Indonesia Auditing Research Journal, 15 (3) (2026), pp. 389-298

Published by: Institute of Accounting Research and Novation (IARN)

Indonesia Auditing Research Journal

Journal homepage: https://journals.iarn.or.id/index.php/ARJ/index

Digital technology implementation and the transition toward industry 5.0: Implications for employee skill development in the public sector

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Article Info

Article history:

Received Aug 16, 2026
Revised Aug 24, 2026
Accepted Sep 13, 2026

Keywords:

Digital Technology;
Government Employees;
Industry 5.0;
Skills Development.

ABSTRACT

This study analyzes the influence of the implementation of digital technology on the development of employee skills with the transition to Industry 5.0 as a mediator in the Banten Provincial DPUPR. The mixed methods approach was applied through a survey of 144 respondents and interviews with 13 informants. Quantitative data were analyzed using PLS-SEM assisted by SmartPLS 4, while qualitative findings were used to clarify statistical results. The implementation of digital technology has a negative effect on employee skill development (β=−0.241; t=3,053; p=0.002), but has a positive effect on the transition to Industry 5.0 (β=0.713; t=16,242; p=0.000). The transition strongly improves employee skills (β=0.956; t=16,009; p=0.000) while mediating the positive influence of digital technology (β=0.681; t=9,980; p=0.001). This pattern indicates competitive mediation. Digitalization that is not accompanied by user readiness can create an adaptation burden. On the contrary, human-centric, collaborative, resilient, and sustainable implementation is able to turn technology into a means of strengthening employee competence.

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1. INTRODUCTION

The development of digital technology has changed the way organizations plan, execute, and evaluate work. These changes are no longer limited to the use of computers or digitization of documents, but have evolved towards the use of *artificial intelligence*, *the Internet of Things* (IoT), *big data*, cloud computing, and interconnected work systems. This development marks the transition from Industry 4.0 to Industry 5.0, which is a paradigm that not only pursues automation and efficiency, but also places people, sustainability, and organizational resilience as key elements in technological transformation (Breque et al., 2021; Grabowska et al., 2022; Jefroy et al., 2022).

In Indonesia, the transformation is driven through various digitalization policies and *the Making Indonesia 4.0* agenda which is gradually directed towards the Industry 5.0 approach (Hidayatno et al., 2019; Satya, 2018). Although initially more developed in the manufacturing environment, the use of digital technology has now become a strategic necessity for public sector organizations. Digitalization allows the government to increase efficiency, effectiveness, transparency, integration, and the ability to respond to community needs more quickly (Latupeirissa et al., 2024). However, digital transformation in local governments is not enough to be carried out through the procurement of devices or applications. Its success also depends on organizational capacity, leadership, strategy, collaboration, as well as adjustments to work structures and processes (Carter et al., 2024; Gasco-Hernandez et al., 2022). Within the framework of Industry 5.0, technology is placed as a means to build human-oriented, sustainable, and resilient organizations. Thus, the transition requires the renewal of organizational culture, decision-making mechanisms, patterns of human interaction with technology, and the digital competence of the apparatus (Carayannis & Morawska-Jancelewicz, 2022; Ghobakhloo et al., 2024). The Banten Province Public Works and Spatial Planning Office (DPUPR) is a regional apparatus that has a strategic role in infrastructure development, resource management, and spatial planning. The complexity of these tasks is increasing in line with population growth, urbanization, climate change, sustainable development demands, and community needs for quality infrastructure (Banten, 2023). In the face of these conditions, digital technology can be used to support regional mapping, infrastructure data processing, project supervision, spatial planning, asset maintenance, and data-based decision-making. However, the benefits of this technology can only be achieved if employees have adequate skills to operate, understand, and develop its use.

The problem that arises is that the readiness of organizational technology is not necessarily followed by the readiness of human resources. Some employees of the Banten Provincial DPUPR still have a background in technical competencies that develop in conventional work patterns. Meanwhile, digital transformation requires mastery of data analysis, digital applications, information management, data security, and technology-based project management. In addition to technical skills, employees also need the ability to think critically, solve problems, communicate, collaborate, be creative, and adapt to change. If skills development is not carried out in a targeted manner, technology implementation can cause competency gaps, cultural resistance, inequality in intergenerational technology mastery, and low utilization of digital systems (Aly, 2022; Fatihaturrizqi et al., 2025; Tavares et al., 2022).

The gap between the speed of technological development and the ability of employees is an important issue because the success of digital transformation is essentially determined by the humans who use it (Höyng & Lau, 2023). Advanced technology does not automatically improve performance if employees do not understand the functions, benefits, and how to integrate them into work (Mhaske et al., 2025). On the other hand, the application of technology accompanied by skill development can open up opportunities to increase productivity, job accuracy, service innovation, operational efficiency, and decision-making quality (Atobishi et al., 2024; Mikalef et al., 2023). Thus, the problem of this research is centered on how the implementation of digital technology in preparation and transition to Industry 5.0 affects the skill development of employees of the Banten Provincial DPUPR. Theoretically, this research is based on the concept of Industry 5.0 which emphasizes three main principles, namely *human-centric*, sustainable, and *resilient*. In this perspective, technology is not positioned as a replacement for humans, but as a means that strengthens human ability to produce more effective and valuable work. Although digital transformation and skills development research has evolved, there is still a gap in explaining the relationship between digital technology implementation, Industry 5.0, and employee skills. Previous research has mostly discussed efficiency, capability, and performance, while the influence of digital technology on the skill development of public sector employees is still limited (Carter et al., 2024; Gasco-Hernandez et al., 2022). In addition, the relationship between Industry 5.0 principles and skills development, particularly as a mediation mechanism, is still limited to being empirically tested (Breque et al., 2021; Carminati et al., 2025). This research fills this gap by examining the transition of Industry 5.0 as a mediator between digital technology and employee skill development.

Based on these problems, this study aims to analyze the implementation of digital technology in preparation and transition to Industry 5.0 and its impact on the skill development of employees of the Banten Provincial DPUPR. In particular, the research is directed to identify the level of readiness of employees in adopting digital technology; analyze the influence of technology implementation on technical skills, interpersonal skills, and adaptive competencies; identify the driving and inhibiting factors of the transition process; and formulate a skill development strategy that is in accordance with organizational needs and employee characteristics.

2. RESEARCH METHOD

This study uses a mixed methods approach to analyze the effect of the implementation of digital technology in preparation and transition to Industry 5.0 on the skill development of employees of the Banten Province DPUPR. This method includes quantitative surveys for scale measurements and qualitative interviews for in-depth exploration, with data triangulation for validity. The measurement of variables was adapted from several relevant studies, for example Digital Technology Implementation (Use of digital systems, Technology integration, Automation of work processes, Digital infrastructure, Utilization of digital data) (Babkin et al., 2022; Tahu, 2025), Transition to Industry 5.0 (Human-centric orientation, Human and technology collaboration, Organizational resilience, Digital transformation readiness, Sustainability orientation) (Brodny & Tutak, 2025; Rožanec et al., 2022), and Employee Skills Development (Digital skills, Problem solving, Technology adaptation, Continuous learning, Collaboration and communication) (Carminati et al., 2025; Saniuk & Grabowska, 2023). A total of 144 respondents were selected from a population of 225 employees. The sample size was determined using the Slovin formula with a 5% margin of error. Respondents were selected based on their involvement in using digital systems or applications in their work. The quantitative data were analyzed using SmartPLS 4, including assessments of the outer and inner models (Hair et al., 2019, 2022; Khan et al., 2019). Meanwhile, 13 informants participated in the qualitative phase. Interviews were conducted until data saturation was reached, defined as the point at which additional interviews no longer generated new or substantially different themes.

3. RESULTS AND DISCUSSIONS

The analysis is carried out in stages through the evaluation of measurement models and structural models. In the initial stage, the quality of the instrument is checked based on outer loading, construct reliability, AVE, and Fornell-Larcker criteria. The results show that the research indicators are able to measure each construct validly, consistently, and have adequate empirical differences. Furthermore, structural model testing is used to explain the direction, strength, and significance of direct and indirect relationships. The research findings show an interesting dynamic because the implementation of digital technology does not always directly strengthen employee skills. A more constructive impact is formed when the use of technology is accompanied by a human-oriented organizational transition, human-technology collaboration, resilience, sustainability, and continuous learning as per the principles of Industry 5.0.

Table 1. Result of measurement model

Varieble/Indicator	Outer loading	Cronbach's Alpha	Composite Reliability	AVE	R2
Employee Skills Development		0,906	0,930	0,728	0,644
ESD1	0,754				
ESD2	0,870				
ESD3	0,886				
ESD4	0,869				
ESD5	0,881				
Implementation Digital Technology		0,917	0,938	0,750	
IDT1	0,865				
IDT2	0,887				
IDT3	0,848				
IDT4	0,865				
IDT5	0,865				
Transition to Industry 5.0		0,915	0,934	0,701	0,508
TI1	0,854				
TI2	0,838				
TI3	0,812				
TI4	0,822				
TI5	0,847				
TI6	0,851				

Note. AVE = Average Variance Extracted; R2 = R-Square.

The results of the evaluation of the measurement model show that all indicators have adequately represented their constructs. The *outer loading value* is in the range of 0.754–0.887 and completely exceeds the limit of 0.70 (Hair et al., 2022). Thus, there are no indicators that need to be eliminated. In the construct of employee skill development, ESD3 obtained the highest score of 0.886, while ESD1 was the lowest of 0.754. Although lower than other indicators, ESD1 still meets the indicator's validity requirements. The construction of digital technology implementation has an *outer loading* between 0.848 and 0.887. IDT2 is the most powerful indicator in describing the application of digital technology. Meanwhile, the transition to Industry 5.0 indicator yielded a value between 0.812 and 0.854, with TI1 being the most dominant indicator.

All three constructs showed excellent internal consistency, with Cronbach's Alpha of 0.906–0.917 and composite reliability of 0.930–0.938. High values indicate strong measurement consistency, but should also be considered as an indication of possible similarity or redundancy between indicators. However, the entire outer loading was above 0.70 and the AVE value ranged from 0.701–0.750, while the Fornell–Larcker criterion indicated discriminant validity was met. Thus, the high reliability in this study does not automatically indicate problematic redundancy, but indicates that the indicators have a strong correlation in representing the same construct. An R^2 value of 0.508 indicates that the implementation of digital technology is able to explain 50.8% of the variation in the transition to Industry 5.0. Furthermore, the R^2 of employee skill development of 0.644 means that 64.4% of changes in employee skills can be explained by predictor variables in the model, while the remaining 35.6% are influenced by other factors outside the study. Overall, the measurement model was judged valid, reliable, and feasible for use in subsequent structural testing.

Table 2. Fornell-larcker criterion

Construct	Employee Skills Development	Implementation Digital Technology	Transition to Industry 5.0
Employee Skills Development	0,853		
Implementation Digital Technology	0,440	0,866	
Transition to Industry 5.0	0,784	0,713	0,837

The results of the Fornell–Larcker criteria test show that the validity of the discriminant has been met. The square root value of AVE on employee skill development was 0.853, digital technology implementation was 0.866, and transition to Industry 5.0 was 0.837. Each value of the diagonal is higher than the correlation between constructs in the same row and column.

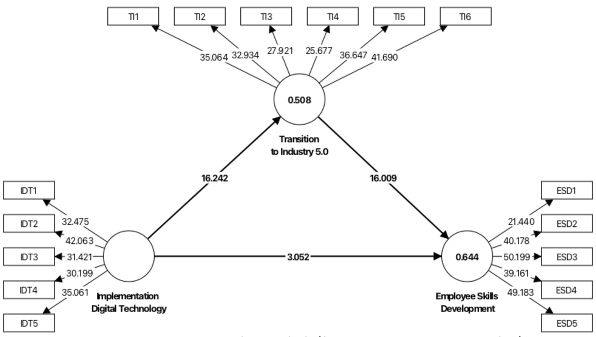

Figure 1. Structural model (bootstrapping results)

The test results showed that the entire structural path was significant. The implementation of digital technology has a negative effect on employee skill development (β = −0.241; t = 3.052; p = 0.002). This means that the application of technology without human readiness, training, and work adjustment can suppress the skills development process. In contrast, the implementation of digital technology drives the transition to Industry 5.0 positively and strongly (β = 0.713; t = 16.242; p <

0.001). The Industrial 5.0 transition further has a huge influence on employee skill development (β = 0.956; t = 16.009; p < 0.001). The indirect influence of the implementation of digital technology through the transition of Industry 5.0 was also positive and significant (β = 0.681; t = 9.980; p < 0.001). Since direct and indirect influences have opposite directions, the pattern suggests competitive mediation. Thus, digital technology is more effective in developing skills if its application is directed through the principles of Industry 5.0.

Table 3. Path coefficients and significance of structural model

Hipotesis	β	STDEV	T statistics	P values
Implementation Digital Technology -> Employee Skills Development	-0,241	0,079	3,052	0,002
Implementation Digital Technology -> Transition to Industry 5.0	0,713	0,044	16,242	0,000
Transition to Industry 5.0 -> Employee Skills Development	0,956	0,060	16,009	0,000
Implementation Digital Technology -> Transition to Industry 5.0 -> Employee Skills Development	0,681	0,068	9,980	0,000

Digital Technology Implementation and Employee Skill Development

The test results showed that the implementation of digital technology had a negative and significant effect on employee skill development, with a path coefficient of −0.241, a standard deviation of 0.079, a t-value of 3.052, and a p-value of 0.002. A t-value that exceeds 1.96 and a p-value below 0.05 proves that the relationship is statistically significant. However, the direction of the coefficient shows that the increase in the implementation of digital technology, after the influence of the transition to Industry 5.0 is taken into account, is related to a decrease in employee skill development by 24.1%. Ten of the 13 informants indicated that application deployment often takes place faster than the process of setting up user capabilities. Employees have been required to use the system when training, mentoring, inter-application integration, and technical support are not fully available. This situation makes some employees study applications just to solve administrative demands. They are able to follow the sequence of operations, but do not necessarily understand the relationship between data, work processes, and the resulting decisions. An informant described the condition as follows:

> "*The application must be used when some employees do not understand the flow. Eventually the work does enter the system, but the solution still rests on a few people who are considered the most knowledgeable.*"

The information shows the difference between the use of technology and the mastery of skills. The ability to enter data does not necessarily reflect substantive digital skills. New skill development occurs when employees are able to understand the function of technology, check the quality of information, interpret system outputs, and use the results to solve work problems. The interviews also found repetitive data inputs, unconnected applications, differences in network quality, and dependence on certain operators. In these conditions, digitalization can add to the stages of work. Employees must continue to carry out manual procedures, then repeat the same work through the application. As a result, the time that should be used to study, analyze data, or solve problems is absorbed by administrative activities. Senior employees face different challenges. They generally have strong technical knowledge and field experience, but it takes time as well as appropriate learning methods when new systems are introduced. In contrast, younger employees tend to be faster to operate applications, but do not necessarily have the contextual experience to assess whether system outputs are appropriate to field conditions. This difference shows that digitalization can widen the competency gap if organizations apply one training pattern to all employee groups.

These findings expand the view of Babkin et al. (2022) that the application of technology within the framework of Industry 5.0 needs to be directed towards humane, resilient, and sustainable systems. Stand-alone technology only changes the medium of work, whereas skill development requires changes in learning patterns, task sharing, organizational support, and employee engagement. The explanation is also in line with Tahu (2025), which places system integration, security, scalability, and digital architecture suitability as an important part of successful transformation. Thus, the negative influence found is not caused by the existence of technology alone, but by the gap between the speed of technology application and the readiness of humans who use it. Implementations that are oriented towards the obligation to use applications can create procedural compliance, but they do not necessarily shape digital capabilities, problem-solving, adaptation, continuous learning, or collaboration.

Implementation of Digital Technology and Transition to Industry 5.0

The implementation of digital technology has proven to have a positive and significant effect on the transition to Industry 5.0. The path coefficient of 0.713, the standard deviation of 0.044, the t-statistics of 16.242, and the p-value of 0.000 indicate a strong relationship. The increase in the implementation of digital technology was followed by an increase in the transition to Industry 5.0 by 71.3%. Thus, the second hypothesis gains empirical support. The results of the interviews reinforce these findings. As many as 12 out of 13 informants explained that the use of technology has changed the way employees store information, compile reports, coordinate, supervise activities, and provide material for consideration to leaders. Digital systems allow information to be delivered faster and accessed by multiple units without having to wait for physical documents. However, interviews show that transformation is not only marked by the number of applications. Changes towards Industry 5.0 begin to be seen when technology is used alongside human professional consideration. Informants affirm that digital data can show patterns, locations, or job developments, but the final decision still requires field examination, technical knowledge, and an understanding of the social context.

> *"The system provides data quickly, but decisions still require technical considerations and understanding of the territory. Technology helps humans see problems more clearly, not as a substitute for human responsibility."*

The statement reflects the principle of human and technological collaboration. Technology performs the functions of processing, storing, and presenting information, while humans perform the functions of interpretation, risk assessment, ethical consideration, and decision-making. This pattern is consistent with Rožanec et al. (2022), who place humans as an active part of technology-assisted supervision, correction, and decision-making. Human orientation indicators also emerged from the explanations of 11 informants. Technology acceptance tends to increase when employees are engaged, given the opportunity to try, and have the space to communicate difficulties. On the other hand, rejection is easier when the system is introduced in one direction and perceived as an additional oversight or administrative burden. Thus, user engagement is not only a strategy to reduce resistance, but also a source of information to ensure that the application's functionality is in line with the needs of the job. While there are indicators of organizational resilience, the informant highlighted the importance of backup procedures, data protection, technical support, and the ability to maintain services when the network experiences a disruption. The experience of facing system constraints prompted several units to devise alternative steps to keep the main work going. Although the mechanism is not yet uniform, this condition shows a growing awareness that dependence on technology must be balanced with the ability to maintain operational continuity.

Transformation is also seen in the sustainability orientation. Eight informants stated that the use of electronic documents reduces printing, speeds up the distribution of reports, reduces travel to deliver documents, and reduces work repetition. These benefits show that digitalization can support resource efficiency. However, sustainability still requires attention to energy consumption, data storage security, device lifespan, and e-waste management. Quantitative and qualitative results together show that digital technology is an important infrastructure for the Industry 5.0 transition. However, the level of progress of the transition is not enough to judge the number of devices or applications. A more complete transformation occurs when technology is aligned with human needs, organizational resilience, system interoperability, data security, and sustainability goals.

Transition to Industry 5.0 and Employee Skill Development

The effect of the transition to Industry 5.0 on employee skill development resulted in a coefficient of 0.956, standard deviation of 0.060, *t-statistics* 16.009, and *p-value* of 0.000. The coefficient is the biggest direct influence in the model. These results show that the increase in the transition to Industry 5.0 is related to an increase in employee skill development by 95.6%. Thus, the third hypothesis gains strong empirical support. The large coefficient shows that employee skills develop especially when technology is placed in a human-centric, collaborative, resilient, digitally ready, and sustainability-oriented work environment. The results of the interviews reinforced these findings because the informants felt that the use of technology not only changed the medium of work, but also encouraged them to learn new skills, adjust procedures, and improve the way work was completed. The informant in charge of the management of the information system explained:

> *"Once the digital system is used, employees do not only learn to run applications. They also begin to understand how to examine data, recognize input errors, and use information to get work done. That ability develops through training, hands-on practice, and discussion when obstacles are encountered."*

The statement shows that the transition to Industry 5.0 encourages integrated skill development. In the digital skills dimension, employees become more accustomed to using applications, managing electronic documents, accessing information, and utilizing communication platforms. However, the ability to process data, maintain information security, and assess system outputs still needs to be strengthened. The ability to run applications is the initial stage, while digital maturity demands a broader understanding of data quality, risks, and consequences of using technology. In the problem-solving indicator, 11 informants assessed that digital data helped them recognize problems faster. Nonetheless, solutions are not determined based solely on system output. Employees continue to compare digital data with field conditions, technical experience, and information from other units. The process develops analytical skills as employees must assess the accuracy of the information, find sources of inconsistencies, and determine actionable actions. This was confirmed by the informant who carried out the field surveillance function:

> *"Data from the system helps to pinpoint the parts of the work that need to be checked, but decisions can't be made right away based on numbers alone. We still compare it with the conditions of the field and discuss with other departments. From that process, employees learn to analyze the problem and determine more appropriate actions."*

The information shows that technology functions as a decision support, while employees continue to carry out the functions of interpretation, verification, and professional assessment. These findings support Saniuk and Grabowska (2023), who place problem-solving, analytical thinking, and decision-making skills as key competencies in Industry 5.0. Technology provides information, but skill value is formed when employees are able to turn that information into diagnosis and action. In the adaptation indicator, employees showed better acceptance after having the opportunity to try the system, get mentoring, and understand the benefits of technology for their work. A total of 10 informants explained that adaptation increases gradually through direct experience. This shows that adaptability is not a fixed individual character, but can be developed through a process of change that provides a sense of security, learning time, social support, and the opportunity to obtain feedback. Continuous learning is also the dominant theme. A total of 12 informants said that one training was not enough because applications, features, procedures, and job needs were constantly changing. Employees learn technology through a combination of formal training, hands-on practice, how-to videos, discussions, and peer assistance. This pattern shows that digital transformation has taken learning out of the formal training space and made it part of daily work activities.

These findings are consistent with Carminati et al. (2025), who place continuous learning, upskilling and retraining as the foundation of readiness for role change. The results of the interviews added that learning will be more effective if the organization provides a knowledge sharing forum, easy-to-understand documentation, practical opportunities, and mentoring after the training is completed. In the collaboration and communication indicators, technology accelerates the delivery of documents and the exchange of information between units. Employees can check data together without having to be in the same location all the time. Technology also opens up a space for knowledge exchange between generations, where employees who are more proficient in applications help colleagues, while more experienced employees provide technical and contextual understanding. The results of the interviews provide a contextual explanation of the strong influence of the transition to Industry 5.0 on employee skill development. These transitions form a work environment that allows technology to be used to learn, examine data, discuss, assess risks, and solve problems. Thus, skill development is not only in the form of the ability to operate applications, but includes adaptive, analytical, collaborative, and continuous learning capabilities.

The Role of Mediation in the Transition to Industry 5.0

Indirect influence testing yielded a coefficient of 0.681, a standard deviation of 0.068, a t-statistic of 9.980, and a p-value of 0.000. These results show that the implementation of digital technology increases employee skill development through the transition to Industry 5.0. Thus, the fourth hypothesis gains empirical support. Qualitative findings provide an explanation for the mediation process. Digital technology initially provided devices, applications, data, and automation. These resources have not directly generated skills, especially when employees are only directed to fulfill procedures. When technology implementation is followed by user involvement, division of human and system roles, strengthening resilience, leadership support, continuous learning, and attention to sustainability, the use of technology turns into a competency development process.

> *"The device can be the same, but the results are different. If employees are trained, engaged, and given space to evaluate systems, technology drives new capabilities. Otherwise, employees will only become passive users."*

The statement shows that the Industry 5.0 transition acts as a conversion mechanism. Technology is a source of change, while Industry 5.0 principles determine how those resources translate into skills (Alves et al., 2023). Human orientation encourages engagement and a sense of security to learn. The collaboration of humans and technology provides space for employees to examine and interpret system outputs (Tóth et al., 2023). Organizational resilience ensures learning doesn't stop when disruption occurs. Transformation readiness provides technical and institutional support, while sustainability orientation provides direction for the use of technology to generate long-term value.

The mediation relationship has an interesting pattern because the direct and indirect influences move in opposite directions. The direct influence of technology implementation on skills is −0.241, while the indirect effect through the transition of Industry 5.0 is 0.681. Since they are both significant but in different directions, the model shows competitive mediation. The total effect can be calculated (Total effect=−0.241+0.681=0.440). These results mean that overall the implementation of digital technology still has a positive influence of 0.440 on skill development. However, these positive benefits are mainly generated through the Industrial 5.0 transition path. The direct path actually shows negative consequences when technology is not accompanied by human and organizational readiness. This pattern reveals two mechanisms that run simultaneously. The first mechanism is the overload effect, which is when an unintegrated system, limited training, and the demands of application use increase adaptation pressure. The second mechanism is the empowerment effect, which is when technology is managed through the principles of Industry 5.0 and used to increase participation, learning, decision-making, and collaboration. The empowerment effect is greater than the burden effect, so the total effect remains positive.

4. CONCLUSION

This research shows that the implementation of digital technology has not automatically resulted in an increase in employee skills. Its direct influence on skill development was found to be negative and significant. The findings indicate that the implementation of applications, automation, and data-driven systems can increase the burden of adaptation when not accompanied by system integration, mentoring, and user readiness. On the contrary, the implementation of digital technology has a strong positive influence on the transition to Industry 5.0. This transition is then the most dominant factor in improving digital skills, problem-solving skills, technology adaptation, continuous learning, and collaboration and communication. The positive indirect influence confirms that human-based transformation, resilience, human-technology collaboration, digital readiness, and sustainability are the main pathways that transform the use of technology into competency development.

Theoretically, this study shows that the Industry 5.0 perspective broadens the understanding of the relationship between digital technology and skills development by placing humans as the main mechanism in the transformation process. The findings of competitive mediation show that technology does not automatically improve skills, but its impact depends on the application of the principles of human-centric, collaboration, resilience, digital readiness, and sustainability. Practically, the Banten Provincial DPUPR needs to direct digital transformation to strengthen human capacity. Training programs are not enough to just teach application operating procedures, but need to include data analysis, information security, decision-making, problem-solving, and cross-unit coordination. Organizations also need to strengthen system integration, provide post-training mentoring, build knowledge sharing forums, and involve employees in technology design and evaluation. These findings can also be adapted by other public organizations by adapting digitalization strategies to task characteristics, employee readiness, and organizational capacity. Priorities include needs-based training, post-training mentoring, system integration, employee engagement, and continuous learning.

This research is still limited to one regional apparatus organization and uses data collected in one period. Perception-based quantitative data have not fully described skills change objectively, while the number of qualitative informants has not covered all variations in job positions and fields of work. Future research could use longitudinal design, involve multiple government agencies, and add performance-based skills measures. The next model can also test digital leadership, learning culture, individual readiness, organizational support, and generation gaps as mediating or moderation variables.

ACKNOWLEDGEMENTS

The author expressed his gratitude to the Directorate of Research and Community Service (DPPM), the Director General of Research and Development of the Kemdiktisaintek RI, for funding research through the PDP. The funding was provided based on Contract Number 283/C3/DT.05.00/PL-BARU/2026 dated January 30, 2026. Appreciation was also conveyed to LLDIKTI Region IV based on Contract Number 1631/LL4/PG/2026 dated April 21, 2026, as well as the LPPM Primagraha University based on Contract Number 1921/HK.3.4/01-UPG/V/2026 dated May 8, 2026.

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