



THE INFLUENCE OF LEARNING MANAGEMENT SYSTEM (LMS)-BASED TRAINING AND CAREER DEVELOPMENT ON EMPLOYEE COMPETENCE AT PT. PERKEBUNAN NUSANTARA IV REGIONAL II MEDAN

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ABSTRACT

This study examines the influence of Learning Management System (LMS)-based training and career development on employee competence at PT. Perkebunan Nusantara IV Regional II Medan. The research addresses the ongoing challenge of improving employee competence despite the implementation of LMS and career development programs. A quantitative research design was used, and data were collected through structured questionnaires distributed to 123 employees. Multiple linear regression analysis was applied to examine the relationships among variables. The findings reveal that LMS-based training has a significant and dominant effect on employee competence, with greater impact than career development programs. The LMS provides flexibility and accessibility that enhance learning engagement, yet limitations remain, such as the lack of contextual content and alignment with jobspecific needs. Career development programs also positively affect competence but show uneven access across employee groups, limiting their full impact. The study concludes that a structured, integrated approach combining LMS training with equitable career development pathways is essential to maximize employee competence. The research highlights the need for organizations to align LMS content with workplace requirements and develop inclusive career strategies. These findings contribute to the human resource development field by offering practical insights for enhancing digital learning systems and career growth in the plantation sector.

Keywords: LMS-Based Training; Career Development; Employee Competence

1. INTRODUCTION

In today's increasingly competitive work environment, employees' ability to master technology and job-related competencies has become a crucial factor in supporting a company's productivity. PT. Perkebunan Nusantara IV Regional II Medan faces significant challenges in this regard, particularly in improving employee competence, despite having implemented Learning Management System (LMS)-based training programs through the Agro Wallet platform since 2020. Field data reveals that employees' comprehension of training materials delivered via LMS remains low, as reflected in suboptimal achievement of competence scores in the company's annual performance evaluations. Additionally, internal evaluations indicate that employees have expressed dissatisfaction, citing a mismatch between LMS content and the actual demands of their daily work, as well as limited technical support for navigating the LMS. This situation is further compounded by a declining trend in employee satisfaction with career development programs, which correlates with waning interest in participating in advanced competency development initiatives. These issues are critical because employee competence is a key driver in an organization's ability to achieve sustainable business goals (Irfandi et al., 2023; Mahakhant & Rotchanakitumnuai, 2021).

Theoretically, an LMS is designed to facilitate adaptive, flexible, and accessible learning processes, expected to enhance learning motivation and competence acquisition among employees (Dalimunthe et al., 2024; Alturki & Aldraiweesh, 2021). The Task-Technology Fit (TTF) theory explains that the alignment between task requirements and the technology used such as an LMS is a critical success factor in digital learning implementations within the workplace (Dalimunthe et al., 2023; Chuenyindee et al., 2022). However, literature reviews have highlighted that LMS implementations in various organizations often fall short of expectations, primarily due to users' limited understanding, technological infrastructure constraints, and a lack of managerial support in aligning LMS content with actual competency needs (Alotaibi, 2024; Dalimunthe et al., 2024). These gaps emphasize the need for LMS development that is tailored to specific organizational contexts, which includes creating relevant training content, providing technical training for users, and continuously monitoring the LMS's effectiveness in improving workplace competencies.

Based on the issues outlined, this study aims to analyze the impact of Learning Management System (LMS)-based training on employee competence at PT. Perkebunan Nusantara IV Regional II Medan, examine the impact of career development on employee competence, and evaluate the combined influence of LMS and career development on employee competence. These objectives are intended to bridge the gap between theory and practice in implementing LMS for employee development in plantation companies and to provide strategic recommendations for improving training and career development systems that align with the dynamic needs of the plantation industry.

The urgency of this study lies in the need for the company to enhance its competitive edge by developing human resources who are adaptive to technological advancements, particularly in effectively implementing LMS and career development programs. Empirical data from PT. Perkebunan Nusantara IV Regional II Medan demonstrates that LMS adoption has yet to significantly improve employee competence, while career development programs remain fragmented and poorly integrated into the company's digital learning ecosystem. These conditions highlight the importance of conducting this research to gain a deeper understanding of how LMS and career development programs can be optimized to synergistically enhance employee competence, ultimately contributing to productivity and organizational performance. This research is expected to offer theoretical contributions to the field of human resource management, particularly in digital learning contexts, and provide practical solutions for addressing competency gaps in the digital transformation era.

Definition of the Concept: LMS-Based Training

Learning Management System (LMS)-based training is a learning method that utilizes digital technology as the primary platform to support the process of transferring knowledge and skills to learners or employees. LMS is designed to facilitate flexible learning, accessible anytime, and allows the integration of various learning resources such as videos, documents, and discussion forums into a centralized system (Suhendar et al., 2023; Hardika, 2021). In organizational contexts, LMS-based training offers significant advantages as it reduces operational costs of traditional training, accelerates the learning process, and enhances efficiency in monitoring participants' competency achievements (Suhendar et al., 2023; Govender, 2022). The LMS concept is also supported by the **ADDIE** instructional design model (Analysis, Design, Development, Implementation, and Evaluation), which emphasizes the importance of needsbased planning, material design tailored to learner characteristics, and continuous evaluation of learning effectiveness (Suhendar & Rambe, 2023; Lee, 2022).

Categorization or Manifestation of LMS-Based Training

LMS-based training can be categorized into various forms of implementation, depending on the objectives and needs of learners and the organization. The main categories of LMS training include synchronous learning, asynchronous learning, and blended learning. Synchronous learning refers to real-time, scheduled instruction such as virtual classrooms or live webinars, which enable real-time interaction between participants and instructors (Lukashe et al., 2024; Syam et al., 2024). Asynchronous learning allows participants to access materials at any time without time constraints, offering greater flexibility in the learning process, though with limited real-time interaction (Aziz & Handayani, 2024; Moorhouse & Wong, 2022). Blended learning combines both methods, which is believed to provide

more optimal learning outcomes by leveraging the strengths of each approach (Anggriawan, 2024; Almusaed et al., 2023). LMS manifestations also include features such as assessments, progress tracking, and adaptive learning that personalize the learning experience based on individual learner abilities (du Plooy et al., 2024).

Definition of the Concept: Career Development

Career development is defined as a series of efforts undertaken by individuals and organizations to enhance skills, knowledge, and work experience, enabling employees to reach higher positions and roles within the organization. Career development includes various activities such as training, mentoring, job rotation, coaching, and formal learning programs aimed at supporting employees' professional growth (Sari et al., 2023). In the human resource management literature, career development is considered a key factor in boosting motivation, engagement, and employee retention, while helping organizations achieve sustainability and competitive advantage (Angguna, 2020). This definition also emphasizes that career development is not solely an individual's responsibility but also an organizational commitment to providing learning and professional growth opportunities for every employee (Taslim et al., 2024).

Categorization or Manifestation of Career Development

The manifestation of career development in organizational practice includes various programs designed to support employees' professional growth. Key categories of career development include technical skills enhancement, soft skills improvement, mentoring and coaching programs, job rotation, and scholarship opportunities for further education among qualified employees (Yuliana Sari et al., 2023). Additionally, career development can occur through informal learning activities such as participation in strategic projects, cross-departmental collaboration, and the development of professional networks that facilitate knowledge transfer and experiential learning (Lindblom & Martins, 2022). These manifestations are essential for helping employees understand their career potential and plan development paths that align with personal aspirations and organizational needs (Cheng et al., 2024).

Definition of the Concept: Employee Competence

Employee competence is defined as a combination of knowledge, skills, attitudes, and behaviors required to perform tasks effectively according to organizational standards. Competence includes not only technical abilities (hard skills) but also non-technical abilities such as communication, leadership, problem-solving, and adaptability to change (Rusli et al., 2021). This concept is crucial in human resource management as it serves as the foundation for training planning, career development, and employee performance evaluations

(Urbancová et al., 2021). Competence also acts as an indicator of an employee's ability to adapt to changes in the work environment and technological advancements, which are increasingly important in the digitalization era and the Fourth Industrial Revolution (Lubis et al., 2022).

Categorization or Manifestation of Employee Competence

Employee competence is manifested through various indicators reflecting mastery of tasks and roles in the workplace. Technical competence typically relates to specific job skills, such as proficiency in specific software, foreign language skills, or understanding of standard operating procedures (SOPs) (Maghiar & Brown, 2022). Meanwhile, non-technical or soft skills include interpersonal communication, leadership, teamwork, adaptability, and strategic decision-making abilities (Ojan et al., 2025). Other manifestations of competence include the ability to solve problems creatively, think critically, and innovate in daily work processes (Thornhill-Miller et al., 2023).

2. RESEARCH METHOD

This research focuses on analyzing the influence of Learning Management System (LMS)-based training and career development on the competence of employees at PT. Perkebunan Nusantara IV Regional II Medan. The research object is the phenomena surrounding employee competence issues within the company, particularly the challenges faced in the implementation of LMS training and career development programs. These challenges include limited content relevance in LMS modules, lack of customization in career planning, and inconsistent managerial support in aligning learning objectives with workplace demands. By investigating these issues, the study seeks to understand how LMS and career development programs interact in shaping employee competence and identify strategic recommendations for improving human capital management in the plantation industry.

This study employs a quantitative research approach, as defined by Sugiyono (2015), which emphasizes objective data collection, statistical analysis, and hypothesis testing. The research design is descriptive, aiming to depict current phenomena related to LMS training, career development, and employee competence at PT. Perkebunan Nusantara IV Regional II Medan. Primary data were obtained through structured questionnaires distributed to 153 employees, selected using purposive sampling techniques based on specific criteria: employees working at the Medan headquarters and using the LMS platform for less than one year. Secondary data sources include literature reviews, company documents, and supporting materials relevant to the study variables, such as organizational charts, training records, and HR reports.

Data sources for this research are categorized into primary and secondary data. Primary data were directly collected from respondents using questionnaires designed to capture employees' perceptions of LMS training effectiveness and career development initiatives. Secondary data were obtained from company documents, HR records, internal reports, relevant journal articles, and other references that provide contextual understanding of LMS implementation and career development practices in the plantation sector. These combined sources ensure a comprehensive dataset that supports the study's analysis and findings.

The primary method of data collection was a structured questionnaire using a Likert scale to measure employee perceptions. Respondents were asked to rate their agreement with various statements related to the quality of LMS-based training, career development opportunities, and their own perceived competence. Additional data were gathered through interviews with selected informants to clarify specific issues, such as challenges in LMS content delivery or barriers in career progression. Documentation reviews complemented the process, analyzing internal reports, training modules, and records of employee participation in learning programs. These combined techniques provided a multi-faceted perspective on the research problem.

Data were analyzed using descriptive and inferential statistical methods. Descriptive analysis summarized participant characteristics and response distributions, while multiple linear regression analysis tested the research hypotheses. The regression model examined the simultaneous effects of LMS-based training (X1) and career development (X2) on employee competence (Y). Statistical testing was conducted using SPSS version 30, with assumptions including normality, multicollinearity, heteroscedasticity, and autocorrelation tests applied to ensure model validity. The final regression equation was formulated as:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + e$$

where Y represents employee competence, $\beta 0$ is the constant, $\beta 1$ and $\beta 2$ are regression coefficients, and e is the error term. This analytical framework allowed the study to quantify the relative contributions of LMS training and career development to employee competence.

3. RESULT AND ANALYSIS

LMS Training: Empirical Findings and Interpretation

The analysis revealed that Learning Management System (LMS)-based training at PT. Perkebunan Nusantara IV Regional II Medan significantly influences employee competence, as shown by a regression coefficient (B) of 0.579, t-value of 7.086, and p-value < 0.001. This positive relationship indicates that LMS training, which offers flexibility and accessibility, effectively enhances employees' technical and non-technical skills. Employees reported a 30% increase in participation rates,

with an average response score of 3.99 on the Likert scale, reflecting a favorable perception of LMS utility. However, interviews and survey comments highlighted limitations, including a lack of contextual relevance in training materials and insufficient integration of practical case studies. This gap between LMS design and real-world application confirms previous studies stating that the success of LMS depends content alignment with job demands (Mahakhant Rotchanakitumnuai, 2021). Furthermore, organizational support for LMS utilization was found to be uneven, with some supervisors actively encouraging engagement while others perceived LMS as a mere compliance tool. These findings underscore the need for systematic content curation and active managerial involvement to maximize LMS benefits.

Career Development: Empirical Findings and Interpretation

Career development programs at PT. Perkebunan Nusantara IV Regional II Medan also exhibit a significant influence on employee competence, albeit to a lesser extent compared to LMS training. The regression analysis showed a coefficient (B) of 0.348, t-value of 4.334, and p-value < 0.001, indicating a statistically significant yet moderate impact. Employees responded positively to career development initiatives such as mentoring, coaching, and job rotation, acknowledging their contribution to both technical and leadership skill development. However, survey responses also revealed disparities in access, where employees in strategic roles received more opportunities than those in operational positions. This uneven distribution echoes findings by Sembiring et al. (2022) that career development often favors specific employee groups (Sembiring et al., 2022). Consequently, while career development is a vital component of human capital strategies, its effectiveness is contingent upon inclusivity, transparency in promotion criteria, and alignment with performance targets. The study also found that employees who benefited from career development were more likely to engage with LMS resources, suggesting a synergistic relationship between formal training platforms and structured career pathways.

Integration of LMS and Career Development: Analysis and Theoretical Contribution

The combined analysis of LMS and career development programs revealed a shared contribution of 56.9% to the variance in employee competence, highlighting their joint role in shaping workforce capabilities. The higher impact of LMS reflects its flexibility and direct learning outcomes, while career development serves as a complementary mechanism that nurtures long-term skill growth and employee motivation. These findings align with the Task-Technology Fit (TTF) theory, which emphasizes the alignment between technological tools and work tasks (Mahakhant & Rotchanakitumnuai, 2021). However, this study extends the literature by demonstrating that without strong managerial support and content

relevance, even high LMS engagement may not fully translate into competence gains. Furthermore, the limited inclusivity in career development programs underscores the need for a more equitable design, where all employees, regardless of role, can access learning opportunities tailored to their specific job functions. The study contributes to the ongoing discourse on digital learning by highlighting the practical challenges of integrating LMS and career development into a cohesive system that addresses both immediate and future skill needs in the plantation sector.

Reflection on Research Objectives and Practical Implications

The study's findings address the core research objectives by demonstrating that while both LMS and career development significantly influence competence, the LMS exerts a more direct and measurable impact. This suggests that digital platforms, when properly designed and supported, can serve as primary vehicles for workforce upskilling in industries with distributed operations such as plantations. However, career development remains essential for fostering broader capabilities, including leadership, communication, and problem-solving skills, which are less effectively developed through LMS alone. For practitioners, these insights underscore the need to integrate LMS with a holistic talent management framework that includes regular content updates, user training, mentoring schemes, and transparent performance-linked promotion pathways. Investing in an adaptive LMS ecosystem, supported by inclusive career development strategies, can help organizations build resilient, competent workforces ready to navigate the challenges of digital transformation.

4. CONCLUSION

The most striking finding from this study is that despite the intensive implementation of Learning Management System (LMS) based training at PT. Perkebunan Nusantara IV Regional II Medan, its contribution to enhancing employee competence surpasses that of career development programs, which have traditionally been regarded as the primary tool for human capital development. This surprising result highlights the transformative potential of LMS as more than just a supplementary learning platform, but rather as a critical driver for improving employee skills challenging the conventional view that LMS serves only as a secondary solution. This finding reshapes the understanding of how digital learning can fundamentally elevate employee competence, especially in industries such as plantations, where technology integration has historically been limited.

This research provides significant contributions to both theoretical knowledge and practical applications. Theoretically, it expands the discourse on the dynamic interaction between LMS and career development in shaping employee competence, addressing a gap in the literature that rarely examines their combined influence within the plantation industry context. It also reinforces the importance of designing LMS content aligned with job-specific competencies, an area that has often been overlooked in digital learning discussions. Practically, the study offers actionable insights for organizations seeking to enhance their human capital strategies, emphasizing the need to optimize LMS as a core tool for competence development and to establish inclusive, equitable, and role-specific career development programs that meet the demands of the modern workforce.

While this study offers valuable insights, it is important to note its scope is limited to a single company and focuses solely on LMS, career development, and employee competence variables. This limitation, however, should not be seen as a weakness, but rather as a foundation for future research. Further studies could explore additional factors such as organizational culture, intrinsic motivation, and leadership styles that may influence the effectiveness of LMS and career development programs. Future research could also expand the scope to other industries, adopt mixed-methods approaches, or conduct longitudinal analyses to assess long-term impacts on competence. This study serves as an initial step in encouraging more comprehensive investigations into human capital development in the digital age.

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