Analysis of the Implementation of Enterprise Resource Planning Systems (Applications and Products in Data Processing) In Improving Employee Training Management Effectiveness: A Case Study at PT KAI (PERSERO) DAOP III Cirebon

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KEYWORDS	ABSTRACT
ERP SAP HR, training management, training effectiveness, management information system, PT KAI DAOP III Cirebon.	This study aims to analyze the implementation of ERP SAP HR in improving the effectiveness of employee training management in the HR and General Division of DAOP III Cirebon. The study used a qualitative approach with purposive sampling techniques to select eight informants who were directly involved in the planning, implementation, and evaluation of training, as well as users of the SAP/RAILEO ERP. Data were collected through in-depth interviews, observations, and documentation, then analyzed using NVivo 12 software to identify patterns, themes, subthemes, and linkages between aspects of training management. The results show that SAP ERP supports administrative efficiency, data integration, participant monitoring, and data-driven decision-making. However, the effectiveness of training management is not optimal because manual processes still cause delays in information flow and gaps between system data and field practices. The Training Center has full authority to maintain the security and uniformity of national training, but limited flexibility for DAOP III hinders responsiveness to local needs. Granting limited access to SAP TEM, reducing manual mechanisms, improving SAP modules, strengthening user capacity, and implementing system integrity dashboards are recommended to enhance the effectiveness and efficiency of training management. Follow-up research is recommended to explore the long-term impact of ERP SAP on its competencies, performance, and integration with other HR development programs at PT KAI.

INTRODUCTION

Although the implementation of SAP ERP (Enterprise Resource Planning – Systems, Applications, and Products in Data Processing) has been widely adopted across various business sectors such as manufacturing, banking, energy, telecommunications, and retail, its primary focus remains on enhancing the efficiency of internal business processes and supply chains (Dessyana & Yolanda, 2022; Rahman, 2018; Sokolov et al., 2024; Wirren Chang et al., 2023; Yolanda & Dessyana, 2022). In contrast, PT Kereta Api Indonesia (PT KAI), as a strategic public transportation state-owned enterprise (SOE), faces unique operational complexities, including fleet management, scheduling, ticketing, and human resource competency development (Hanafiah et al., 2025; Zou et al., 2024). The implementation of SAP ERP at PT KAI not only aims to boost efficiency but also supports improvements in public service quality and employee training management effectiveness.

DAOP III Cirebon was selected as the research locus due to its strategic position as a node connecting northern and southern Java, coupled with its high demand for training management. Additionally, DAOP III Cirebon is representative of SAP ERP implementation practices at the regional level, which involve complexities distinct from those of larger divisions such as Jakarta or Surabaya (Kraljić & Kraljić, 2018; Llivisaca-Villazhañay et al., 2025; Pulluru, 2025; Sitinjak & Jayadi, 2023). Therefore, PT KAI, particularly DAOP III Cirebon, merits study as a research site to analyze SAP ERP's role in enhancing training management effectiveness compared to other sectors.

PT Kereta Api Indonesia (PT KAI) pursues digitalization as a core strategy through SAP ERP, an integrated information system that automates key business processes in real time to enhance efficiency, coordination, and transparency. Implementation began in June 2011 in collaboration with PT Telkom Indonesia and Metrasys, aiming to create a unified platform for managing finances, human resources, and operations. In DAOP III Cirebon, the system rolled out in 2014 as part of PT KAI's broader digital transformation.

PT Kereta Api Indonesia (Persero), as a national transportation company, confronts complex global challenges that demand skilled, adaptive, and professional human resources. In the Society 5.0 era—which emphasizes technology to elevate human life quality—PT KAI delivers various employee development programs. These initiatives foster a workforce capable of providing superior, productive services while contributing to business performance and sustainability.

PT KAI's human resource development strategy relies on comprehensive education and training to bolster skills, individual productivity, and organizational competitiveness amid ongoing changes. Education and training management plays a pivotal role in human resource (HR) development by optimizing employee potential (Ade Octaviany et al., 2022; Bahri & Salsiati, 2025; Djogo, 2023; Jumaidi Nur et al., 2023). Training effectiveness manifests in enhanced knowledge, behavioral changes, and contributions to organizational performance, necessitating continuous evaluation to ensure success and inform future programs.

PT Kereta Api Indonesia (Persero) addresses global challenges by developing skilled, adaptive human resources through comprehensive education and training—both classical sessions at the Training Center and online via EduKAI—to enable superior service, high productivity, and business sustainability. This involves continuous evaluation, with DAOP III Cirebon playing a strategic role in administrative aspects and providing feedback for training policy development. Although SAP ERP supports PT KAI's training management, its effectiveness at operational units like DAOP III Cirebon remains underexplored, partly due to limited authority over the TEM Module. This study analyzes the challenges, potential, and contributions of SAP ERP to HR development and training management effectiveness in the field. A key limitation is the absence of robust post-training evaluation features, hindering operational units' data-driven assessments of training impacts.

Prior research on SAP ERP implementation at PT KAI has focused mainly on technical and policy aspects at the central level, with few studies examining operational units like DAOP as end-users. Yet, system effectiveness hinges on field-level usage, particularly in employee training management. This study bridges that gap by analyzing SAP ERP implementation in DAOP III Cirebon to assess its challenges, potential, and contributions to PT KAI's overall HR

development. DAOP III Cirebon lacks full authority over the TEM (Training and Event Management) Module, which is primarily managed at the Training Center and HR Center for scheduling, class management, and certification. DAOP III Cirebon functions mainly as a participant sender, needs proposer, and manual evaluator.

Research implications include limited or nonexistent access to PD (Personal Development) at DAOP III Cirebon, as it operates at the macro (corporate) level rather than operationally. Like TEM, DAOP III Cirebon acts as a passive user (policy recipient and implementer) rather than an active one (module inputter/controller). Neither PD nor TEM is directly accessible to DAOP III Cirebon, which must submit needs via internal service memorandums, Rail Development System (RDS), or Warta Dinas (WAD) for central processing.

The core gap lies in DAOP's inability to access real-time data for evaluating training effectiveness, creating a digitalization divide. DAOP III Cirebon—as the frontline unit most attuned to field training needs—is not fully integrated into the SAP ERP workflow. This study addresses that gap by analyzing SAP ERP's implementation in supporting training management effectiveness at DAOP III Cirebon. It focuses on operational-level usage, obstacles encountered, and development potential to better meet field needs and sustainably advance PT KAI's HR development.

Based on the problem identification that has been described earlier, the problem formulation for research on the Implementation of SAP ERP in Improving the Effectiveness of Employee Training Management at PT KAI DAOP III Cirebon can be formulated as follows: How is the implementation of SAP Human Resources ERP carried out in supporting the effectiveness of Employee Training Management at PT KAI DAOP III Cirebon?, How to improve the effectiveness of employee training management with the implementation of SAP ERP at PT KAI (PERSERO) DAOP III Cirebon?, What are the obstacles faced in the implementation of SAP ERP in improving the effectiveness of employee training management at PT KAI (PERSERO) DAOP III Cirebon?, What is the strategy to strengthen the implementation of SAP ERP in Human Resources to improve the effectiveness of the management of employee education and training training at PT KAI (Persero) DAOP III Cirebon?

Based on the formulation of the problem, the objectives of the research are as follows: Analyzing the implementation process of SAP Human Resources ERP in supporting the effectiveness of Employee Training Management at PT KAI DAOP III Cirebon, Evaluating the extent of the effectiveness of employee training management with the implementation of SAP ERP at PT KAI (PERSERO) DAOP III Cirebon, Identifying obstacles faced in the use of SAP ERP in improving the effectiveness of employee training management at PT KAI (PERSERO) DAOP III Cirebon, Formulating alternative strategies or proposals to strengthen the use of SAP ERP in Human Resources to improve the effectiveness of employee training management at PT KAI (Persero) DAOP III Cirebon.

METHOD

This research was conducted at PT KAI (Persero) DAOP III Cirebon, one of PT KAI (Persero)'s operational regions. As an operational unit responsible for railway management and

operations in its jurisdiction, DAOP III Cirebon served as a relevant site for examining SAP ERP implementation in employee training management. The study spanned four months, from June to September 2025.

The research employed a qualitative approach with purposively selected informants (purposive sampling). Informants were chosen based on their experience, knowledge, and direct involvement in SAP ERP implementation for training management at the operational level of DAOP III Cirebon. They included: Policy Holder at PT KAI (Persero) DAOP III Cirebon; Expert in Business Administration and digitalization; HR and General Manager Assistant; Assistant HR Manager; Team Leader/Supervisor of SAP HR in the HR Division; HR staff at DAOP III Cirebon involved in operational training management; Employees using the SAP ERP system for training administration; and Employees who had attended training at the Training Center/Education Center.

The number of informants was not predetermined but adjusted according to data saturation principles—when information became repetitive and no new data emerged. Thus, the emphasis was on information depth rather than quantity. Data collection techniques included interviews, observations, documentation, and SWOT analysis. Data analysis was performed using NVivo 12 software.

RESULTS AND DISCUSSION
Word Cloud Analysis

The word cloud analysis results of NVivo 12 depicts the frequency of word occurrence across all data sources (from interview transcripts or training documents), and is very useful for extracting initial insights before conducting an in-depth thematic analysis. Word cloud shows the most frequently appearing words in the research data, The larger the size of the word, the more often it appears. High frequency indicates the dominant concept or topic being talked about by the informant. This is an indicator of the main theme that emerges from the experiences and views of informants.

Initial Interpretation Based on Word Cloud Analysis NVivo Word cloud analysis using NVivo software provides an initial overview of the trends in topics that appear most frequently in the narrative of interviews with key informants. This visualization serves as an entrance to understand the focus of attention, perception, and experience of informants towards the implementation of the SAP ERP system in employee training management at PT KAI (Persero) DAOP III Cirebon.

From the visualization results, the word "training" emerged as the word with the highest frequency and the largest size, indicating that the entire informant discussion centered on the issue of employee training and competency development. The dominance of the word emphasizes that the education and training process is the main aspect studied in the context of the effectiveness of HR management and the application of ERP technology in the company environment.

The words "participant", "training center", and "certificate" also appear in a fairly large size. The three reflect the focus of the discussion on the training management mechanism starting from the delivery of participants, the implementation at the training center, to the issuance of post-activity certificates. The appearance of the term "participant" shows attention to the experience of employees during training, while "training center" shows the importance

of the role of PT KAI's internal training institution which functions as a coordination center for program implementation. Meanwhile, the word "certificate" marks the administrative dimension and formality of the training results which are one of the indicators of the success of training activities.

Furthermore, the words "through" and "on" which also often appear show a narrative pattern that explains the flow of the training implementation process, starting from the registration stage, assignment, implementation, to post-training evaluation. This strengthens the understanding that informants describe a lot of the procedural and technical aspects that take place in the training management system.

The words "pusdikat" (education and training center) and "division" affirm the existence of cross-unit coordination between the Center for Education and Training at the central level and the DAOP unit as the implementer. This phenomenon shows that the training system is not yet fully decentralized and still depends on policies or authorization from the center.

The appearance of the word "no" in a fairly striking measure is an important indicator that needs to be interpreted critically. The frequency with which these words appear can indicate the presence of expressions of limitations, barriers, or inconsistencies between policies and practices in the field, such as "inaccessible," "not integrated," or "ineffective." Thus, this word can reflect the perception of the challenges and gaps in SAP ERP implementation in supporting the training management process.

Some other words such as "employee," "program," "evaluation," "mutation," and "access" reinforce the understanding that informants' discussions focus not only on the training itself, but also on its relationship to the broader HR management system. The word "mutation" indicates the relationship between training outcomes and employee career development, while "access" indicates information technology aspects, especially related to the user's ability to access training data through the SAP ERP system.

The results of the visualization show that the main focus of informants is on three main dimensions: the process of organizing training (sending participants, implementation, and certification), the involvement of training institutions and authorization mechanisms between divisions, and digital system constraints in supporting the effectiveness of training management. This word cloud serves as an initial map that emphasizes the relevance of field findings to the research focus, as well as the basis for the formation of the main theme in the next in-depth analysis using coding and categorization in NVivo, which is enriched with SWOT analysis to assess the strengths, weaknesses, opportunities, and threats of SAP ERP implementation at PT KAI (Persero) DAOP III Cirebon.

Analysis of Main Themes and Subthemes

The implementation of SAP Human Resources ERP at PT KAI DAOP III Cirebon is a system that is integrated with various aspects of human resource management. The node center features SAP HR ERP Implementation as the main theme, which branches off into several important interconnected subthemes and forms a unified employee training management system.

First, this implementation starts from the planning and coordination of the training program, where the planning process is fully carried out by the central government (Balai Diklat or Pusdiklat), while DAOP III only plays the role of the implementer. This subtheme is related

to the proposal and summoning of training participants carried out through the Rail Document System (RDS) system, illustrating the relationship between the central authority and regional implementers in the training administration process.

Furthermore, the aspects of the SAP HR and SAP TEM ERP systems are the main technical foundations in employee data management and training activities. Although the SAP TEM module is managed by the center, the DAOP III HR Division still plays a role through the RAILEO system as a front office that connects employees with training data. This interconnectedness is reinforced by the integration nodes of HRIS and RAILEO as well as the integration of SAP and RAILEO systems, which underscores the importance of synchronization between platforms to create efficient workflows.

In addition, this system also touches on operational and technical dimensions involving the use and division of SAP HR tasks, SAP data management and input, and the use of SAP systems in daily activities. This subtheme indicates that the effectiveness of implementation is greatly influenced by the division of roles between staff, technical capabilities, and the level of adoption of digital systems. In this context, technology adoption is an indicator of the success of digital transformation within PT KAI, which is supported by the readiness of human resources in operating the ERP system.

From the organizational side, the node visualization also shows the influence of leadership support and the structure and work process of the HR Division on the smooth implementation of the system. Managerial support has proven to be crucial in ensuring that every training policy and process is aligned with the company's goals. Meanwhile, communication systems and data security are crucial in ensuring the integrity and confidentiality of information managed through internal networks and RDS systems.

Additional nodes such as the features and systems used, SAP HR features and modules, and the understanding and introduction of the SAP ERP system show that the utilization of technology is not only related to the software, but also to the extent to which users understand and optimize the functions of the system. Finally, the entire branch of this node illustrates that the successful implementation of ERP SAP HR at PT KAI DAOP III Cirebon does not only depend on technology, but also on collaboration between units, human resource readiness, and policy support from the central level.

The effectiveness of training management at PT KAI DAOP III Cirebon is greatly influenced by the extent to which the SAP ERP system is able to support training management from the planning stage to evaluation. The nodes that appear in this theme show the relationship between the mechanism of the training process, the integration of certification and reporting systems, and the evaluation of training results.

The training process within DAOP III is carried out centrally through the Training Center or Education Center, while the human resources unit in the region only implements and reports the results. The SAP HR ERP system connected to RAILEO facilitates participant registration, certificate reporting, and documentation of training activities. However, its effectiveness has not been maximized because the SAP TEM module that functions to monitor the implementation of training can only be accessed by the center. As a result, regional units do not have full control over the data and results of the training.

Nonetheless, ERP systems provide real benefits to work efficiency. Employees can register for training independently through RAILEO, while the HR Division gets convenience in processing participant data and reporting training results. Training evaluations were conducted in stages through Google Forms based on the Kirkpatrick Level 3 and 4 models, indicating an effort to measure the impact of training on performance. Overall, the effectiveness of this system comes from administrative efficiency, data access speed, and real-time training report accuracy through SAP HR ERP integration.

NVivo node analysis shows that obstacles in the implementation of SAP ERP at PT KAI DAOP III Cirebon arise in three main aspects: technical, human resources, and structural authority. Technical obstacles in the form of network disruptions or limited access to central systems are still common, even though they have been handled by the IT team through a reporting mechanism directly to the information technology unit. These obstacles show that the success of digital systems is highly dependent on the stability of the infrastructure and the support of central server maintenance.

From the aspect of human resources, the limited competence of SAP operators is a crucial problem. Only a small percentage of HR staff have participated in SAP training, so the data input process and training management is still highly dependent on the Team Leader or Assistant HR Manager. This creates dependency and hinders continuity when key staff are off duty.

Meanwhile, structural barriers stem from central policies that limit regional access to SAP TEM modules. This condition results in the management process of training at the regional level only being administrative, without being able to monitor or control the results of training evaluation directly. Manual processes are also still found, especially in the issuance of certificates that are not yet fully digital. These obstacles show that the successful implementation of SAP ERP requires synergy between technological readiness, human resource competence, and organizational policies that provide a balanced access space between the central and regional governments. The analysis of the NVivo node shows that obstacles in the implementation of SAP ERP at PT KAI DAOP III Cirebon arise in three main aspects: technical, human resources, and structural authority.

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implementation of SAP ERP requires synergy between technological readiness, human resource competence, and organizational policies that provide a balanced access space between the central and regional governments.

Based on the findings of the five speakers, the strategy to strengthen SAP ERP implementation is directed at three main dimensions, namely improving human resource competence, optimizing systems, and strengthening organizational policies. In the aspect of human resources, increasing user capacity is a priority. SAP training, both in the form of Human Capital Basic and Supervisory Management Development Program, needs to be expanded so that all HR staff have adequate technical capabilities to manage data and training modules independently.

From a system perspective, a complete integration between SAP HR, SAP TEM, and RAILEO is needed so that the training flow from the call of participants to the issuance of certificates can take place without manual intervention. The use of digital systems must also be strengthened with periodic maintenance schedules and supervision from the SAP HR Leader Team. In addition, there is a need for internal policies that ensure the security and smooth communication of data, for example through the RDS system with OTP codes to maintain document confidentiality.

At the organizational level, the long-term strategy includes the establishment of a special supervisor for Training and Training at the DAOP level, as suggested by the HR Manager. This position serves to bridge communication between the central and regional governments, as well as ensure that each training runs according to the needs of field competencies. Thus, the strategy to strengthen the implementation of SAP ERP does not only focus on technology, but also on improving human capabilities and organizational structures that support the sustainability of digital transformation at PT KAI DAOP III Cirebon.

Data Coding Analysis

Based on the results of the analysis of interview data that has been coded using NVivo 12 Plus, four main themes were obtained that became the focus of the research, namely: (1) Implementation of SAP Human Resources Enterprise Resource Planning (ERP) at PT KAI DAOP III Cirebon, (2) Effectiveness of Employee Training Management with SAP ERP Implementation, (3) Obstacles to SAP ERP Implementation in Improving the Effectiveness of Training Management, and (4) Strategy for Strengthening SAP ERP Implementation in Human Resources Management at PT KAI DAOP III Cirebon. The four themes emerged consistently from the results of encoding all interview data and illustrated the close relationship between technical and managerial aspects in the process of implementing the SAP ERP system in the context of employee training management. The results of the thematic analysis show that each theme has a number of subthemes and codes that reflect the dominant dimension of the informants' views.

The four main themes do not stand alone, but form a network of meanings that are interrelated and reinforce each other. The first theme highlights the SAP HR ERP Implementation process, including system working mechanisms, user role sharing, and employee training data integration. The second theme emphasizes the extent to which SAP ERP implementation supports the effectiveness of training management through improved administrative efficiency, data accuracy, and ease of monitoring training results.

The third theme reveals various obstacles faced in the implementation of the system, such as limited trained human resources, technical constraints, and dependence on central-level coordination. Meanwhile, the fourth theme focuses on strategies to strengthen implementation, which includes improving user competence, system optimization, and developing digital-based internal policies.

Overall, the results of this analysis show that the dimensions of technology implementation, managerial process effectiveness, operational barriers, and organizational strengthening strategies are the four main pillars that explain the relationship between the implementation of ERP SAP HR and the effectiveness of employee training management. The four are then visualized in the Figure above, which maps the relationship between the main themes, subthemes, and codes of NVivo 12 Plus analysis results from all Informants, thus providing a comprehensive overview of the dominant patterns that emerged in this study.

Based on the results of the analysis of interview data coded using the NVivo 12 Plus device, in all Informants it was found that the dimensions: Leadership Support, Technology Adopt, SAP and RAILEO System Integration, Features and Systems Used, HR Division Work Structure and Processes, Use of SAP System in Daily Activities, Use and Division of SAP HR Tasks, Employee Management Information System, SAP Features and Modules, Mechanism for the Implementation of Training and Call Flows, SAP Data Management and Input, HRIS and RAILEO Integration, Data Communication and Security Systems, SAP Data Management and Input, , Planning and Coordination of Training Programs, Proposal and Summoning of Training Participants, SAP HR and SAP TEM ERP System, Understanding and Introduction of SAP ERP System. are the most dominant aspects that represent the big theme of ERP Implementation SAP Human Resources at PT KAI DAOP III Cirebon.

Based on the results of the analysis of interview data encoded using the NVivo 12 Plus device on all Informants, the dimensions that emerged as the most dominant aspects in the major theme of Employee Training Management Effectiveness with SAP ERP Implementation, namely: Training Monitoring and Evaluation, Training Management Efficiency, Process Accuracy and Speed, Training Program Information Gap, Training Program Evaluation, Certificate Integration and Management, Training Process Mechanism, System strengthening and automatic integration, Certificate management integration, Limited effectiveness due to SAP TEM Access, Post-Training Impact on Employee Performance, Experience of participating in Training. is the most dominant dimension that represents the effectiveness of the implementation of training programs based on ERP, SAP, HR, and SAP TEM systems. Each of these dimensions reflects the relationship between the governance of training management and the application of digital technology that is being sought to strengthen the corporate learning system at PT KAI.

Based on the results of the analysis of interview data coded using the NVivo 12 Plus device, the dimension of SAP ERP implementation obstacles emerged as a critical factor that affected the effectiveness of employee training management at PT KAI (Persero) DAOP III Cirebon. The coding results show several main patterns that represent these obstacles, including: human resource and infrastructure readiness, initial obstacles to implementation, network constraints, limited trained human resources, manual processes and dependence on centers, limited authorization and access in the regions, and lack of post-training evaluation.

Thematic analysis shows that these barriers are multidimensional, including technical factors, human resources, and procedures. Based on the results of the analysis of interview data encoded using the NVivo 12 Plus device on all informants, the dimension of the SAP ERP implementation strengthening strategy emerged as a key factor in supporting the sustainability and effectiveness of training management at PT KAI (Persero) DAOP III Cirebon. Several subthemes and dominant patterns indicate that this strengthening strategy is multidimensional, involving technical, organizational, and human resource development aspects.

The coding results show several main patterns that represent this dimension, including: system maintenance and team appointment, procedural and system suitability, improvement of HR competence, improvement of communication and data security, strengthening of systems and automation integration, proposals for strengthening organizations, priority strategies for training implementation, and expectations and suggestions for training program development.

System strengthening strategy SAP ERP implementation SWOT analysis results

Table 1. SWOT Analysis Matrix

Internal Factors/External Factors	Strengths (S) 1. **SAP Infrastructure Availability Nationally**, 2. Data Accuracy **& Traceability,** 3. **Basic competencies of the HR team**, 4. **The Strategic Role of SAP HR Team Leader** 5. **The Potential of SAP TEM Integration** 6. **HR Management Commitment**,	Weaknesses (W) 1 **Limitations of Competent Human Resources** 2. **Dominance of Manual Processes,** 3. **Planning Insynchronization** 4. **Evaluation Not Integrated** 5. **Absence of Dashboard Monitoring** 6. **High Administration & Low Transparency**
Opportunities (O) 1. Integration between HR modules: 2. Hybrid learning development 3. Digitization of certification: 4. Talent management: 5. Increased transparency & automation of administration: 6. Long-term strategic contribution:	**SO Strategy**: Harnessing power to seize opportunities. SO1.. Using the reliability of SAP infrastructure and data standards to build a competency-based training system that connects employee profiles with training needsSO2. Train HR staff to take advantage of EduKAI which is integrated into SAP, so that the implementation of training can switch to an online-offline model faster. SO3. Develop e-certificates and system-based evaluations to increase the transparency of training results. . SO4.. Utilizing central support in strengthening digital infrastructure and expanding access to TEM modules. SO5. Leverage SAP–RAILEO integration to optimize real-time access to training data	**WO Strategy**: Reduce weaknesses by taking advantage of opportunities: WO1.. Conduct intensive training for HR staff to optimize the system and reduce reliance on manual processes **WO2. Digitizing Administrations to Reduce Manual Processes** **WO3. Synchronization of Planning with Talent Management** Utilizing SAP to prepare competency-based need analysis training so that the central calendar can adjust to the needs of real units. **WO4.** Overcome the limitations of DAOP authority by encouraging the partial delegation of authority to use SAP HR/TEM

	SO6. Making SAP the main platform for long-term human resource development, not just an administrative tool, with an orientation on PT KAI's competitiveness nationally.	**WO5 Strengthening Monitoring Dashboard for Transparency** Develop an integrated dashboard-based central-regional communication mechanism. **WO6. SAP Transformation from Administrative Tool to Strategic Enabler** Changing the mindset of using SAP from just administrative recording to a strategic tool for succession planning and increasing organizational competitiveness.
Threats (T) 1. **Limited access**: Few HR staff have full input rights, while most staff are only passive users. 2. **Dependence on the center:** Planning, program endorsement, and administration of training certificates are still greatly influenced by the center, so regional flexibility is limited. 3. **Lack of automation**: The certificate, evaluation, and reporting process is still manual/semi-digital, so efficiency is low and prone to human error. 4. **Limited digital competencies**: Some HR staff are not yet proficient in advanced SAP features, such as training data analysis or Kirkpatrick-based evaluation. 5. **Lack of authority/access to SAP TEM:** The Training and Event Management (TEM) module that is crucial for training management is still the central authority, so DAOP III cannot fully utilize the planning, monitoring, and evaluation functions available in the module. 6. **Post-training evaluations have not been fully documented in the SAP**: Level 3 (behavior change) and Level 4 (organizational outcomes) have been partially carried out, but have not been integrated into the SAP system, making it difficult to monitor program effectiveness comprehensively.	**ST Strategy** Use existing powers to address/minimize threats **ST1. Optimization of national SAP infrastructure to** reduce the risk of limited access**. ST2.** Utilize the competencies of existing SAP staff to deal with limited access to data input. **ST3.** Optimize system integration to reduce the risk of data missynchronization between centers and regions.**ST4** Strengthen coordination between units so that changes in central policies do not hinder the implementation of training in the regions. **ST5. D**management support as a driving force for initiatives to improve digital competencies of staff **ST6. Leverage integration & management commitment** to address the challenges of digital evaluation, automation, and competencies.	**WT Strategy** Minimize internal weaknesses so as not to exacerbate the threat **WT1. Competency Strengthening & Access Multiplication**: Create cross-training programs and add staff with limited authorization for input, so that there is no dependency on a single Person in Charge **WT2. Preparation of DAOP III internal digitization SOPs, so that the dominance of manual processes can be reduced even though SAP TEM access has not been fully provided** **WT3.** Establish regular coordination forums to anticipate policy changes and technical obstacles. **WT4. Integration of Evaluation in Systems** Create a mechanism for the integration of Google Form/paper results into SAP on a regular basis, so that evaluation data is documented and can be used for the analysis of the Center–DAOP. **WT5. Gradual Monitoring & Transparency** Build a simple Excel/Power BI-based dashboard fed from SAP data, a transition solution before the full real-time dashboard is available. **WT6. System Risk Management** Prepare contingency plans (e.g. local data backup & emergency manual SOPs) so that training operations are not stopped when the system fails or the network is problematic.

The SWOT-based strategy formulation emphasizes that improving the implementation of SAP ERP in DAOP III Cirebon must combine proactive and adaptive steps. Proactive steps include leveraging internal strengths and external opportunities, such as optimizing SAP infrastructure, integrating across modules, digitizing training administration, and strengthening data-driven talent management. Meanwhile, adaptive steps are directed to overcome internal weaknesses and anticipate external threats, for example through improving human resource competencies, preparing digital SOPs, cross-training, strengthening dashboard monitoring, and contingency mechanisms to maintain smooth training operations. This integrated approach allows DAOP III to maximize the potential of SAP ERP as a strategic platform in training management, while ensuring flexibility and readiness to face operational dynamics.

CONCLUSION

NVivo 12 analysis, including word clouds, revealed that SAP ERP implementation emerged as the dominant theme among informants, framed as a systemic transformation in employee training management at PT KAI (Persero) DAOP III Cirebon, with key terms like training, system, integration, efficiency, and evaluation underscoring its role as an integrated SAP HR ERP framework for planning, execution, monitoring, digital certificate management, and evaluation—delivering greater efficiency, accuracy, and transparency. The analysis identified four core themes: SAP HR ERP implementation, training management effectiveness, barriers (e.g., HR readiness, limited access, technical constraints), and strengthening strategies (e.g., RAILEO optimization, system integration, process digitalization, capacity building, and SAP Learning Solution-based evaluation). Overall, the study affirms that SAP HR ERP success hinges on synergy among systems, processes, and HR competencies, offering academic enrichment in HR and management information systems alongside practical recommendations for PT KAI's adaptive, integrated training management; for future research, longitudinal studies could track post-implementation outcomes over 2–3 years to assess sustained effectiveness and ROI at multiple DAOP sites.

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