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Human Capital as A Determinant of Nurse Performance

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Abstract

Background: The quality of healthcare services is highly dependent on nurse performance as one of the key components in delivering safe, effective, and patient-centered care. However, challenges related to competency gaps, fluctuating work motivation, and the increasing demand for digital skills remain significant issues affecting nurses' performance. In the era of digital transformation in healthcare, nurses are required to possess adequate competence and digital literacy to adapt to technological advancements and improve service quality. Therefore, understanding the factors influencing nurse performance is essential for developing effective strategies to strengthen healthcare human resources. Objective: This study aimed to analyze the effects of competence, motivation, and digital literacy on nurse performance.Method: This study employed a quantitative research design involving a population of 901 nurses from Type C and Type D general hospitals. The sample size was determined using the Slovin formula, resulting in 212 respondents selected through proportional random sampling. Data were analyzed using multiple linear regression with the SmartPLS application, including outer model and inner model evaluations.Results: The findings indicated that competence, motivation, and digital literacy had direct, positive, and significant effects on nurse performance.Conclusion: This study concluded that competence, motivation, and digital literacy were important factors in improving nurse performance.

INTRODUCTION

Nurses represent the strongest human capital component in human resource management within hospital institutions, as regulated under Law No. 36 of 2014 concerning Health Workers. They also contribute to achieving the objectives of the national health system (Prabowo, 2019). This is because nurses spend more time providing direct care to patients than other healthcare professionals (Qtait, 2023; Taylor et al., 2015). Furthermore, nurses play an essential role in ensuring quality care and patient safety (Alsadaan et al., 2023; Tamata & Mohammadnezhad, 2023). In this context, the human capital approach emphasizes employees as intangible assets that contribute to improving organizational performance (Elrehail et al., 2020), which can be assessed through employees' past and current performance (Desta et al., 2022).

The issue is that the performance of health workers in general hospitals (Rumah Sakit Umum/RSU) in Central Java Province has not yet reached optimal levels (Central Java BPS, 2021). Among the 29 regions in Central Java Province, several regencies with four Type C and Type D general hospitals have experienced similar challenges. These challenges are associated

with high workloads (52.2%), an unbalanced nurse-to-patient ratio, and psychological factors (40.8%), including inadequate salaries, fatigue, and work-related stress, while other factors account for the remaining 7%. According to the human capital approach, this phenomenon indicates that competence, motivation, and, in the current digital era, skills related to digital literacy have significant potential to improve performance (Desta et al., 2022; Karthik et al., 2026).

Empirical studies have demonstrated that competence (Priyanti et al., 2024; Mehralian et al., 2025), motivation (Delima et al., 2024; Nurjannah et al., 2024; Nugraha et al., 2024; Priyanti et al., 2024), and digital literacy (Nugraha et al., 2024) influence nurse performance (Priyanti et al., 2025; Putra et al., 2025). However, contradictory findings have been reported, indicating that competence (Ginting & Rizky, 2025; Maulana & Tanesab, 2025; Taki et al., 2023), motivation (Fitriany & Mudjijah, 2024; Maulana & Tanesab, 2025; Alsadaan et al., 2023), and digital literacy (Putra et al., 2025; Putra & Syahrul, 2023) do not significantly affect nurse performance.

In Indonesia, the nursing workforce faces structural challenges that directly affect performance in Type C and Type D general hospitals. Ministry of Health data from March 2025 recorded 784,515 nurses nationally, with a nurse-to-population ratio of 2.5 per 1,000 population. However, this national figure masks substantial geographical disparities: East Java had 98,744 nurses, West Java had 94,392, and Central Java had 94,193, whereas North Kalimantan had only 3,233, West Papua had 4,799, and Bangka Belitung had 5,054. A Ministry of Health official acknowledged that although the national number of nurses may be sufficient, shortages remain in 3T regions (tertinggal, terdepan, and terluar) or underdeveloped, frontier, and outermost areas. In addition to distributional disparities, a qualitative challenge remains, as approximately 68.39% of Indonesian nurses hold Diploma III qualifications, while only 18.49% possess Bachelor of Nursing (Ners) qualifications and 5.64% hold specialist qualifications. This educational composition indicates that a substantial proportion of nurses may require further competency development to achieve optimal performance, particularly in resource-constrained Type C and Type D hospitals that serve as primary referral facilities for communities in regencies and municipalities. Central Java Province illustrates this challenge, with 52.2% of nurses experiencing high workloads and 40.8% reporting psychological challenges, including fatigue and work-related stress (BPS Jawa Tengah, 2021, as cited in the research problem statement).

A substantial body of empirical research has examined the determinants of nurse performance; however, findings remain inconsistent. Regarding competence, studies by Priyanti et al. (2024), Mehralian et al. (2025), and Kapantow et al. (2020) demonstrated significant positive effects on nurse performance. However, Ginting and Rizky (2025), Maulana and Tanesab (2025), and Taki et al. (2023) did not confirm this relationship. A recent Indonesian quasi-experimental study indicated that competency-based training effects were consistently strong for knowledge acquisition and self-rated competence but were more variable and frequently smaller or statistically insignificant when outcomes were assessed through observable clinical performance. Regarding motivation, Delima et al. (2024), Nurjannah et al. (2024), and Nugraha et al. (2024) reported significant positive effects, consistent with self-determination theory. However, Fitriany and Mudjijah (2024), Maulana and Tanesab (2025), and Alsadaan et al. (2023) reported different findings. Regarding digital

literacy, Bayar (2024) and Nugraha et al. (2024) confirmed positive effects on performance, while a Korean study found that nurses with higher levels of digital literacy demonstrated improved nursing performance. Nevertheless, Putra et al. (2025) and Putra and Syahrul (2023) reported no significant effect. These inconsistent findings suggest that contextual factors, including hospital type, organizational resources, and digital infrastructure, may influence the relationships between human capital variables and nurse performance.

Despite the growing body of literature, critical research gaps remain. First, the simultaneous examination of competence, motivation, and digital literacy within an integrated framework remains limited, particularly in Indonesian healthcare settings. Most existing studies focus on one or two variables, limiting the assessment of their relative and combined contributions to nurse performance. Second, digital literacy as a determinant of nurse performance has received insufficient academic attention in Indonesia. A comprehensive review of digital literacy research in Indonesia identified numerous studies examining employee performance in general; however, few studies have specifically addressed nurse performance in hospital settings. The relationship between digital literacy and nurse performance has been identified as an area requiring further investigation (Harmadi et al., 2025). Third, existing Indonesian nursing performance research predominantly focuses on large-scale hospitals with relatively adequate resources, leaving Type C and Type D hospitals—which experience greater resource limitations and serve vulnerable populations—comparatively underexplored. A recent Indonesian study acknowledged that evidence regarding contextualized training for practicing nurses in resource-limited hospitals remains limited. Fourth, the integration of digital literacy into human capital theory within nursing contexts represents an underdeveloped theoretical area, as most human capital research continues to emphasize traditional dimensions, such as education, training, and work experience.

The urgency of addressing these gaps is reinforced by Indonesia's accelerating healthcare digital transformation. The Ministry of Health has mandated electronic medical record (EMR) integration with the SATUSEHAT platform through Regulation No. 24 of 2023, with 34,463 healthcare facilities integrated as of October 2025. However, significant implementation challenges remain, including infrastructure limitations and workforce readiness issues, with 495 hospitals reportedly not yet implementing six core EMR functions. The Ministry of Health's Digital Health Transformation Strategy 2025–2029 explicitly aims to establish "a healthy and productive society through a national digital health ecosystem," requiring nurses to possess adequate digital competencies. Simultaneously, persistent issues related to high workload (52.2%) and psychological distress (40.8%) among nurses in Central Java require immediate attention. A systematic literature review on inpatient nurse workload in Indonesia after the COVID-19 pandemic concluded that high workloads negatively affect job satisfaction, competence, and increase the risk of burnout. Without empirical evidence identifying which human capital factors most effectively improve performance in resource-constrained healthcare settings, policymakers and hospital administrators may face difficulties in allocating resources effectively and developing targeted, evidence-based interventions.

This research provides several original contributions. Theoretically, it advances human capital theory by incorporating digital literacy as a contemporary dimension of employee value, responding to the need to understand how digital skills function as intangible assets within

healthcare organizations (Desta et al., 2022). It also extends self-determination theory by examining how motivational factors interact with competency and digital capabilities in influencing performance outcomes. Methodologically, this study applies SmartPLS-based structural equation modeling to examine direct relationships among variables and evaluate the structural model, providing analytical rigor in assessing complex relationships. Contextually, this study contributes evidence from Type C and Type D hospitals in Indonesia, a setting characterized by resource limitations that may generate findings different from those observed in well-resourced hospital environments. Empirically, this research addresses inconsistencies in previous studies by providing evidence from an underexamined population, potentially clarifying differences in findings related to competence and motivation. Furthermore, the study contributes to policy development by generating evidence relevant to Indonesia's digital health transformation agenda and healthcare human resource planning.

The purpose of this research was to empirically examine the effects of competence, motivation, and digital literacy on nurse performance in Type C and Type D general hospitals in Central Java Province, Indonesia. Specifically, this study aimed to determine whether competence, motivation, and digital literacy had positive and significant effects on nurse performance. By examining these relationships within an integrated human capital framework, this research sought to identify the factors that most strongly predicted performance outcomes in resource-constrained healthcare settings, thereby supporting the development of targeted intervention strategies.

This research is expected to contribute significantly to both theoretical development and practical application. Theoretically, it extends human capital theory by demonstrating how competence, motivation, and digital literacy function as interconnected dimensions of employee value within healthcare contexts. It also contributes to the growing literature on digital literacy in nursing by providing empirical evidence from an underexamined population and addressing inconsistencies in previous findings. Practically, the findings provide evidence-based guidance for hospital administrators in designing competency development programs, motivational strategies, and digital literacy training initiatives tailored to resource-constrained settings. For policymakers, particularly the Ministry of Health, the results provide insights for developing nursing performance indicators and supporting evidence-based healthcare human resource management. This study also contributes to Indonesia's digital health transformation agenda by identifying digital literacy requirements that support effective EMR implementation and optimization of nursing services.

The objective of this research was to empirically examine the effects of competence, motivation, and digital literacy on nurse performance in Type C and Type D general hospitals in Central Java Province. Through a quantitative design involving 212 respondents selected using proportional random sampling and data analysis using SmartPLS-based structural equation modeling, this study aimed to provide empirical evidence regarding these relationships. The benefits of this research extend to multiple stakeholders. For hospital management, the findings provide practical insights for improving nurse performance through targeted competence development, motivational strategies, and digital literacy interventions. For the Ministry of Health and regional health authorities, the results provide a basis for evidence-based policy formulation regarding nursing workforce development, particularly in resource-limited healthcare facilities. For the nursing profession, this research highlights digital

literacy as an essential professional competency in the digital healthcare era. For academic researchers, this study addresses existing research gaps and provides a foundation for future investigations into human capital management in healthcare. Ultimately, by identifying the human capital factors that contribute to improved nurse performance, this research supports broader efforts to enhance healthcare quality, patient safety, and health outcomes for communities in Indonesia and beyond.

METHOD

This study employed a quantitative research design with hypothesis testing through direct effect analysis (Creswell, 2014). The population consisted of 901 nurses working at Type C and Type D general hospitals. The sample size was determined using the Slovin formula with a 6% margin of error (Tejada & Punzalan, 2012), resulting in 212 respondents selected through proportional random sampling. Nurse performance was measured using indicators of behavior, service quality, and the nursing process (Kristof-Brown, 2005; Kitsios & Kamariotou, 2021; Kapantow et al., 2020). Nurse competence was measured through knowledge, skills, behavior, and experience indicators (Orgev & Demirci, 2024; Kapantow et al., 2020). Motivation was measured using indicators of basic needs, safety needs, social needs, and self-actualization (Delima et al., 2024; Kitsios & Kamariotou, 2021). Digital literacy was measured based on digital skills, digital ethics, and digital security indicators (Kundi & Alharbi, 2022). Primary data were collected using a structured questionnaire with a 5-point Likert scale ranging from strongly disagree to strongly agree. Data collection was conducted over one month through Google Forms. Data were analyzed using multiple linear regression with the SmartPLS application, which is suitable for examining complex relationships among variables in management research (Monecke & Leisch, 2012).

RESULTS AND DISCUSSION

Respondent Identity Analysis

Respondents were dominated by women (131 respondents or 61.8%), aged between 36-45 years (144 respondents or 67.9%), with a diploma-level education (108 respondents or 50.9%), and 6-10 years of work experience (98 respondents or 46.2%). They were identified as coming from type C general hospitals (110 respondents, or 51.89%) and type D general hospitals (102 respondents, or 48.11%). Given these respondent characteristics, nurses in inpatient wards have significant potential to develop themselves to achieve more optimal performance.

Analysis of Respondent Responses to Research Variables

Based on the data collected from all respondents, the average nurse performance (Y) falls into the high category (4.163). This is shown by polite behavior and the ability to provide quality service, namely being able to prepare equipment quickly and accurately (average of 4.193 each). Nurses are also able to ensure patient safety by providing actions in accordance with nursing care and mastering the nursing process, namely being able to identify the needs of each patient (average of 4.184).

Competence (X^1) is conceptually defined as an ability acquired through genetics, learning outcomes, and experience, which produces the behavior, knowledge, and attitudes needed to carry out tasks and responsibilities. Based on the data processing results, the average score is

at a competent level (4.026). This is particularly evident in adequate technical skills (average of 4.184); sufficient experience in problem-solving (average of 4.160). Nurses also possess procedural knowledge (average of 4.104), behave with good work ethics (average of 4.085), administrative skills (average of 3.995), and technical experience with science and technology (average of 3.995).

Work motivation (X^2) is conceptually defined as a psychological drive that generates desire, energy, and commitment in carrying out the nursing care function. Based on the collected data, nurses' average work motivation is high (4.000), evident from a high level of social needs, namely maintaining harmonious relationships with patients (average of 4.241). Respondents also had high work motivation due to their need for safety, including job protection (average of 4.179) and job security (average of 4.123). The need for self-actualization, namely achieving good professional growth, averaged 4.080. Additionally, respondents also had social needs reflected in their ability to achieve personal growth (average of 4.005).

Digital literacy (X^3) is the knowledge and ability to use digitalization to obtain work-related information. Based on the data processing results, nurses' digital literacy is, on average, adequate (3.816). This is shown by an understanding of digital ethics, namely responsible behavior (average of 4.175) and security awareness (average of 4.123). Nurses also possess digital skills in searching for, finding, and evaluating information (average of 3.382) and in adequately utilizing digitalization (average of 3.373).

Results of Multiple Linear Regression-PLS Analysis

Outer Model Test

The *outer model* test was conducted to test validity and reliability (Monecke & Leisch, 2012), with the results obtained as follows.

Table 1. Convergent Validity Test (Outer Loading)

Indicator & Variable	*Coefficient Outer Loadings*	*Cut Off*	*Results*
$X_{1.1} \leftarrow X_1$	*0.744*	*> 0.7*	*Valid*
$X_{1.2} \leftarrow X_1$	*0.768*	*> 0.7*	*Valid*
$X_{1.3} \leftarrow X_1$	*0.871*	*> 0.7*	*Valid*
$X_{1.4} \leftarrow X_1$	*0.893*	*> 0.7*	*Valid*
$X_{2.1} \leftarrow X_2$	*0.716*	*> 0.7*	*Valid*
$X_{2.2} \leftarrow X_2$	*0.742*	*> 0.7*	*Valid*
$X_{2.3} \leftarrow X_2$	*0.863*	*> 0.7*	*Valid*
$X_{2.4} \leftarrow X_2$	*0.768*	*> 0.7*	*Valid*
$X_{3.1} \leftarrow X_3$	*0.862*	*> 0.7*	*Valid*
$X_{3.2} \leftarrow X_3$	*0.751*	*> 0.7*	*Valid*
$X_{3.3} \leftarrow X_3$	*0.768*	*> 0.7*	*Valid*
$Y_1 \leftarrow Y$	*0.762*	*> 0.7*	*Valid*
$Y_2 \leftarrow Y$	*0.844*	*> 0.7*	*Valid*
$Y_3 \leftarrow Y$	*0.743*	*> 0.7*	*Valid*
$Y_4 \leftarrow Y$	*0.724*	*> 0.7*	*Valid*

Source: Processed primary data (2026).

Table 1 shows that all indicators of the nurse performance, competence, motivation, and digital literacy variables obtained an *outer loading* coefficient > 0.7. This means that all indicators are valid overall. Table 2 shows the *Average Variance Extracted* (AVE) validity test, with results showing that all indicators have an AVE coefficient > 0.5. This means they are valid, or that all indicators are able to explain >50% of the variance, so the SEM-PLS model that has been built has a high level of accuracy.

Table 2. Convergent Validity (AVE)

Variable	Coefficient AVE	Cut Off	Results
Nurse Performance (Y)	0.825	>0.5	Valid.
Competence (X_1)	0.867	>0.5	Valid.
Work Motivation (X_2)	.0.752	>0.5	Valid.
Digital Literacy (X_3)	0.778	>0.5	Valid.

Source: processed primary data (2026).

$\sqrt{\text{AVE}}$Table 3 presents the *discriminant validity* test using the *Fornell-Larcker* approach, showing that all √AVE values exceed the correlations between variables. This means all indicators are valid, and thus the instrument is able to measure what it is intended to measure.

Table 3. *Discriminant Validity* Test (Fornell-Larcker)

Variable	Nurse Performance (Y)	Competence (X_1)	Digital Literacy (X_3)	Work Motivation (X_2)
Nurse Performance (Y)	0.843			
Competence (X_1)	0.165	0.924		
Digital Literacy (X_3)	0.160	0.252	0.716	
Work Motivation (X_2)	0.212	0.133	0.262	0.812

Source: processed primary data (2026).

Table 4 shows that all HTMT coefficients are < 0.85, meaning they are valid and meet the *discriminant validity* requirement. This indicates that all indicators of each variable do not overlap with the other variables under study.

Table 4. *Discriminant Validity Test (HTMT)*

Variable	HTMT Coefficient	*Cut Off*	Result
Competence (X_1) <-> Nurse Performance (Y)	0.278	<0.85	Valid
Digital Literacy (X_3) <-> Nurse Performance (Y)	0.521	<0.85	Valid
Digital Literacy (X_3) <-> Competence (X_1)	0.632	<0.85	Valid
Work Motivation (X_2) <-> Nurse Performance (Y)	0.365	<0.85	Valid
Work Motivation (X_2) <-> Competence (X_1)	0.542	<0.85	Valid
Work Motivation (X_2) <-> Digital Literacy (X_3)	0.612	<0.85	Valid

Source: processed primary data (2026).

Table 5 shows that all indicators of the nurse performance, competence, motivation, and digital literacy variables have *cross loading* coefficients > 0.7, and higher than those for other variables. This means that all statement items are valid and meet the *discriminant validity* requirement.

Table 5. *Discriminant Validity* Test (*Cross Loadings*)

Indicator	Cross Loading Coefficient				Cut Off	Result
	Nurse Performance (Y)	Competence (X_1)	Work Motivation (X_2)	Digital Literacy (X_3)		
Y_1	0.762	0.201	0.112	0.120	>0.7	Valid
Y_2	0.742	0.269	0.124	0.160	>0.7	Valid
Y_3	0.762	0.242	0.134	0.136	>0.7	Valid
Y_4	0.766	0.195	0.152	0.124	>0.7	Valid
$X_{1.1}$	0.432	0.764	0.233	0.143	>0.7	Valid
$X_{1.2}$	0.103	0.762	0.241	0.122	>0.7	Valid
$X_{1.3}$	0.131	0.740	0.316	0.290	>0.7	Valid
$X_{1.4}$	0.145	0.821	0.108	0.232	>0.7	Valid
$X_{2.1}$	0.103	0.234	0.732	0.244	>0.7	Valid
$X_{2.2}$	0.122	0.143	0.743	0.126	>0.7	Valid
$X_{2.3}$	0.187	0.152	0.756	0.151	>0.7	Valid
$X_{2.4}$	0.132	0.214	0.763	0.108	>0.7	Valid
$X_{3.1}$	0.134	0.241	0.137	0.826	>0.7	Valid
$X_{3.2}$	0.158	0.173	0.164	0.772	>0.7	Valid
$X_{3.3}$	0.171	0.226	0.114	0.733	>0.7	Valid

Source: processed primary data (2026).

The next stage is the reliability test. Table 6 shows that the nurse performance, competence, motivation, and digital literacy variables have a *Cronbach's alpha* coefficient > 0.7. This means that all indicators are reliable in measuring all the variables. The C.R (rho_a) and C.R (rho_c) coefficients also exceed 0.70. These results therefore show that all indicators of all variables are reliable, or unbiased.

Table 6. Reliability Test

Variable	*Cronbach's Alpha*	*Composite reliability (rho_a)*	*Composite reliability (rho_c)*	*Cut Off*	Conclusion
Nurse Performance (Y)	0.816	0.768	0.772	>0.7	Reliable
Competence (X_1)	0.767	0.757	0.782	>0.7	Reliable
Work Motivation (X_2)	0.734	0.746	0.762	>0.7	Reliable
Digital Literacy (X_3)	0.759	0.724	0.734	>0.7	Reliable

Source: processed primary data (2026).

Inner Model Test

The *inner model* test is intended to test *collinearity, R-square, f-square, Q-square, GoF*, and hypothesis testing (Monecke & Leisch, 2012). Table 7 shows that all indicators of the nurse performance, competence, motivation, and digital literacy variables have a VIF coefficient < 5. This means there is no strong correlation between exogenous variables, so all indicators are unbiased.

Table 7. *Collinearity* Test

Variable and Indicator	VIF	*Cut Off*	Conclusion
Nurse Performance (Y) :			
Y1	1.923	<5	No multicollinearity.
Y2	1.942	<5	No multicollinearity.
Y3	1.177	<5	No multicollinearity.
Y4	1.626	<5	No multicollinearity.
Competence (X_1) :			
X1.1	1.438	<5	No multicollinearity.
X1.2	1.341	<5	No multicollinearity.
X1.3	1.171	<5	No multicollinearity.
X1.4	1.214	<5	No multicollinearity.
Work Motivation (X_2) :			
X2.1	1.148	<5	No multicollinearity.
X2.2	1.132	<5	No multicollinearity.
X2.3	1.152	<5	No multicollinearity.
X2.4	1.143	<5	No multicollinearity.
Digital Literacy (X_3) :			
X3.1	1.142	<5	No multicollinearity.
X3.2	1.112	<5	No multicollinearity.
X3.3	1.148	<5	No multicollinearity.

Source: processed primary data (2026).

Table 8 shows an *R-square* coefficient for the nurse performance variable of 0.780, meaning that competence, motivation, and digital literacy are able to explain 78% of the nurse performance variable, with the remaining 22% explained by other factors. Next, a *Goodness of Fit (GoF)* test was conducted, obtaining a GoF value > 0.36 (0.793 > 0.36). This means that the research model has a strong fit or support with the observed data or sample.

Table 8. *R-square* and *GoF* Test

Variable	*R-square*	*R-square Adjusted*	GoF
Nurse Performance (Y)	0.780	0.776	0.793

Source: processed primary data (2026).

Table 9 shows that the *effect size (f-square)* of the competence (0.773), motivation (0.626), and digital literacy (0.591) variables on nurse performance is at a high level. This means that all of these variables are highly crucial in building nurse performance.

Table 9. *Effect Size* Test

Variable	f-square	Category
Competence (X_1) -> Nurse Performance (Y)	0.773	High
Work Motivation (X_2) -> Nurse Performance (Y)	0.626	High
Digital Literacy (X_3) -> Nurse Performance (Y)	0.591	High

Source: processed primary data (2026).

Table 10 presents the results of the *inner* model *direct effect* hypothesis test, using a t-statistic < 1.96 and ρ < 0.05. First, competence has a positive and significant effect on nurse performance, so H^1 is accepted (o=0.672; t=5.251; ρ=0.000). Second, motivation also has a positive and significant effect on nurse performance, so H^2 is accepted (o=0.584; t=4.653; ρ=0.000). Third, digital literacy also has a positive and significant effect on nurse performance, so H^3 is accepted (o=0.473; t=3.072; ρ=0.001).

Table 10. Hypothesis Test

Variable	*Original Sample (O)*	*T Statistics (|O/STDEV|)*	*P Values*	Conclusion
Competence (X_1) -> Nurse Performance (Y)	0.672	5.251	0.000	H_1 Accepted
Work Motivation (X_2) -> Nurse Performance (Y)	0.584	4.653	0.000	H_2 Accepted
Digital Literacy (X_3) -> Nurse Performance (Y)	0.473	3.072	0.001	H_3 Accepted

Source: processed primary data (2026).

High competence directly and tangibly improves nurse performance, consistent with *human capital* theory. According to the *human capital* approach, employees are the highest asset in carrying out work (Elrehail et al., 2020), which in this context relates to service quality. According to *human capital* theory, competence is formed from knowledge, skills, and attitudes, which directly improve performance (Firdausijah, 2023). This is also consistent with *self-determination theory*, in which competence is part of a basic human need, so that when fulfilled, it significantly fosters individual performance drive. Competent nurses possess high knowledge of both procedures and relevant government regulations. This is supported by the test results of Mehralian et al. (2025), Halimahturrafiah et al. (2023), Ginting (2025), Priyanti et al. (2024), Kapantow et al. (2020), Jaksa (2024), Saryadi & Arini (2022), Putra et al. (2024), and Orgev & Demirci (2024).

In this context, it was also directly shown that high work motivation is able to improve nurse performance. This result is relevant to *human capital* theory, which reveals that motivation is a crucial factor in improving performance (Desta et al., 2022). In this context, nurses with a high level of motivation will make maximum use of their skills to provide services to patients, thereby demonstrating high performance (Imran & Atiya, 2020). This is also consistent with *self-determination theory*, as it is one motivational framework that emphasizes the achievement of optimal performance when basic psychological needs are met (Dombestein et al., 2020). The test results of Delima et al. (2024), Nurjannah et al. (2024), Nugraha et al. (2024), Dombestein et al. (2020), Jaksa (2024), Ibrahim et al. (2023), and Alsadaan et al. (2023) support the finding that high work motivation improves performance.

Digital literacy also directly and tangibly improves nurse performance, consistent with *human capital* theory. According to the *human capital* perspective, digital literacy in this current era is an important form of investment for increasing the *value* and expertise of nurses (Nardo et al., 2020). This ultimately improves performance (Wardani, 2022; Silic et al., 2020). Harmadi et al. (2025) also revealed that the relationship between digital literacy and nurse performance has not received much attention. Bayar's (2024) test results show that digital literacy has a positive and significant effect on employee performance. Nurses make maximum use of nursing information systems, such as electronic medical records (Alsadaan et al., 2023), making nursing care optimal, which in turn improves nurse performance (Qtait, 2023).

CONCLUSION

This study concluded that profitability, liquidity, and activity significantly contributed to reducing the risk of financial distress, reflecting a company's fundamental financial strength. In contrast, solvency did not have a significant effect, indicating that a high debt structure does not necessarily negatively affect financial conditions when managed efficiently. Institutional ownership did not function as a moderating variable in the relationship between financial indicators and financial distress. This limited moderating effect may be attributed to the passive role of institutional ownership, particularly among foreign investors, which may have reduced its effectiveness in supervising management. The limitations of this study included the relatively short observation period (2022–2024), the limited number of variables examined, and the focus on the consumer non-cyclicals sector. Future research is recommended to extend the observation period, incorporate additional variables, and include other industry sectors to obtain more comprehensive findings.

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