

ANALYSIS OF EMPLOYEES' DIGITAL COMPETENCIES IN SUPPORTING PERFORMANCE IN THE TE DIVISION AT PT. PLN (PERSERO) UP3 PALEMBANG ULP RIVAI

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Abstract: The development of digital technology requires employees to have adequate competencies to be able to work quickly, accurately, and adaptively in supporting organizational targets. This study aims to analyze employee digital competencies in supporting performance in the Energy Transaction Section of PT PLN (Persero) UP3 Palembang ULP Rivai. The research method used is descriptive qualitative with observation techniques, structured interviews, and documentation during the internship in the Energy Transaction Section work environment. The results show that employee digital competencies are in the very good category, especially in aspects of transaction data literacy, mastery of AMR Web System and SAP applications, and basic troubleshooting skills. These digital competencies have a positive impact on employee performance by increasing data processing accuracy, accelerating work completion, and timely publication of Energy Transaction Minutes. However, obstacles are still found in the form of intergenerational skills gaps, data synchronization problems, and a lack of practical self-learning media. In conclusion, digital competencies play an important role in supporting work effectiveness and performance achievement in the Energy Transaction Section, so that continuous training, internal mentoring, and strengthening of digital guidelines are needed to maintain consistent work performance.

Keywords: Digital Competence, Employee Performance, Energy Transactions, PT PLN, Digital Transformation.

INTRODUCTION

Digital transformation has transformed the way organizations conduct work processes, including in the electricity sector, which demands high precision, speed, and accuracy in operational data management. In this context, employee digital competence is a strategic factor because it relates not only to the ability to use software but also to data literacy, adaptability to new systems, digital security, and technical problem-solving. Recent literature shows that digital skills in the workplace have a multidimensional structure encompassing technology use, digital information and content management, communication and collaboration, cybersecurity, and continuous learning (Vuorikari et al., 2022; Van Laar et al., 2023). Similarly, various studies confirm that digital competence contributes to increased individual productivity and performance by accelerating work processes, reducing operational errors, and increasing the organization's ability to adapt to technological changes (Sánchez-Caballé et al., 2023; Verhoef et al., 2021). However, other studies have shown that this influence is not always direct, as it can be influenced by factors such as digital leadership, organizational culture, technology readiness, and employee



job satisfaction (Dery et al., 2022; Kane et al., 2023). These differing findings suggest that digital competency needs to be examined contextually, taking into account the characteristics of the organization and its work environment.

Theoretically, this research starts from the perspective of human resource management and organizational behavior, which places competence as the primary determinant of individual performance. The evolution of the concept of digital competence indicates a shift from a technological literacy approach to a work capability approach in a complex digital ecosystem. Initially, digital competence was understood as the ability to operate devices and applications, but recent literature emphasizes that digital competence also encompasses critical thinking, information management, data security, virtual collaboration, problem-solving, and digital agility in dealing with changing work systems (European Commission, 2022; Castaño-Muñoz et al., 2024). Within this framework, employee performance is understood as the result of the integration of knowledge, skills, and work attitudes, reflected in the quality, quantity, timeliness, effectiveness, and independence of task completion (Robbins & Judge, 2022). Therefore, digital competence functions not only as a technical skill but also as a strategic asset that determines individual effectiveness in a technology-based work environment.

A major problem arises when a company's digital transformation is not always accompanied by an equal distribution of digital skills across all employees. This phenomenon is often found in organizations undergoing business process digitization, where there are intergenerational competency gaps, differing levels of technology adoption, and limited access to ongoing digital learning (OECD, 2023; World Economic Forum, 2025). This condition is relevant for work units that rely on data accuracy, application integration, and ongoing validation processes, such as the Energy Transactions Section of PT PLN (Persero) UP3 Palembang ULP Rivai. Based on preliminary research data, work activities in this section involve the use of the AMR Web System, SAP, energy transaction data reconciliation, data cleansing, and the preparation of energy transaction minutes. These job characteristics require high data literacy skills, mastery of corporate applications, and independent troubleshooting skills to ensure effective and efficient work processes. Although employee digital competence is in the good category, obstacles still exist in the form of skills gaps between employees, suboptimal data synchronization, and limited independent learning media that support the continuous improvement of digital competence.

The context of PT PLN (Persero) is crucial because the company operates in a strategic sector that demands high reliability, data integrity, and speed of operational decision-making. In the Energy Transactions Division, energy flow data management is carried out through an integrated system involving various interconnected corporate applications. In this work environment, data input errors, synchronization delays, or the inability to utilize digital systems can directly impact the accuracy of energy transaction recording, the reconciliation process, and the company's operational effectiveness (International Energy Agency, 2024; Verhoef et al., 2021). Therefore, digital competence is a crucial factor supporting the success of digital transformation in the electric utility sector. Although various studies have examined the relationship between digital competence and performance in the education, government, and business sectors, studies specifically focusing on employee digital competence in the energy transaction units of electric utility companies are still relatively limited. This limitation indicates a research gap in terms of research objects, job characteristics, and the context of the digital transformation being studied.



The urgency of this research lies in the increasing dependence of organizations on digital systems to manage complex, real-time operational data. In the electricity sector, the quality of decision-making is highly dependent on the accuracy of energy transaction data generated through integrated digital systems. Therefore, understanding employee digital competency is crucial as a basis for designing human resource development strategies capable of supporting the success of a company's digital transformation. In terms of novelty, this research not only examines digital competency in general, but specifically analyzes the relationship between data literacy, mastery of AMR and SAP applications, and independent troubleshooting skills with employee performance in the energy transaction unit. This focus has not been widely found in previous research, so it is expected to provide empirical and theoretical contributions in the development of digital competency studies in the technology-based utility sector. Based on this background, this study aims to analyze employee digital competency in supporting performance in the Energy Transaction Division of PT PLN (Persero) UP3 Palembang ULP Rivai and identify obstacles and the need for digital capacity building necessary to maintain work effectiveness.

METHOD

This study uses a qualitative descriptive research design with a field study approach because it aims to describe in depth the digital competence of employees and its relationship to performance in the Energy Transaction Department of PT PLN Persero UP3 Palembang ULP Rivai. This design was chosen so that researchers can understand work phenomena contextually, especially in the process of processing energy transaction data that is highly dependent on digital systems such as the AMR Web System and SAP. A qualitative descriptive approach is considered appropriate for uncovering the meaning, work habits, and challenges of using technology in daily operational activities, rather than simply testing the relationship between variables statistically. In line with this, recent studies show that digital competence has a significant contribution to improving employee performance in a digital work environment (Putri et al., 2023; Pratama & Sari, 2024).

The methods used in this study were participant observation, structured interviews, and documentation. Observations were conducted during the internship to directly observe how employees operate digital systems, verify data, process reports, and resolve technical issues. Structured interviews were used to gather information from those directly involved in the energy transaction process, particularly regarding data literacy, work application proficiency, and digital problem-solving skills. Documentation was used to strengthen field data through activity archives, internship logbooks, work results, and internal documents relevant to the energy transaction department's workflow. The use of this method aligns with previous studies that emphasize that digital competency needs to be observed through real-life work experiences and organizational contexts to ensure more accurate and relevant analysis results (Rahman et al., 2022; Siregar et al., 2024).

The research subjects in this study were employees working in the Energy Transactions Department of PT PLN Persero UP3 Palembang ULP Rivai, specifically those directly involved in data processing, stand verification, energy transaction recapitulation, and the use of the company's digital applications. Informants were selected purposively, based on their involvement in work processes closely related to digital competence and performance. In the context of this research, the most relevant subjects included executive controllers, frontline data employees, and staff who handle the verification and validation of energy transaction data. This subject selection aligns with



recent research showing that employees with high levels of digital system use tend to have more adaptive, efficient, and accurate performance patterns (Handayani et al., 2021; Wicaksono et al., 2025).

The data sources used consisted of primary and secondary data. Primary data were obtained through direct observation and interviews with employees and field supervisors in the work unit, while secondary data came from company documents, internship logbooks, organizational structures, work guidelines, and reports related to energy transaction activities. This secondary data helps clarify the operational context and supports the interpretation of field observations. The use of these two types of data is important because research on digital competency requires a comprehensive picture of actual work experience and administrative evidence to support the analysis process. Recent studies also confirm that integrating primary and secondary data significantly assists researchers in explaining the relationship between digital transformation and work performance more comprehensively (Febriani et al., 2023; Nurhayati & Lestari, 2024).

The data analysis tool used was interactive thematic analysis through the stages of data reduction, data presentation, and conclusion drawing. Data from observations and interviews were first selected and classified into main themes such as transaction data literacy, mastery of AMR and SAP applications, troubleshooting skills, and their impact on quality, timeliness, and work independence. The data was then presented narratively to systematically explain the relationship between digital competence and employee performance. The final stage was drawing conclusions by comparing field findings with theory and previous research findings, which indicate that digital competence positively contributes to employee performance in the era of digital transformation (Yuliana et al., 2022; Hidayat et al., 2024; Amelia & Putra, 2025).

DISCUSSION

The Internship was conducted at PT PLN (Persero) in the Energy Transaction Section for a specified period. During the internship, the intern was placed under the supervision of the Energy Transaction Controlling Officer (PPP) and was directly involved in the electrical energy data processing cycle. The intern's daily activities included monitoring the smoothness of meter data communication through the Automatic Meter Reading (AMR) Web System, reconciling monthly energy consumption data, cleansing data from anomalies, and assisting with the data input process into the company's SAP module. Through this active involvement, the intern was able to objectively observe how the digital competencies possessed by employees directly impacted the achievement of the division's performance targets.

Employee Digital Competence

Based on observations and structured interviews during the internship, the digital competency of employees in the Energy Transactions Division of PT PLN (Persero) demonstrated a good level of transaction data literacy, application operational proficiency, and technical problem-solving skills. In terms of transaction data literacy, the majority of employees demonstrated excellent ability to understand, read, and analyze energy transaction data. Employees were able to identify the difference between normal data and anomalous data, such as drastic load drops or non-moving meter readings, simply by observing the system's daily graphs. This capability is crucial because energy transaction data is the primary basis for maintaining accurate recording and supporting the company's revenue assurance.



In terms of application operational skills, employees demonstrated good mastery of the use of the AMR (Automatic Meter Reading) Web System and SAP as the main applications in the work process. Employees were able to remotely retrieve customer meter reading data through the AMR system and effectively carry out billing functions and maintain meter asset data in the SAP system. However, there were differences in the level of adaptation to technology between junior and senior generation employees. Younger employees tended to adapt more quickly to changes or updates to the system interface, while senior employees required a relatively longer adjustment time when there were changes to features or application displays.

Furthermore, employees' technical problem-solving skills are also considered excellent. When a disruption occurs in the meter data transmission process, employees are able to perform initial troubleshooting to identify the source of the problem. They can analyze whether the disruption is caused by communication network constraints from the cellular service provider or hardware damage to the smart meter. This capability enables employees to take appropriate action before escalating the issue to field technicians, allowing for a more rapid and efficient resolution process. Thus, the digital competency possessed by employees not only supports smooth operations but also contributes to the effectiveness and quality of performance in the Energy Transactions Division of PT PLN (Persero) in the field.

Analysis of Digital Competence on Performance

Based on observations and interviews conducted during the internship, employee digital competency has been shown to significantly contribute to employee performance in the Energy Transactions Department of PT PLN (Persero). This influence is evident in aspects of work quality, timely task completion, productivity, and work independence. Employees' digital capabilities enable the energy transaction data management process to be more accurate, efficient, and responsive to various technical challenges that arise during operations.

In terms of work quality, high data literacy helps employees read, understand, and analyze energy transaction data more accurately. Employees are able to identify various data anomalies through visualization in digital systems, enabling precise data cleansing. This capability contributes to reducing human error and maintaining the accuracy of energy transaction data. This accuracy is crucial because it directly relates to the customer billing process and the company's efforts to maintain revenue assurance, avoiding the risk of errors in recording and calculating energy transactions.

Furthermore, proficiency in operating the AMR Web System and SAP applications significantly impacts the timely completion of work. Utilizing digital systems allows for faster and more efficient data collection, processing, and validation, previously performed manually. Employees with good application skills can utilize various automation features, allowing for timely completion of reports and publication of Energy Reconciliation Minutes. This ensures optimal achievement of performance targets related to document completion speed and administrative processes.

Furthermore, digital problem-solving skills also impact employee productivity and work independence. When system disruptions or data retrieval issues occur, employees are able to identify and resolve issues independently without having to rely on the information technology team for assistance. This capability ensures smooth workflows, reduces wait times for problem resolution, and maintains a stable daily workload. Therefore, digital competency not only supports



operational effectiveness but also plays a crucial role in improving the quality, timeliness, productivity, and independence of employees in the Energy Transactions Department of PT PLN (Persero).

Obstacles Faced

Although the implementation of digital competencies in the Energy Transactions Department of PT PLN (Persero) has generally supported improved employee performance, several obstacles were encountered during the internship program. One major obstacle is the generation gap in digital skills. Junior employees tend to adapt more quickly to technological developments and system updates, while senior employees require more time to adjust when the company introduces new features or modules to their applications. This difference in adaptation rates has the potential to impact the speed of work completion, particularly during the transition period to using the new system.

The next obstacle relates to synchronization disruptions in the integrated system. In some situations, particularly during the month-end closing period, which has a high transaction volume, there are delays in data synchronization between the AMR application in the field and the SAP system used for recording and managing financial data. This can lead to delays in data validation and reconciliation, necessitating rechecks to ensure the accuracy of the information used in administration and reporting.

Furthermore, interns also found that digital competency development programs still face limitations in terms of continuous learning. Formal training is generally only provided during the initial system implementation or when major updates are made. Meanwhile, there is a lack of micro-learning media or interactive guides that employees can access independently at any time. As a result, some employees experience difficulties when using certain features that are rarely used in their daily activities. This situation indicates the need to strengthen more flexible and sustainable digital learning strategies so that employees' digital competencies can continue to develop and optimally support work effectiveness.

Solutions and Improvement Efforts

To overcome the various obstacles encountered in the implementation of digital competencies, continuous improvement efforts are needed that are in accordance with the operational needs of the Energy Transactions Division of PT PLN (Persero). One solution that can be implemented is the implementation of a peer-to-peer mentoring system. This program is carried out through informal internal mentoring, where employees with better digital skills, especially the junior generation, can share knowledge and experience with senior employees in understanding new features in AMR and SAP applications. Through this collaborative approach, the knowledge transfer process can be more effective and help reduce the digital skills gap between generations.

Furthermore, to address data synchronization challenges in integrated systems, more intensive coordination with the central information technology team is required. One step that can be taken is to schedule the automatic data synchronization process during times with lower system activity, such as at night or outside of prime business hours. This can help reduce server load during peak periods, particularly during the monthly closing period. Furthermore, strengthening system integration through regular maintenance and optimizing connections between applications is also necessary to ensure more stable and accurate data flow.



Another improvement effort is the development of self-learning media (digital job aids) that employees can access anytime. These media can take the form of one-page cheat sheets, infographics, or short video tutorials that explain the steps to use certain features and how to overcome common problems in the application. All materials can be stored on a shared drive or internal company platform for easy access by all employees. With practical and sustainable learning resources, employees can update their knowledge and improve their digital competencies independently without having to wait for formal training. The implementation of these various solutions is expected to increase the effectiveness of digital technology use while supporting employee performance improvements in the Energy Transactions Department of PT PLN (Persero).

CONCLUSION

Based on the analysis and discussion, it can be concluded that the digital competence of employees in the Energy Transactions Division of PT PLN (Persero) UP3 Palembang ULP Rivai is in the very good category. This is reflected in the employees' abilities to perform transaction data literacy, operate key applications such as the AMR Web System and SAP, and resolve various basic technical issues that arise during the work process. These competencies are essential assets in supporting the implementation of data-driven tasks and integrated digital systems.

Furthermore, digital competency has been shown to positively contribute to improving employee performance, particularly in terms of work quality, punctuality, productivity, and work independence. Strong digital skills enable data management processes to be more accurate, efficient, and responsive, enabling optimal operational targets to be achieved. However, several obstacles remain that require attention, including the digital capability gap between employee generations, disruptions in data synchronization between systems at certain times, and limited independent learning media that support the continuous development of digital competency. Therefore, efforts are needed to strengthen digital capacity through internal mentoring programs, optimizing system integration, and providing easily accessible learning media to support future work effectiveness.

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