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Psychological Safety as a Mediator Between Digital Competence, Employee Agility, and Employee Performance

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Abstract

Purpose: This study examines the direct and indirect effects of Digital Competence and Employee Agility on Employee Performance, with Psychological Safety serving as a mediating variable among employees of PT PIP.

Research Methodology: This study employed a quantitative explanatory research design. Data were collected from 373 permanent employees of PT PIP using proportionate stratified random sampling, ensuring that each employee stratum was represented proportionally to its size in the population. A structured questionnaire with a five-point Likert scale was used as the research instrument. The data were analyzed using Structural Equation Modeling–Partial Least Squares with SmartPLS version 3.2.9.

Results: The findings indicate that Digital Competence and Employee Agility have positive and significant effects on Employee Performance. Both variables also positively influence Psychological Safety, which significantly enhances Employee Performance.

Conclusions: The study concludes that improving employee performance in the power generation industry requires not only strong digital competencies and employee agility but also the development of a psychologically safe work environment that enables employees to adapt, collaborate, and perform effectively during digital transformation.

Limitations: This study was limited to permanent employees of PT PLN Indonesia Power and employed a cross-sectional research design, which restricts the generalizability of the findings to other industries and organizational contexts.

Contributions: This study contributes to the literature on digital transformation and human resource management by integrating Human Capital Theory, Resource-Based View, Social Exchange Theory, and Theory of Performance to explain mediating role of Psychological Safety in the relationships between Digital Competence, Employee Agility, and Employee Performance.

Keywords: *Digital Competence, Employee Agility, Employee Performance, Power Generation Industry, Psychological Safety*

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1. Introduction

The power generation industry is a strategic and critical sector that underpins national economic stability, industrial sustainability, and the quality of life of society. Over the past decade, this industry has faced substantial transformation pressures driven by digitalization, the energy transition, and increasingly stringent demands for efficiency and occupational safety. The adoption of technologies such as digital control systems, predictive maintenance, condition-based monitoring, and smart grids has become essential to maintaining the reliability of electricity supply while minimizing the risk of system failures (Anderson, Potočnik, & Zhou, 2014; Zhou, & Hoever, 2014). Digital transformation in the power generation industry extends beyond improving operational efficiency; it also aims to strengthen occupational safety and mitigate operational risks with far-reaching consequences. Modern power generation systems require real-time data-driven decision-making, cross-system integration, and rapid responses to technical disruptions and fluctuating electricity demand (Anderson et al., 2014).

Despite rapid technological advancements, numerous studies indicate that the success of digital transformation depends largely on the readiness of human resources. Cross-national evidence from Asia and the Middle East demonstrates that digitalization does not automatically enhance organizational performance unless employees possess sufficient digital competence and adaptive capabilities. Consequently, human resources constitute the primary determinant of whether technological investments translate into improved operational performance in the power generation industry (Anisariza, Purwaningsih, Basrowi, & Ventayen, 2025).

Digital Competence refers to an individual's ability to understand, operate, and effectively utilize digital technologies to accomplish work-related tasks. Within the power generation industry, digital competence encompasses proficiency in digital control systems, monitoring devices, operational data analytics, industrial automation systems, and industrial cybersecurity (Anjarany & Marianti, 2026). Previous studies consistently demonstrate that digital competence exerts a direct and significant positive effect on employee performance. Employees with higher levels of digital competence tend to exhibit greater work accuracy, faster task completion, and lower operational error rates. Nevertheless, considerable disparities in digital competence remain among employees due to differences in educational background, age, and access to technology-related training (Anisariza et al., 2025).

Although digital technologies can improve operational efficiency, their effectiveness depends partly on employees' ability to use them competently and adapt to changing work requirements. In the high-risk power generation industry, insufficient digital competence may contribute to operational errors, delayed responses to technical disruptions, and occupational safety risks. However, organizational productivity indicators cannot directly establish differences in individual employee performance because they may also reflect variations in generation capacity, business scope, workforce composition, and operational structure. Therefore, examining the relationship between Digital Competence, Employee Agility, Psychological Safety, and individual Employee Performance is necessary to understand how employees' capabilities and workplace conditions contribute to effective and safe operations during digital transformation (Cuevas-Vargas, Aguirre, & Parga-Montoya, 2022).

Employee productivity represents one of the primary indicators used to evaluate human resource performance in the power generation industry. According to PLN Statistics, employee productivity has shown a consistent upward trend between 2021 and 2024. In 2021, productivity reached 4,943.48 MWh per employee, increasing to 5,318.00 MWh per employee in 2022 and 5,628.56 MWh per employee in 2023. By 2024, productivity had risen further to 5,953.17 MWh per employee (see Table 1).

Table 1. Employee productivity in the Indonesian Power Generation Industry (PLN), 2021–2024

Year	Employee Productivity (MWh/Employee)	Official Source
2021	4,943.48	PLN Statistics 2021
2022	5,318.00	PLN Statistics 2022

Year	Employee Productivity (MWh/Employee)	Official Source
2023	5,628.56	PLN Statistics 2023
2024	5,953.17	PLN Statistics 2024

This steady increase indicates that each employee in Indonesia's power generation industry has been able to produce progressively higher electricity output over time. The trend reflects improvements in operational performance and workforce efficiency, supported by the implementation of digital technologies, power plant automation, and integrated digital control systems. However, when compared with other electricity utilities in Southeast Asia, Indonesia's power generation industry still has room for performance improvement (Daud & Gusnita, 2026).

Based on employee productivity data for 2024, the Electricity Generating Authority of Thailand (EGAT) recorded the highest productivity at 8.64 GWh per employee. Meanwhile, PT PLN (Persero) of Indonesia achieved 5.95 GWh per employee, whereas Tenaga Nasional Berhad (TNB) of Malaysia reported 4.52 GWh per employee (Deku, Wang, & Preko, 2024). These differences reveal substantial performance gaps among electricity utility companies operating within the same regional context, despite facing similar industrial characteristics and energy transition challenges (Table 2).

Table 2. Comparison of employee productivity among ASEAN Electricity Utilities, 2024

Utility Company	Country	Number of Employees	Electricity Output	Productivity (GWh/Employee)	Official Source
PT PLN (Persero)	Indonesia	51,438	306,219.42 GWh sold	5.95	PLN Statistics 2024
Tenaga Nasional Berhad (TNB)	Malaysia	Approximately 34,455	Approximately 156,000 GWh	4.52	TNB Integrated Annual Report 2024
Electricity Generating Authority of Thailand (EGAT)	Thailand	Approximately 22,000	Approximately 190,000 GWh	8.64	EGAT Annual Report 2024

The observed productivity gap suggests that employee performance is not solely determined by generating capacity, customer base, or organizational size. In fact, utilities with fewer employees and leaner organizational structures are capable of producing significantly higher electricity output per employee. This phenomenon implies that internal human resource factors may play a more influential role in shaping employee performance than physical infrastructure or technological resources alone (Faeni & Faeni, 2025).

The differences in employee productivity also reflect variations in employees' readiness to adapt to digitally enabled work systems. The implementation of technologies such as digital control systems, predictive maintenance, and integrated operational data platforms requires an adequate level of digital competence. Employees who are unable to keep pace with technological advancements are more likely to experience reduced work effectiveness, even when organizations have made substantial investments in digital technologies (Faeni, Faeni, & Riyadh, 2026).

Given these limitations, there is a need for research that develops an integrative model to explain the effects of Digital Competence and Employee Agility on Employee Performance, with Psychological Safety serving as a mediating variable, particularly within the power generation industry in Southeast Asia. This study seeks to address both theoretical and empirical gaps by providing context-specific evidence on the dynamics of human resource management in an energy sector undergoing extensive structural and digital transformation (Widana, Faeni, & Basrowi, 2025).

The novelty of this study lies in its effort to address the existing empirical gap in the power generation industry through a quantitative survey-based approach. Unlike previous studies that primarily examine employee performance directly, this research integrates Digital Competence and Employee Agility as

key antecedent variables while simultaneously examining the mediating role of Psychological Safety. This integrative framework is expected to make a significant contribution to the development of employee performance models in the energy sector and provide more comprehensive empirical evidence to support strategic human resource management and decision-making in the power generation industry (Fajarwati & Saputri, 2026).

2. Literature Review and Hypotheses Development

2.1 Theory of Performance and Employee Performance

According to the Theory of Performance, Employee Performance is a multidimensional construct encompassing task performance, contextual performance, and adaptive performance. Task performance refers to employees' effectiveness in fulfilling prescribed job responsibilities, contextual performance involves discretionary behaviors that support organizational functioning, and adaptive performance reflects the ability to respond effectively to changing work demands. In the context of digital transformation, adaptive performance is particularly important because employees must continuously adjust to evolving technologies, operational procedures, and safety requirements. At the individual level, this study examines employees' perceptions of Psychological Safety as their belief that they can express concerns, ask questions, and acknowledge mistakes without fear of negative interpersonal consequences (Hasibuan, Suliyanto, & Novandari, 2026).

Accordingly, employee performance incorporates both outcome dimensions (productivity, quality, and efficiency) and behavioral dimensions (initiative, collaboration, and continuous learning) (Hasibuan et al., 2026). Theoretically, digital competence enhances task and adaptive performance by strengthening employees' technical capabilities and change management skills, whereas employee agility primarily improves adaptive and contextual performance through behavioral flexibility and proactive adjustment (Fitriyansyah, Basrowi, Khaeruman, & Afiah, 2025).

2.2 Employee Performance

Traditionally, Employee Performance is defined as the work outcomes achieved by an individual in carrying out assigned duties and responsibilities, measured in terms of both quality and quantity according to organizational standards. Performance as the qualitative and quantitative work results achieved by an employee in fulfilling responsibilities assigned by the organization. Emphasizes performance as the extent to which an individual successfully accomplishes work tasks over a specified period compared with predetermined standards, targets, or performance criteria (Huo, Zheng, & Pei, 2023).

Within the industrial and organizational psychology literature, employee performance extends beyond quantitative work outputs (task performance) to include contextual performance and, in dynamic work environments, adaptive performance. Employee performance as the aggregate value of an individual's work-related behaviors that contribute to organizational effectiveness over a standard period Kraus, Breier, and Dasí-Rodríguez (2020).

From an academic perspective, Employee Performance is therefore viewed as a multidimensional construct reflecting the accumulation of employees' task, contextual, and adaptive behaviors over time. Its value to the organization is determined not only by the quality and quantity of work outputs but also by employees' contributions to organizational climate and adaptability. Comprehensive performance measurement should integrate both objective indicators and subjective assessments, recognizing that individual characteristics (e.g., ability, motivation, and personality) together with organizational conditions (support, opportunities, and cultures of safety and innovation) jointly shape performance outcomes. This perspective provides a stronger foundation for both research and human resource management practices aimed at achieving sustainable performance improvement (Lopes, Silveira, Farinha, Oliveira, & Oliveira, 2021).

2.3 Digital Competence

Digital Competence is defined as the integration of knowledge, skills, and attitudes that enables individuals to use digital technologies confidently, critically, and responsibly in learning, work, and

social participation. This definition is adopted in the Council Recommendation on Key Competences for Lifelong Learning and further operationalized through the Digital Competence Framework for Citizens (DigComp) (Nurdiana, 2026). Likewise, UNESCO TVETipedia conceptualizes digital competence as encompassing information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), cybersecurity and digital well-being, intellectual property awareness, problem-solving, and critical thinking. Therefore, digital competence extends beyond operational technical skills to include the ability to evaluate information critically, interact effectively in digital environments, create and integrate digital content, and maintain security, ethical standards, and digital well-being (Maulidia, Afifah, Pebrianti, Juniwati, and Heriyadi (2026).

2.4 Employee Agility

Employee Agility refers to an employee's ability to respond, adapt, and capitalize on opportunities within dynamic and uncertain work environments. It encompasses rapid responses to change, anticipation of emerging demands, and proactive initiatives to innovate or adjust behaviors in order to achieve a dynamic fit between job requirements and individual capabilities (Nambisan, Wright, & Feldman, 2019).

Conceptualize employee agility as the outcome of a continuous process of responding and aligning oneself with work demands arising from uncertain environments. Within this framework, agile employees do not merely react to change but also anticipate future developments and proactively manage emerging challenges and opportunities. Emphasize employees' capacity to gather and disseminate information regarding environmental changes and to respond to such information rapidly and appropriately (Nguyen, Ngo, Bucic, & Phong, 2018).

2.5 Psychological Safety

Psychological Safety is a multidimensional construct referring to the shared belief among team members that they can take interpersonal risks—such as speaking up, reporting mistakes, asking questions, and proposing new ideas—without fear of negative consequences. Its theoretical foundations are rooted in Self-Determination Theory, Social Exchange Theory, and Conservation of Resources (COR) Theory. Extensive empirical evidence demonstrates that psychological safety is positively associated with learning behavior, innovation, team performance, and employee well-being (Parida, Sjödin, Lenka, & Wincent, 2015).

Nevertheless, research also suggests that excessively high levels of psychological safety may reduce accountability, highlighting the need to maintain an appropriate balance between openness and responsibility (Nuryanto, Yusuf, Junedi, Pratiwi, & Basrowi, 2025). Psychological safety is commonly measured using adaptations of Edmondson's Psychological Safety Scale, with reliability and construct validity established for specific organizational contexts. In practice, psychological safety can be fostered through supportive leadership, a no-blame organizational culture, structured learning forums, open communication, and continuous feedback mechanisms that encourage employees to express ideas, acknowledge mistakes, and engage in collaborative problem-solving without fear of punishment (Putri, Asnawi, Hanif, Normal, Sinaini, & Saputra, 2025).

2.6 The Mediating Role of Psychological Safety in the Relationship between Digital Competence and Employee Performance

Digital Competence enables employees to operate digital technologies, solve work-related problems, and respond effectively to operational challenges. However, these competencies may not translate fully into improved performance if employees feel reluctant to ask questions, report errors, or communicate concerns. Psychological Safety provides an environment in which employees can apply their digital skills, exchange knowledge, and learn from mistakes without fear of negative interpersonal consequences (Putri, Asnawi, Hanif, Normal, Sinaini, & Saputra, 2025). Thus, Psychological Safety may facilitate the translation of Digital Competence into better Employee Performance, particularly in the power generation industry, where digital systems and operational safety require effective communication and continuous learning.

2.7 The Mediating Role of Psychological Safety in the Relationship between Employee Agility and Employee Performance

Employee Agility reflects employees' ability to adapt quickly to technological changes, shifting operational demands, and emerging workplace challenges. Nevertheless, adaptability may not consistently improve performance when employees lack a psychologically safe environment to express ideas, seek assistance, and collaborate during periods of change. Psychological Safety may strengthen the relationship by encouraging employees to communicate openly, experiment with appropriate solutions, and learn from operational experiences. Consequently, Psychological Safety may serve as a mediating mechanism through which Employee Agility contributes to improved Employee Performance in the power generation industry (Parida, Sjödin, Lenka, & Wincent, 2015).

Based on the theoretical review and conceptual framework described above, the following research hypotheses are proposed:

H_1: Digital Competence has a direct positive effect on Employee Performance in the power generation industry

H_2: Employee Agility has a direct positive effect on Employee Performance in the power generation industry

H_3: Digital Competence has a direct positive effect on Psychological Safety in the power generation industry

H_4: Employee Agility has a direct positive effect on Psychological Safety in the power generation industry

H_5: Psychological Safety has a direct positive effect on Employee Performance in the power generation industry

H_6: Digital Competence has an indirect positive effect on Employee Performance through Psychological Safety in the power generation industry

H_7: Employee Agility has an indirect positive effect on Employee Performance through Psychological Safety in the power generation industry

3. Research Methodology

3.1 Research Location and Period

The study was conducted at the Head Office of PT PIP, Indonesia. However, the research covered not only the head office but also all operational areas of PT PIP. The study was carried out over the period from April to July 2026. Within this relatively short timeframe, every effort was made to obtain the data required to achieve the research objectives (Hair, Hult, Ringle, and Sarstedt (2022).

3.2 Method

This study adopted the positivist paradigm with a deductive approach to test theory through objectively measurable hypotheses. Accordingly, a quantitative research method employing a survey design was used as the primary strategy for collecting primary data from respondents. The sample was selected using purposive sampling to ensure that all participants met the specific criteria relevant to the research objectives. The collected data were analyzed using Variance-Based Structural Equation Modeling (SEM-VB), commonly known as Partial Least Squares Structural Equation Modeling (SEM-PLS), which was selected for its ability to simultaneously estimate and evaluate complex structural models.

3.3 Population and Sample

The population comprised 5,409 permanent employees of PT PIP. The initial sample size of 373 respondents was estimated using Slovin formula with a 5% margin of error. Proportionate stratified random sampling was employed to ensure proportional representation of employee strata. Eligible

participants were permanent employees actively working during data collection who voluntarily agreed to participate. Data were collected using a structured questionnaire measuring Digital Competence, Employee Agility, Psychological Safety, and Employee Performance, with responses recorded on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Participation was voluntary, confidentiality was maintained, and informed consent was obtained. Data were analyzed using SEM-PLS with SmartPLS version 3.2.9, assessing measurement reliability and validity, structural relationships, and mediation effects through bootstrapping. The final report should specify the actual response rate, instrument sources, statistical power justification, and bootstrapping settings to ensure methodological transparency and reproducibility.

3.4 Data Collection Techniques

Primary data were collected through a structured questionnaire survey. The questionnaire consisted of closed-ended questions measured using a four-point Likert scale and multiple-choice items to quantitatively assess employees' perceptions regarding Digital Competence, Employee Agility, Psychological Safety, and Employee Performance (Nuryanto et al., 2024). Secondary data were obtained from published corporate statistical reports and annual reports of PT PIP (Waluyo & Basrowi, 2024. In addition, tertiary data, including journal articles and previous research studies, were used to support and strengthen both the primary and secondary data (Junedi & Basrowi, 2024; Uda, Prasetyo, Dopo, & Uda, 2024).

3.5 Research Instrument Blueprint

Based on the operational definitions of the study variables, the research instrument was developed as follows in Table 3.

Table 3. Research instrument blueprint for employee performance

Operational Definition	Dimension	Operational Indicator	Item Code	Number of Items	Instrument
Employee Performance is measured as a multidimensional construct reflecting employees' behavioral contributions and work outcomes within the organization.	Task Performance	Ability to respond to operational incidents	TP1	3	Four-point Likert Scale Questionnaire
		Accuracy in implementing operational procedures	TP2		
		Quality of operational outputs	TP3		
	Contextual Performance	Frequency of assisting colleagues during operational disruptions	CP1	3	
		Active participation in cross-departmental discussions	CP2		
		Initiative to improve operational efficiency	CP3		
	Adaptive Performance	Speed of adapting to new monitoring systems	AP1	3	
		Response effectiveness during emergency situations	AP2		
		Ability to quickly learn updated procedures	AP3		
	Safety Performance	Frequency of reporting near-miss incidents	SP1	3	
		Compliance with safety checklists	SP2		

Operational Definition	Dimension	Operational Indicator	Item Code	Number of Items	Instrument
		Initiative in accident prevention	SP3		
Total Items				12	

3.6 Data Analysis Technique

Partial Least Squares Structural Equation Modeling (SEM-PLS) is an inferential statistical technique used to examine and model relationships among variables within a conceptual framework (Sukidin & Choirul, 2025). This approach is recognized for its flexibility and has been widely applied across various disciplines, including social sciences, management, business, and other fields involving complex relationships among latent constructs (Teece, Pisano, & Shuen, 1997; Wang, & Ahmed, 2007). SEM-PLS enables researchers not only to test theoretical hypotheses but also to simultaneously investigate the interrelationships among multiple constructs within a single integrated model (Hair, 2022).

The measurement model (outer model) in SEM-PLS is an essential component used to represent and measure latent variables that cannot be observed directly. It evaluates the relationships between latent constructs and their observed indicators through assessments of reliability and validity, including indicator reliability, internal consistency reliability, convergent validity, and discriminant validity (Hasibuan, Suliyanto, & Novandari, 2026).

The structural model (inner model) represents the core of SEM-PLS analysis and focuses on examining the causal relationships among latent constructs that have been validated through the measurement model. It assesses the strength, direction, and significance of hypothesized relationships while evaluating the model's explanatory and predictive capabilities through path coefficients, coefficients of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), and hypothesis testing using the bootstrapping procedure (Hair, 2022).

4. Results and Discussions

4.1 Data Description

Based on the primary data collected through the questionnaire survey, respondents' demographic characteristics were analyzed according to age, educational attainment, length of employment, and work unit.

Table 4. Distribution of respondents by age

No.	Age	Frequency	Percentage (%)
1	< 30 years	76	20.38
2	30–40 years	138	37.00
3	> 40 years	159	42.62
Total		373	100.00

As shown in Table 4, among the 373 respondents, the majority of employees at PT PLN Indonesia Power were over 40 years of age, accounting for 159 respondents (42.62%). Employees aged 30–40 years represented the second-largest group with 138 respondents (37.00%), while those under 30 years constituted the smallest group, comprising 76 respondents (20.38%).

Table 5. Distribution of respondents by length of employment

No.	Length of Employment	Frequency	Percentage (%)
1	< 6 years	82	21.98
2	6–10 years	116	31.10
3	11–15 years	95	25.47
4	> 15 years	80	21.45
Total		373	100.00

As shown in Table 5, the largest proportion of respondents had been employed for 6–10 years, comprising 116 employees (31.10%). Employees with 11–15 years of service represented the second-largest group (95 respondents; 25.47%), followed by those with less than six years of employment (82 respondents; 21.98%). Employees with more than 15 years of service accounted for 80 respondents (21.45%), making them the smallest group.

Table 6. Distribution of respondents by work unit

No.	Work Unit	Frequency	Percentage (%)
1	Head Office	41	10.99
2	West Java Power Generation Unit	82	21.98
3	East Java Power Generation Unit	76	20.38
4	Sumatra Power Generation Unit	70	18.77
5	Kalimantan Power Generation Unit	56	15.01
6	Sulawesi, Maluku, and Papua Power Generation Unit	48	12.87
Total		373	100.00

As presented in Table 6, the respondents were distributed across the Head Office and all major operational regions of PT PLN Indonesia Power, including power generation units in Java, Sumatra, Kalimantan, Sulawesi, Maluku, and Papua. This distribution indicates that the sample adequately represents employees from the company's diverse operational units, thereby providing comprehensive coverage of organizational perspectives across different geographical regions.

4.2 Outer Model

Table 7. Outer loading values

	Employee Agility	Employee Performance	Digital Competence	Psychological Safety
AD1	0.855			
AD2	0.817			
AP1		0.826		
AP2		0.807		
AP3		0.789		
CCD1			0.734	
CCD2			0.733	
CCD3			0.750	
CP1		0.753		
CP2		0.776		
CP3		0.743		
CPS1	0.820			
CPS2	0.822			
CT1	0.824			
CT2	0.824			
DCC1			0.817	
DCC2			0.786	
DCC3			0.762	
DM1	0.736			
DM2	0.806			
DPS1			0.834	
DPS2			0.779	

	Employee Agility	Employee Performance	Digital Competence	Psychological Safety
DPS3			0.840	
DSW1			0.757	
DSW2			0.740	
DSW3			0.801	
IDL1			0.720	
IDL2			0.758	
IDL3			0.740	
LA1	0.791			
LA2	0.838			
PR1	0.779			
PR2	0.810			
PS1				0.838
PS2				0.802
PS3				0.850
PS4				0.876
PS5				0.895
PS6				0.847
PS7				0.848
RS1	0.764			
RS2	0.795			
SO1	0.868			
SO2	0.851			
SP1		0.752		
SP2		0.811		
SP3		0.728		
TP1		0.801		
TP2		0.772		
TP3		0.783		

Based on the results presented in Table 7, all 50 measurement indicators representing the four research constructs (Employee Agility, Employee Performance, Digital Competence, and Psychological Safety) achieved outer loading values above the recommended threshold of 0.70. Overall, the standardized loading values ranged from 0.720 to 0.895. The lowest loading value was observed for IDL1 under the Digital Competence construct (0.720), whereas the highest loading value was obtained for PS5 under the Psychological Safety construct (0.895).

According to the convergent validity criteria proposed by Hair (2022), indicators with outer loading values exceeding 0.70 demonstrate satisfactory convergent validity. Therefore, all measurement items in this study were retained for further analysis, indicating that each indicator adequately represents its respective latent construct.

Table 8. Composite reliability results

Construct	Composite Reliability
Employee Agility	0.969
Employee Performance	0.942
Digital Competence	0.956
Psychological Safety	0.948

As presented in Table 8, all research constructs exhibited Composite Reliability (CR) values substantially above the recommended minimum threshold of 0.70. The CR values ranged from 0.942 to 0.969, indicating excellent internal consistency reliability for all latent constructs. These findings demonstrate that the indicators associated with each construct consistently measure the same underlying concept and confirm the reliability of the measurement instrument employed in this study.

Table 9. Coefficient of Determination (R^2)

Endogenous Variable	R^2	Adjusted R^2	Interpretation
Employee Performance	0.798	0.796	High
Psychological Safety	0.737	0.736	High

Based on the results presented in Table 9, the coefficient of determination (R^2) indicates that the structural model possesses strong predictive capability for both endogenous constructs. The Psychological Safety construct achieved an R^2 value of 0.737 (Adjusted R^2 = 0.736), indicating that 73.7% of the variance in Psychological Safety is explained by Digital Competence and Employee Agility. Meanwhile, Employee Performance recorded an R^2 value of 0.798 (Adjusted R^2 = 0.796), indicating that 79.8% of the variance in Employee Performance is jointly explained by Digital Competence, Employee Agility, and Psychological Safety.

Following the guidelines proposed by Hair (2022), R^2 values approaching or exceeding 0.75 are considered substantial, reflecting strong explanatory and predictive power. Accordingly, both endogenous constructs in this study fall within the high category, demonstrating that the proposed structural model effectively explains variations in Psychological Safety and Employee Performance among employees of PT PLN Indonesia Power. These findings provide strong empirical support for the robustness of the proposed research model.

4.3 Bootstrapping Model

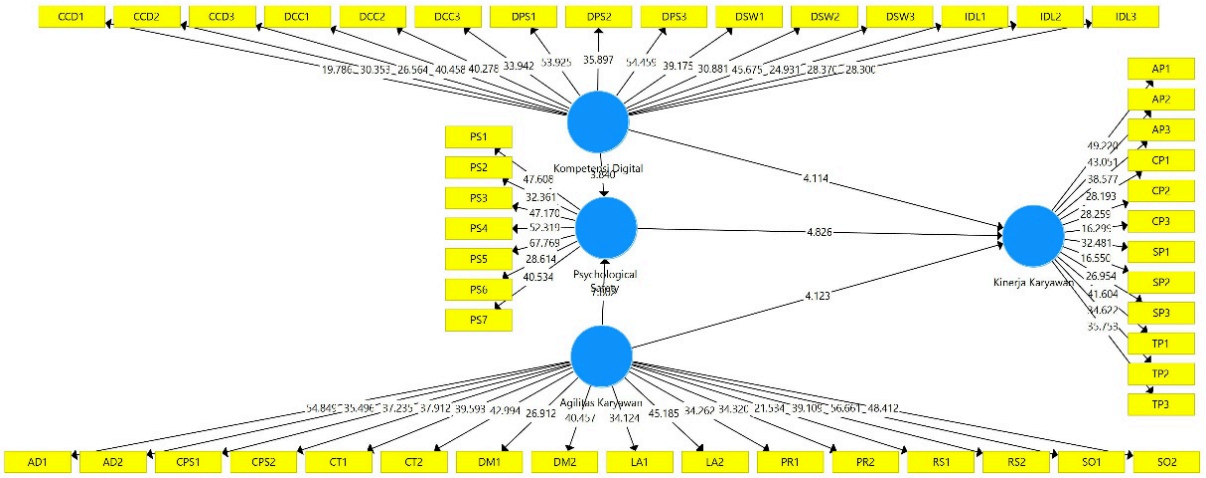


Figure 1. Bootstrapping model

Based on the bootstrapping analysis in Figure 1 conducted using **SmartPLS v3.2.9**, the significance testing of the structural model was performed to examine the relationships among the research variables Table 10 .

Table 10. Results of direct hypotheses testing

Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation	t-Statistic	p-Value
Employee Agility → Employee Performance	0.373	0.381	0.091	4.123	0.000
Employee Agility → Psychological Safety	0.598	0.603	0.077	7.802	0.000

Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation	t-Statistic	p-Value
Digital Competence → Employee Performance	0.260	0.258	0.063	4.114	0.000
Digital Competence → Psychological Safety	0.284	0.280	0.074	3.840	0.000
Psychological Safety → Employee Performance	0.308	0.303	0.064	4.826	0.000

H_1: Digital Competence → Employee Performance

ased on the results presented in Table 10, the path coefficient from Digital Competence to Employee Performance is 0.260, with a t-statistic of 4.114, exceeding the critical value of 1.96, and a p-value of 0.000, below the significance level of 0.05.These results indicate a positive and statistically significant relationship. Therefore, higher levels of Digital Competence are associated with higher Employee Performance, and H_1 is supported.

H_2: Employee Agility → Employee Performance

The relationship between Employee Agility and Employee Performance produced a path coefficient of 0.373, a t-statistic of 4.123, and a p-value of 0.000. Since the *t*-statistic exceeds 1.96 and the *p*-value is below 0.05, the effect is positive and statistically significant. This finding indicates that greater Employee Agility leads to improved Employee Performance. Therefore, H_2 is supported.

H_3: Digital Competence → Psychological Safety

The path coefficient from Digital Competence to Psychological Safety is 0.284, with a t-statistic of 3.840 and a p-value of 0.000. These results confirm a positive and significant effect, indicating that employees with higher levels of digital competence are more likely to experience greater psychological safety. Accordingly, H_3 is supported.

H_4: Employee Agility → Psychological Safety

The relationship between Employee Agility and Psychological Safety yielded a path coefficient of 0.598, a t-statistic of 7.802, and a p-value of 0.000. This represents the strongest direct effect in the structural model. The findings indicate that higher levels of employee agility significantly enhance psychological safety. Therefore, H_4 is supported.

H_5: Psychological Safety → Employee Performance

The path coefficient from Psychological Safety to Employee Performance is 0.308, with a t-statistic of 4.826 and a p-value of 0.000. Since the relationship is positive and statistically significant, greater psychological safety contributes to higher employee performance. Thus, H_5 is supported.

4.4 Indirect Effects

The mediation analysis demonstrates that Psychological Safety significantly mediates the effects of both Employee Agility and Digital Competence on Employee Performance. The indirect effect of Employee Agility on Employee Performance through Psychological Safety is 0.184, with a t-statistic of 4.942 and a p-value of 0.000, indicating a positive and statistically significant mediation effect. Therefore, H6 is supported, suggesting that Psychological Safety partially mediates the relationship between Employee Agility and Employee Performance (Almasyhari, Rachmadani, & Sari, 2025).

Similarly, the indirect effect of Digital Competence on Employee Performance through Psychological Safety is 0.088, with a t-statistic of 2.606 and a p-value of 0.009. Since the indirect effect is also positive and statistically significant, H7 is supported, indicating that Psychological Safety partially mediates the relationship between Digital Competence and Employee Performance (Almasyhari et al., 2025; U. W. Nuryanto, Quraysin, & Pratiwi, 2024). Overall, these findings demonstrate that

Psychological Safety functions as an important psychological mechanism through which both Digital Competence and Employee Agility enhance Employee Performance, reinforcing the importance of fostering a psychologically safe work environment alongside developing employees' digital capabilities and adaptability (Ainin, Parveen, Moghavvemi, Jaafar, & Mohd Shuib, 2015; Rialti & Zollo, 2023).

4.5 Discussion

4.5.1 The Effect of Digital Competence on Employee Performance

The results of the first hypothesis (H_1) demonstrate that Digital Competence has a positive and significant effect on Employee Performance, with a path coefficient of 0.260 (t = 4.114; p = 0.000). This finding indicates that higher levels of digital competence among employees of PT PLN Indonesia Power are associated with higher levels of employee performance (Nuryanto, Basrowi, Quraysin, Pratiwi, & Utami, 2024; Purwaningsih, Muslikh, & Fathurahman, 2024). These findings reinforce Human Capital Theory, which argues that investments in employees' knowledge, skills, and abilities (Nuryanto, Yusuf, Junedi, Pratiwi, & Basrowi, 2025). In this context, digital competence, constitute valuable human capital that enhances organizational productivity and performance (Siagian, Situmorang, Simbolon, Tarigan, Harefa, Poniman, & Sirait, 2026). Employees possessing superior digital knowledge and technical capabilities contribute more effectively to organizational outcomes (Mukt, Basrowi, Juwita, Isnarini, Dewi, & Yusuf, 2025; Uda, Prasetyo, Dopo, & Uda, 2024). As a form of human capital, digital competence enables employees to operate digital technologies more efficiently, accurately, and productively, thereby supporting the increasingly digitalized operations of modern power generation systems (Ainin, Parveen, Moghavvemi, Jaafar, & Mohd, 2015; Rialti, & Zollo, 2023).

The findings are also consistent with the Theory of Performance, which conceptualizes employee performance as a multidimensional construct comprising task performance, contextual performance, and adaptive performance (Junedi, & Basrowi, 2024; Uda et al., 2024). Digital competence directly enhances task performance by improving employees' ability to operate digital control systems, analyze operational data, and make technology-driven decisions (Sok & Sok, 2013). These competencies enable employees to complete tasks more accurately, efficiently, and effectively (Foltean, Trif, & Tuleu, 2019; Trainor, Andzulis, Rapp, & Agnihotri, 2014). Furthermore, digital competence strengthens adaptive performance, as digitally competent employees are better equipped to respond to rapid technological advancements and evolving operational procedures associated with the ongoing digital transformation of the energy sector (Dahlan, Shafia, Tatung, & Basrowi, 2025; Fauzi, Effendi, & Basrowi, 2024). Consequently, digital competence enhances both technical execution and change management capabilities, leading to superior overall performance (Suherman, Pranata, Sumarni, & Suroso, 2026).

4.5.2 The Indirect Effect of Digital Competence on Employee Performance through Psychological Safety

The results of the sixth hypothesis (H_6) indicate that Psychological Safety partially mediates the relationship between Digital Competence and Employee Performance, with an indirect path coefficient of 0.088 (t = 2.606; p = 0.009). Because the direct effect of Digital Competence on Employee Performance remains significant (β = 0.260; p = 0.000), the mediation is classified as partial mediation (=(Suseno, Dian, & Basrowi, 2026).

This finding makes an important contribution to Human Capital Theory by Fauzi, Effendi, and Basrowi (2024) that demonstrating that human capital, not only exerts a direct influence on performance but also affects performance indirectly through a psychological mechanism (Widodo, Kurniawati, Ambarwati, and Kusumawati (2026). Investments in digital competence development should therefore be accompanied by efforts to cultivate a psychologically safe work environment so that the value of human capital can be fully realized (Nuryanto, Basrowi, Quraysin, Pratiwi, & Utami, 2024). This finding is also consistent with Social Exchange Theory, suggesting that organizational support in the form of digital training should be complemented by psychological support through the

establishment of psychological safety to generate reciprocal outcomes in the form of enhanced employee performance (Basrowi, Fauzi, & Efendi, 2025; Fauzi et al., 2024).

The findings are consistent with previous studies reporting that digital competence improves job performance both directly and indirectly through the partial mediation of psychological empowerment (Nuryanto, Yusuf, Junedi, Pratiwi, & Basrowi, 2025). The present study extends this body of knowledge by replacing psychological empowerment with psychological safety as the mediating mechanism (Basrowi et al., 2025; Fauzi et al., 2024) there by providing a more specific explanation of how employees' sense of safety in taking interpersonal risks contributes to improved performance (Triyani, Etika, & Verawati, 2026).

4.5.3 The Indirect Effect of Employee Agility on Employee Performance through Psychological Safety
The results of the seventh hypothesis (H_7) demonstrate that Psychological Safety partially mediates the relationship between Employee Agility and Employee Performance, with an indirect path coefficient of 0.184 (t = 4.942; p = 0.000). Since the direct effect of Employee Agility on Employee Performance remains significant (β = 0.373; p = 0.000), this relationship is also classified as partial mediation. Moreover, the indirect effect of 0.184 is larger than that of the Digital Competence pathway, indicating that Psychological Safety more strongly mediates the relationship between Employee Agility and Employee Performance than the relationship between Digital Competence and Employee Performance (Widodo, Kurniawati, Ambarwati, & Kusumawati, 2026).

This finding provides significant support for the Resource-Based View (RBV) by demonstrating that dynamic capabilities, represented by employee agility, require a supportive psychological environment to be fully translated into superior performance (Daud & Gusnita, 2026). Dynamic capabilities involve the ability to sense opportunities, seize opportunities, and transform organizational resources (Ainin, Parveen, Moghavvemi, Jaafar, & Mohd, 2015; Hasibuan, Suliyanto, & Novandari, 2026). Psychological safety creates conditions in which employees are willing to identify opportunities for improvement, confidently pursue innovative solutions, and adapt their work practices without fear of failure or negative interpersonal consequences (Zhou & Hoever, 2014).

The findings also reinforce Social Exchange Theory by illustrating that employee agility, as a form of individual contribution, establishes reciprocal relationships with the organization through the creation of psychological safety (Berkat, Setinawati, & Basrowi, 2025; Basrowi, Fauzi, & Efendi, 2025). Positive social exchange occurs when employees feel secure enough to contribute their full capabilities. Agile employees contribute by adapting to change and generating innovative solutions, and when these contributions are met with organizational support and psychological safety, a positive reciprocal cycle is created that further enhances employee performance (Triyani, Etika, and Verawati, 2026; Maulidia,.

The present findings are consistent with previous research demonstrating that agile ways of working are positively associated with a climate of psychological safety, which subsequently enhances employee engagement and organizational performance (Dahlan, Shafia, Tatung, & Basrowi, 2025). Employee Agility directly improves employee performance and serves as a mediator between Digital Competence and performance (Siagian, Situmorang, Simbolon, Tarigan, Harefa, Poniman, & Sirait, 2026). The current study extends these findings by positioning Psychological Safety as the mediating mechanism linking Employee Agility to Employee Performance, thereby providing a more comprehensive explanation of the psychological processes underlying employee effectiveness during digital transformation (Suherman, Pranata, Sumarni, & Suroso, 2026).

5. Conclusions

5.1 Conclusion

Based on the results of the Structural Equation Modeling–Partial Least Squares (SEM-PLS) analysis, all proposed hypotheses were supported. The findings demonstrate that Digital Competence and Employee Agility have positive and significant effects on Employee Performance. These results indicate that employees who possess stronger digital capabilities and greater adaptability to

organizational and technological changes tend to achieve higher levels of job performance in carrying out their responsibilities at PT PLN Indonesia Power.

In addition to their direct effects on Employee Performance, Digital Competence and Employee Agility were also found to have significant positive effects on Psychological Safety. This suggests that employees with strong digital competencies and adaptive capabilities are more confident in their work, more willing to express ideas, report mistakes, and actively participate in problem-solving activities without fear of negative interpersonal consequences.

Furthermore, Psychological Safety positively and significantly influences Employee Performance and partially mediates the relationships between Digital Competence and Employee Performance, as well as between Employee Agility and Employee Performance. These findings indicate that a psychologically safe work environment serves as an important mechanism through which employees' digital competence and agility are translated into improved performance. Overall, the proposed structural model demonstrates strong explanatory and predictive power, highlighting the importance of integrating technological capabilities, adaptive behaviors, and psychological conditions to enhance workforce performance in the power generation industry.

5.2 Research Limitation

This study has several limitations that should be considered when interpreting the findings and designing future research. First, this study employed a cross-sectional research design, which captures relationships among variables at only a single point in time. Consequently, the design cannot fully capture the dynamic nature of these relationships over time nor establish definitive causal inferences. Future studies employing longitudinal designs would provide stronger evidence regarding the causal and temporal relationships among Digital Competence, Employee Agility, Psychological Safety, and Employee Performance.

Second, data collection relied exclusively on self-reported questionnaire responses, which may introduce common method bias. Although the measurement model demonstrated satisfactory reliability and validity, future research could improve methodological rigor by utilizing multiple data sources, such as supervisor evaluations of employee performance, or multiple data collection methods, including qualitative interviews or observational techniques, to reduce potential response bias and strengthen the robustness of the findings (Nurdiana, 2026).

5.3 Suggestions and Directions for Future Research

Future research is recommended to examine the relationships among Digital Competence, Employee Agility, Psychological Safety, and Employee Performance across different industries and organizational contexts to improve the generalizability of the findings. Further studies could explore additional psychological and organizational factors that may influence employee performance during digital transformation. Researchers are also encouraged to investigate the mediating role of Psychological Safety using longitudinal research designs to better understand how digital competence and employee agility contribute to performance over time. In addition, future research could integrate Human Capital Theory, the Resource-Based View (RBV), Social Exchange Theory, and the Theory of Performance to provide a more comprehensive understanding of employee adaptability, organizational support, and sustainable performance in technology-driven work environments

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Author Contributions

AGS and BB conceived and designed the study. The research methodology was jointly developed by AGS, BB, and UWN. AGS was responsible for data collection, while BB and UWN conducted the

formal data analysis. The investigation was carried out collaboratively by AGS and BB. AGS prepared the original draft of the manuscript, and BB together with UWN critically reviewed, revised, and edited the manuscript. BB supervised the overall research process, managed the project administration, and secured the research funding. All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work

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