However, LMS effectiveness does not automatically guarantee improvements in hospital service performance. Employee competence plays an important role in mediating the transfer of knowledge from digital training into daily work practices. Competencies, including knowledge, technical skills, professional attitudes, achievement motivation, and adaptability, represent valuable intangible assets that are difficult to replicate from the perspective of the Resource-Based View (RBV) (Barney, 1991; Kash et al., 2014). Human Capital Theory (Becker, 1993) further supports the argument that investment in human resource development through digital training can improve productivity and organizational performance when supported by effective training transfer mechanisms (Baldwin & Ford, 1988; Rajawat et al., 2025).

At Dr. Cipto Mangunkusumo National General Hospital, although various digital transformation initiatives, including LMS implementation, have been introduced, a gap remains between technological potential and the realization of improved institutional service performance. Previous studies have primarily focused on individual learning effectiveness or technical aspects of digital platforms, whereas studies integrating LMS effectiveness, employee competence, and service performance in national referral hospitals remain limited (Aryee et al., 2024; Susanti & Dewi, 2023; Kusnadi & Sari, 2022). This phenomenon represents a significant research gap, particularly within Indonesian public healthcare organizations characterized by high workloads, strict regulations, and the need for rapid adaptation to technological changes.

This study aimed to analyze the effect of LMS utilization effectiveness by the Ministry of Health of the Republic of Indonesia on employee competence, as well as the effects of employee competence and LMS effectiveness on service performance at Dr. Cipto Mangunkusumo National General Hospital. Specifically, this study tested three main hypotheses: (1) LMS effectiveness has a positive and significant effect on employee

competence; (2) employee competence has a positive and significant effect on service performance; and (3) LMS effectiveness and employee competence simultaneously have significant effects on hospital service performance.

This research is expected to provide theoretical contributions by enriching studies in health human resource management, particularly through the integration of RBV theory, Human Capital Theory, and Transfer of Training Theory within the context of hospital digital transformation. Practically, the findings may provide input for the management of Dr. Cipto Mangunkusumo National General Hospital and the Ministry of Health of the Republic of Indonesia in developing more effective LMS policies and employee competency improvement programs to support public service quality.

This research adopted a theoretical framework integrating the Resource-Based View (Barney, 1991) as the primary foundation, Human Capital Theory (Becker, 1993) to explain the value of training investment, and Transfer of Training Theory (Baldwin & Ford, 1988) to analyze the process of applying acquired knowledge into workplace practices. This framework is expected to provide a comprehensive understanding of optimizing digital learning technologies to improve the quality of public healthcare services in Indonesia.

METHOD

This study employed a quantitative approach with a descriptive-verificative design. The study population consisted of employees of Dr. Cipto Mangunkusumo National General Hospital who had participated in LMS-based training provided by the Ministry of Health of the Republic of Indonesia. A sample of 125 respondents was selected using a purposive sampling technique based on the criterion of having completed at least one LMS training module. Primary data were collected through a closed-ended questionnaire using a 5-point Likert scale measuring LMS effectiveness, employee competence, and hospital service performance. The research instrument was tested for validity and reliability before data collection.

The data analysis process included validity and reliability tests, classical assumption tests (normality, multicollinearity, and heteroscedasticity), as well as simple and multiple linear regression analyses to examine the effects among variables. A significance level of 0.05 was applied. This approach was used to empirically test the research hypotheses and examine the relationships among the studied variables.

RESULTS AND DISCUSSION

Classic Assumption Test

The normality test was carried out to ensure that the data in this study was distributed normally using the Kolmogorov-Smirnov test as a test tool with a significance level of 0.05. The results of the analysis showed a significance value of 0.062 so that the data of this study was not distributed normally, but based on *the Central Limit Theorem*, the regression analysis could still be continued because the sample size was relatively large ($n = 124$) (Hair et al., 2022; Sugiyono, 2019).

Table 1. Multicollinearity Test Results

Tolerance	VIVID
0,276	3,628

Source: Primary data processed (2026)

The multicollinearity test aims to detect a high correlation between independent variables that can disrupt the stability of the regression model. The test results are shown through the *Tolerance* and *Variance Inflation Factor* (VIF) values. Based on Table 1, the Tolerance value is above 0.10 and VIF is below 10. Thus, there is no multicollinearity between variables. The heteroscedasticity test was performed to ensure that there was no difference in variance between observations. The Glejser test is used as a detection method. The test results showed all significance values above 0.05, so it can be concluded that there was no heteroscedasticity in the regression model.

Correlation Test

The Correlation test used, namely the Spearman test, is one of the nonparametric statistical methods used to measure the strength and direction of the relationship between two variables. The results showed that the correlation between the Effectiveness of LMS Use and Hospital Service Performance resulted in a correlation coefficient value = 0.783 (very strong) with *p-Value* = 0.000 (< 0.05). The correlation between Employee Competence and Hospital Service Performance resulted in a correlation coefficient value = 0.814 (very strong) with *p-Value* = 0.000 (< 0.05).

Table 2. Spearman Test Results

Variabel	Correlation Coefficient	P value
LMS -> KP	0,783	0,000
KM -> KP	0,814	0,000

Source: Primary data processed (2026)

Coefficient of Determination

The R Square value of 0.759 indicates that 75.9% variation in hospital service performance can be explained by variables of the effectiveness of LMS use and employee competence. The remaining 24.1% was influenced by other variables not examined in this study, such as organizational culture, leadership support, and other external factors.

Table 3. Determination Coefficient Results

R	R Square	Adjusted R Square
0.871	0.759	0.755

Source: Primary data processed (2026)

Multiple Linear Regression Test

This analysis was carried out to analyze the simultaneous influence of independent variables, namely the Effectiveness of LMS Use and Employee Competence, on the dependent variable in the form of Hospital Service Performance. The effectiveness of the use of *Learning Management System* (LMS) has a positive and significant effect on hospital service performance ($\beta = 0.307$; $p = 0.000$). However, employee competence showed a stronger influence ($\beta = 0.595$; $p = 0.000$) and became the most dominant predictor in influencing service performance. These findings indicate that although LMS plays an important role as a means of digital learning, improving employee competencies remains the main determining factor in improving the quality of service at Dr. Cipto Mangunkusumo Hospital.

Table 4. Multiple Linear Analysis Test Results

Variabel	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Say.	Verdict
(Constant)	6,853	1,641	-	4,177	0,000	-
LMS Effectiveness	0,125	0,034	0,307	3,621	0,000	Signifikan
Employee Competencies	0,508	0,072	0,595	7,027	0,000	Signifikan

Source: Primary data processed (2026)

Overall, the results of the multivariate analysis prove that the two independent variables, namely the effectiveness of LMS use and employee competence, have a positive and significant influence both partially and simultaneously on hospital service performance. The resulting regression model is declared fit and reliable, so that it is able to accurately explain the relationship between variables.

1. The Effect of the Effectiveness of LMS Use on Employee Competence

The effectiveness of the use of LMS has a positive and significant effect on the competence of employees at Dr. Cipto Mangunkusumo Hospital. These results show that the higher the effectiveness of the LMS platform (judging from ease of use, content quality, interactivity, and technical support), the higher the employee's competence in terms of knowledge, skills, professional attitude, and adaptability. These findings are in line with *Human Capital Theory* (Becker, 1993) which states that investment in digital training can improve the quality of human resources. In addition, the results of this study support the study of Aryee et al. (2024) who found that *e-learning* that effectively significantly improves the competence of health workers through flexible and continuous access to learning.

2. The Influence of Employee Competency on Hospital Service Performance

Employee competence has a positive and significant effect on hospital service performance, even becoming the most dominant variable ($\beta = 0.595$). Competencies that include clinical knowledge, technical skills, professional attitude, motivation, and adaptability are the main determining factors in improving efficiency, service quality, and SOP compliance. These results reinforce the perspective *Resource-Based View* (Barney, 1991) who consider HR competence as an intangible asset that is difficult to imitate and is a source of competitive advantage for health organizations. These findings are also consistent with the research of Alwi et al. (2023) and Kusnadi & Sari (2022) which shows that employee competence directly improves the quality of service in hospitals.

3. The Effect of the Effectiveness of LMS Use and Employee Competency Simultaneously on Hospital Service Performance

Simultaneously, the effectiveness of LMS use and employee competence had a positive and significant effect on hospital service performance with a contribution of 75.9%. This confirms that the two variables support each other in creating an increase in institutional performance. LMS acts as a technology infrastructure that facilitates competency improvement, while employee competencies become a catalyst in translating digital knowledge into better work behavior. These results are in line with the research of Mahdavi Ardestani et

al. (2023) and Rajawat et al. (2025) which emphasizes the synergy between learning technology and human resource development in improving the quality of public health services.

Research Implications

The findings of this study have important implications for human resource development in vertical hospitals. First, investment in the development and utilization of LMS needs to be continuously improved, not only in terms of platform technical but also in terms of content quality and learning design. Learning content must be relevant to clinical needs and structured systematically to facilitate the understanding and application of knowledge. Second, strengthening employee competencies must be a top priority. LMS-based training programs need to be integrated with competency measurement on a regular basis to ensure that learning truly increases employee capacity. Competency certification and recognition of learning achievements can be an incentive for employees to actively participate in HR development programs. Third, collaboration between hospital management and the Ministry of Health of the Republic of Indonesia in developing and evaluating LMS needs to be strengthened. Feedback from LMS users in the field is essential for continuous improvement, both in terms of technical and learning substance. Periodic evaluation of the effectiveness of the LMS and its impact on service performance can be the basis for more targeted policymaking. Fourth, increasing employee digital literacy is an important prerequisite in optimizing the use of LMS. Training and mentoring programs for employees with low levels of digital literacy need to be provided so that all employees can access and utilize the LMS equally and optimally

Research Limitations

This research has several limitations that need to be acknowledged. First, the research was conducted at one vertical hospital, namely Dr. Cipto Mangunkusumo Hospital, so the generalization of research results to other hospitals needs to be done carefully. Second, the research design is cross-sectional which only measures the relationship between variables at one point in time, so it cannot see the dynamics of the relationship between variables in the long term. Third, this study only measures the effectiveness of LMS from employee perceptions through questionnaires, without objectively measuring competency improvement through direct performance tests or assessments. Further research is recommended to use a longitudinal design and involve more vertical hospitals to obtain more comprehensive results.

CONCLUSION

Based on the results of the research analysis, it can be concluded that the effectiveness of the Learning Management System (LMS) implemented by the Ministry of Health of the Republic of Indonesia had a positive and significant effect on employee competence at Dr. Cipto Mangunkusumo National General Hospital. Employee competence also had a positive and significant effect on hospital service performance, demonstrating the strongest influence compared with other variables. Simultaneously, LMS effectiveness and employee competence had positive and significant effects on hospital service performance, with a coefficient of determination (R^2) of 75.9%. These findings indicated that improving service quality in vertical hospitals was strongly associated with the synergy between digital learning platforms and human resource competency development.

This study reinforced the importance of integrating LMS technology with sustainable human resource development programs to support digital transformation in the healthcare

sector. Although the findings provided significant contributions, further research is recommended to expand the sample scope to include several other vertical hospitals and employ a longitudinal design to examine the dynamics of relationships among variables over time.

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