
HUMAN RESOURCE COMPETENCY GAP ANALYSIS AS A BASIS FOR TRAINING DEVELOPMENT

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ABSTRACT

This study aims to develop a conceptual framework that positions competency gap analysis as a strategic foundation for competency-based training development in organizational human resource management. The study employed a systematic literature review approach using the PRISMA framework, including identification, screening, eligibility, and inclusion stages. Relevant literature was collected from major academic databases, including Scopus, ScienceDirect, SpringerLink, and Google Scholar, covering publications from 2013 to 2026. The selected studies were analyzed using thematic content analysis and interpretative synthesis to identify conceptual patterns and relationships among competency assessment, competency gaps, training needs analysis, and training development strategies. The findings indicate that competency gaps primarily emerge from discrepancies between organizational competency requirements and employees' actual competencies, particularly in technical, managerial, digital, and adaptive capabilities. These gaps significantly affect organizational productivity, innovation capacity, service quality, and workforce readiness in responding to technological transformation. Furthermore, the study demonstrates that competency gap analysis functions as a strategic mechanism for identifying training priorities and designing more targeted, adaptive, and sustainable competency-based training programs. This study proposes an integrated conceptual framework linking competency assessment, competency gap analysis, training needs analysis, and competency-based training within a continuous human resource development cycle. The study contributes to the strategic human resource development literature by strengthening the theoretical relationship between competency diagnostics and evidence-based training strategies while offering practical implications for organizations in developing future-oriented workforce capabilities.

KEYWORDS :*competency gap, human resources, training, training needs analysis, human resource development.*

INTRODUCTION

Dynamic changes in the organizational environment require human resources to possess adaptive competencies relevant to job requirements. Competencies are a key factor in determining the effectiveness of individual and organizational performance(Hosny et al., 2024;Lalaeng et al., 2024).However, in practice, there is still often a mismatch between the competencies possessed by employees and the needs of the organization.This gap poses a major challenge in human resource management because it can lead to inefficiency and reduced work productivity. The gap between industry needs and workforce competencies has even been cited as a major obstacle to improving organizational performance(Rohimi et al., 2024; Morandini et al., 2023). Therefore, a systematic approach is needed to identify competency gaps as a basis for designing targeted training programs.

Competence is an individual characteristic that encompasses knowledge, skills, and attitudes that are directly related to job performance. Competence plays a role in determining an individual's success in carrying out their duties effectively(Jabbara, 2023; Chiu et al., 2024). The competency approach in HR management emphasizes the identification of individual attributes that contribute to superior performance, which includes technical, managerial, and behavioral competencies integrated in the execution of work(Salman et al., 2023).

A competency gap is the difference between the competencies possessed by the workforce and those required by the organization. This gap can lead to inefficiency and reduce the quality of organizational performance(Fachrunnisa & Hussain, 2020). Research shows that competency gaps can occur in various aspects such as technical skills, communication, and behavioral aspects, so identifying gaps is important to determine appropriate development interventions (Putra et al., 2024).

Competency-based training is an approach designed to develop individual skills according to job requirements and focuses on mastering specific competencies that can improve performance (Škrinjarić, 2022). Effective training development must be based on an accurate needs analysis, including the identification of competency gaps, because without such analysis, training programs risk being irrelevant and ineffective (Bin Othayman et al., 2022).

Although numerous studies have addressed the importance of competency and training in improving organizational performance, several gaps remain. Most studies emphasize the direct relationship between competency and performance, without delving deeply into the

process of identifying competency gaps as a basis for training design(Dinçer, 2024). In addition, research related to training often focuses on evaluating program effectiveness, but not many have systematically integrated competency gap analysis into the training planning stage(Devi, 2025). On the other hand, studies on training needs analysis also show that the approach used still tends to be reactive and is not based on comprehensive competency gap mapping(Pandey & Dash, 2026). Therefore, a conceptual study is needed that integrates competency gap analysis with training development as a systematic and applicable framework in human resource management.

This study offers novelty by conceptually integrating competency gap analysis as the primary foundation for developing organizational needs-based training. Unlike previous research, which tends to separate competency, competency gaps, and training, this study builds a conceptual framework that systematically and holistically connects these three aspects(Ferreira & Abbad, 2013; Fachrunnisa & Hussain, 2020). In addition, this study emphasizes the importance of a proactive approach in training needs analysis based on mapping competency gaps, not just responding to short-term needs(Devi, 2025). Thus, the main contribution of this research lies in the development of a conceptual model that can be used as a reference in designing training programs that are more focused, effective, and aligned with the strategic needs of the organization.

The fragmentation of previous studies indicates a significant conceptual gap in strategic human resource development research. Although competency gaps, training needs analysis, and competency-based training have received considerable scholarly attention individually, few studies have integrated these elements into a comprehensive, systematic human resource development framework. The existing literature has not sufficiently explained how competency gap identification can directly inform training priorities, competency mapping, and adaptive workforce development strategies. Consequently, organizations often implement training programs that are insufficiently aligned with actual competency deficiencies and organizational strategic needs. This limitation suggests the need for a more integrative conceptual approach that positions competency gap analysis as the central foundation for training development and workforce capability enhancement.



Figure 1. Conceptual Framework of Competency Gap-Based Training Development.

The conceptual framework proposed in this study illustrates the strategic relationship between organizational change, competency gap analysis, and competency-based training development within human resource development practices. The framework assumes that rapid organizational and technological changes continuously alter competency requirements in modern workplaces. Consequently, organizations must first identify the competencies required to achieve strategic objectives before conducting competency assessments to evaluate employees' actual capabilities.

The discrepancy between required and existing competencies serves as the basis for a competency gap analysis, which subsequently serves as the primary reference for conducting a training needs analysis (TNA). Through this mechanism, organizations can identify competency priorities, determine targeted training interventions, and design competency-based training programs aligned with organizational demands. The framework further emphasizes that effective competency-based training contributes to workforce capability improvement, including employee adaptability, innovation capacity, and overall organizational performance. Ultimately, continuous competency development strengthens organizational adaptability and competitiveness in rapidly changing work environments.

Responding to these limitations, this study proposes a conceptual framework integrating competency assessment, competency gap analysis, training needs analysis, and competency-based training development within a continuous human resource development cycle. Unlike previous studies that predominantly discuss these variables separately, this research positions competency gap analysis as a strategic mechanism for identifying organizational competency

priorities and designing more adaptive, targeted, and sustainable training interventions. Using a systematic literature review, this study aims to analyze the relationship between competency gaps and training development strategies and to construct a conceptual model that strengthens the theoretical linkage between competency diagnostics and strategic workforce development. The study is expected to contribute theoretically to the strategic human resource development literature and, practically, to organizational efforts to develop future-oriented workforce capabilities in rapidly changing work environments.

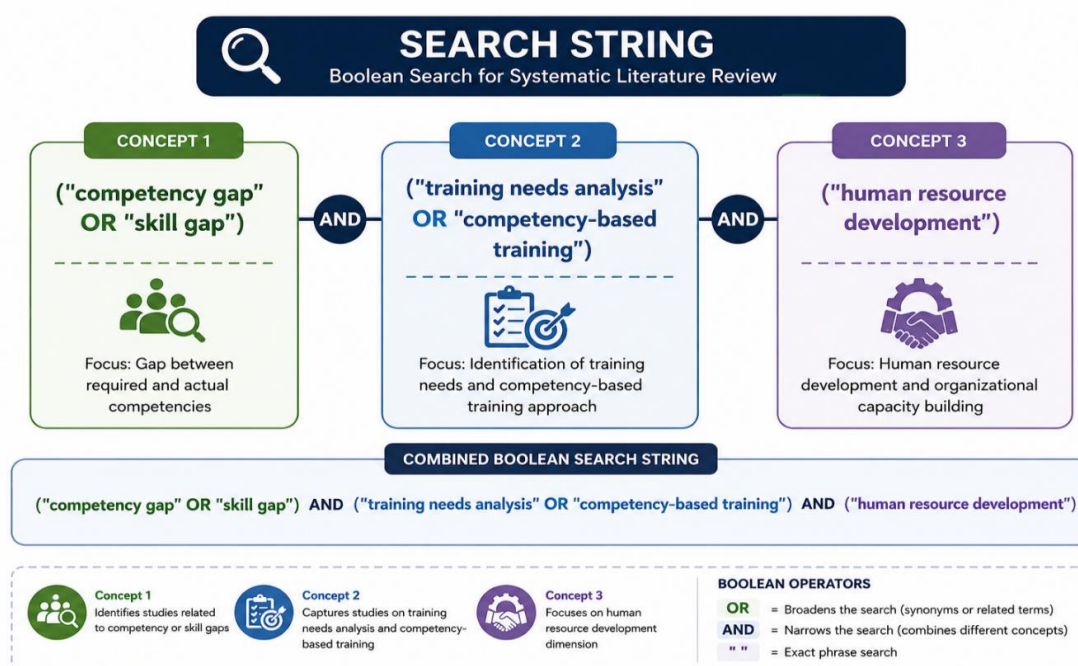
MATERIALS AND METHODS

This study employed a qualitative approach using a systematic literature review (SLR) method to analyze human resource competency gaps as a strategic basis for competency-based training development. The systematic literature review approach was selected because it enables a comprehensive, transparent, and rigorous synthesis of previous studies related to competency management, training needs analysis, and human resource development. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, comprising four stages: identification, screening, eligibility, and inclusion (Safariningsih et al., 2024).

Literature Search Strategy

The literature search was conducted using several international academic databases, including Scopus, ScienceDirect, SpringerLink, and Google Scholar. These databases were selected for their relevance and credibility in publishing studies on human resource management, organizational development, and competency-based training. The literature search covered publications from 2013 to 2026 to ensure inclusion of recent, relevant studies on workforce transformation and organizational competency development in contemporary work environments.

The search used a combination of keywords and Boolean operators to identify relevant studies systematically. The primary search string applied in the databases was as follows: ("competency gap" OR "skill gap") AND ("training needs analysis" OR "competency-based training") AND ("human resource development")



Additional keywords, such as workforce capability, competency assessment, workforce development, digital competency, and organizational adaptability, were also used to expand search coverage and identify complementary studies relevant to the research objectives.

Inclusion and Exclusion Criteria

To ensure the quality and relevance of the selected literature, this study applied specific inclusion and exclusion criteria during the screening and eligibility processes.

Criteria	Inclusion	Exclusion
Publication Year	2013–2026	Published before 2013
Language	English	Non-English publications
Publication Type	Peer-reviewed journals, conference proceedings, academic books	Non-academic articles, blogs, opinion papers
Research Focus	Competency gap, training needs analysis, competency-based training, HR development	Unrelated organizational or educational topics
Accessibility	Full-text accessible	Abstract-only or inaccessible articles
Database Source	Scopus, ScienceDirect, SpringerLink, Google Scholar	Unverified or non-indexed sources

PRISMA Screening Process

The PRISMA process was conducted systematically to identify and select relevant literature. During the identification stage, 247 publications were collected from the selected databases using the search keywords. Duplicate articles were subsequently removed, followed by title

and abstract screening to assess relevance to the research objectives. At the eligibility stage, the full texts of potentially relevant articles were comprehensively reviewed to assess conceptual suitability and methodological relevance. Finally, 34 articles were included in the final synthesis and analysis process because they demonstrated strong relevance to competency gap analysis, training needs analysis, and competency-based training development.

Data Analysis

The selected studies were analyzed using thematic content analysis and interpretative synthesis. The analysis process involved identifying recurring themes, categorizing major concepts, and examining the relationships among competency assessment, competency gap analysis, training needs analysis, and competency-based training development. This analytical approach enabled the study to construct a conceptual understanding of how competency gap identification can function as a strategic mechanism for workforce capability development and organizational adaptability.

To strengthen the validity and reliability of the findings, this study employed source triangulation by comparing findings across multiple studies, theoretical perspectives, and organizational contexts. The triangulation process helped ensure consistency in interpreting the literature and enhanced the robustness of the conceptual framework developed in this study.

RESULTS AND DISCUSSION

Identify Competency Gaps

Identifying competency gaps is a crucial initial step in competency-based human resource management. Based on the simple PRISMA approach used in this study, the literature analyzed indicates that identifying competency gaps involves comparing an individual's actual competencies with the organization's competency standards. This stage appears consistently in various studies selected in the *included phase*, which confirms that measuring competency gaps is the foundation for determining HR development needs(Rigamonti et al., 2024).

From an analytical perspective, the results of the literature synthesis at the eligibility stage indicate that the approach to identifying competency gaps extends beyond measuring technical capabilities to encompass behavioral and managerial aspects. This aligns with the finding that competency is a multidimensional construct involving knowledge, skills, and

work attitudes(Zhang & Yuan, 2022). Therefore, the gap identification process must be comprehensive to capture all competency dimensions relevant to job performance.

Furthermore, literature analysis during the screening stage revealed that competency gap identification can be conducted through various approaches, including performance assessments, self-assessments, interviews, and competency-based instruments. This variety of methods demonstrates that no single approach can be used universally; rather, it needs to be adapted to the organizational context and job characteristics. Therefore, flexibility in identification methods is crucial for producing accurate gap mapping.

Furthermore, in the context of organizational development, identifying competency gaps also serves as a strategic diagnostic tool. A literature review shows that organizations capable of systematically identifying gaps are more likely to design targeted development interventions. This strengthens the argument that identifying competency gaps is not only operational but also has strategic implications for long-term HR planning.

Thus, identifying competency gaps is a complex and multidimensional process that requires a systematic approach. This stage serves not only as an evaluation tool but also as a basis for designing effective and sustainable HR development strategies.

The Impact of Competency Gaps on Organizations

Unmanaged competency gaps have a significant impact on organizational performance. Based on the literature synthesis at the included stage of the PRISMA process, it was found that a mismatch between individual competencies and job requirements can lead to decreased productivity, increased work errors, and low-quality organizational output(Ferrari, 2022).

From a theoretical perspective, a competency gap reflects a misalignment between an individual's capacity and an organization's demands. This condition impacts not only individual performance but also overall organizational effectiveness. A literature review on the eligibility stage shows that organizations with significant competency gaps tend to struggle to achieve their strategic goals. Conversely, the literature analyzed shows that organizations that manage competencies effectively gain a competitive advantage. Appropriate competency development can increase productivity, innovation, and an organization's ability to adapt to changes in the business environment(Sadewa & Ridwan, 2024; Palupi et al., 2024) .

Furthermore, analysis during the screening phase indicated that the impact of competency gaps extends beyond the internal to the external environment. Organizations that fail to address competency gaps will lose their competitive edge in the marketplace, particularly

amid technological advancements and globalization(Ermida & Ismail, 2025). This demonstrates that competency management is a key factor in maintaining organizational sustainability.

In this context, competency gaps can be viewed as strategic risks that must be managed proactively. Organizations need to monitor employee competency development to anticipate future competency needs continuously(Treviño-Elizondo & García-Reyes, 2023). Thus, competency gaps have a broad and significant impact on organizational performance. Effective competency gap management is a crucial prerequisite for improving organizational competitiveness and sustainability.

Comparative Analysis of Competency Gaps: Digital vs. Managerial Competencies

Competency gap analysis is the primary foundation for developing effective training programs. Based on the literature synthesis results at the included stage, it was found that a competency-gap-based training needs analysis (TNA) can increase the relevance and effectiveness of training(Tri Ardiansah et al., 2026).From a conceptual perspective, competency gap analysis serves as a bridge between the organization's actual and ideal conditions. By identifying these gaps, organizations can design more targeted training programs that meet real needs.

A literature review at the eligibility stage shows that training not based on a competency gap analysis tends to be ineffective. This is due to a mismatch between the training material and the participants' needs. Conversely, needs-based training has been shown to significantly improve employee skills and job readiness(Al Sharji & Elgeddawy, 2025). Furthermore, the analysis results from the screening stage indicate that a competency-based TNA approach also enables organizations to allocate training resources more efficiently. By focusing on the most critical gaps, organizations can maximize the impact of training on performance.

Furthermore, competency gap analysis also helps improve the accountability of training programs. By having clear indicators of the gaps to be addressed, organizations can evaluate training effectiveness more objectively. Thus, competency gap analysis is a key element in developing effective training. This approach not only increases the relevance of training but also ensures that investments in human resource development deliver optimal results.

Training Development Strategy

The training development strategy is the next step after the competency gap analysis. Based on the literature synthesis in the included stage, it was found that organizations use various

training methods to address competency gaps, such as digital training, mentoring, and on-the-job training.

Technology-based training, such as e-learning, is highly effective in improving competency, especially amid rapid technological development(Benchouat & Ghezal, 2025). This approach allows for flexibility in the learning process and broader access to training resources. In addition, training strategies integrated with organizational needs have been proven to produce more competent and adaptive human resources(Rohayati, 2024). This shows that the success of training is not only determined by the method used, but also by the suitability of the training program to the organization's needs.

The analysis at the eligibility stage also shows that an effective training strategy must be sustainable. Training should not be viewed as a one-time activity, but as an ongoing process to develop employee competencies. Furthermore, a combination of various training methods, such as blended learning, mentoring, and hands-on practice, has been shown to increase learning effectiveness. This approach enables employees not only to understand concepts but also to apply them in real-world work contexts. Therefore, an effective training development strategy must be based on a competency gap analysis, integrated with organizational needs, and employ a flexible, sustainable approach.

Reconstructing Training Needs Analysis through Competency-Based Perspectives

One of the most important findings of this review is the conceptual shift in training needs analysis (TNA) from an administrative activity to a strategic, competency-driven mechanism(Yimam, 2022;Hosen et al., 2024). Traditional TNA approaches primarily focus on organizational requests, short-term performance problems, and routine training implementation. Such approaches frequently emphasize procedural training delivery without systematically identifying competency deficiencies underlying performance gaps.

However, contemporary studies increasingly support competency-based TNA approaches that position competency gap analysis as the primary foundation for determining training priorities(Audrin & Audrin, 2023;Monang et al., 2022;Sarwari et al., 2024). In this perspective, training is no longer viewed merely as a corrective organizational activity but as a strategic investment aimed at strengthening organizational capability and adaptability.

This shift reflects the influence of Strategic Human Resource Management, which emphasizes the alignment between human resource development and organizational strategic objectives(Anglin et al., 2022;Ren et al., 2023). Strategic HRM argues that workforce development initiatives should directly support organizational competitiveness, innovation

capability, and long-term sustainability. Therefore, competency-based TNA enables organizations to prioritize training interventions according to strategic competency requirements rather than relying solely on administrative considerations.

Comparative analysis between traditional and competency-based TNA further reveals significant differences:

Dimension	Traditional TNA	Competency-Based TNA
Main Orientation	Administrative training needs	Strategic competency development
Focus	Current performance problems	Future organizational capability
Training Basis	Organizational requests	Competency gap analysis
Learning Objective	Skill improvement	Strategic capability enhancement
Organizational Role	Operational support	Competitive advantage development

The synthesis demonstrates that competency-based TNA offers greater strategic relevance by integrating workforce capability assessment with organizational adaptability requirements. This finding strengthens the argument that competency gap analysis should function as the central mechanism within organizational training systems.

Competency-Based Training as a Strategic HRD Mechanism

The literature synthesis also reveals that competency-based training has shifted from a conventional learning activity into a strategic human resource development mechanism(Bahri & Salsiati, 2025;Bilderback, 2023). Unlike traditional training models that often prioritize generalized knowledge transfer, competency-based training specifically focuses on measurable competency outcomes aligned with organizational demands.

The findings indicate that organizations implementing competency-based training systems generally demonstrate stronger workforce adaptability, innovation capability, and organizational resilience(Martínez-Bravo et al., 2022;Sharma & Malodia, 2022). This occurs because competency-based training enables organizations to continuously update workforce competencies in response to environmental changes and technological disruption.

The analysis further highlights the increasing importance of digital learning ecosystems within competency development practices. Contemporary organizations increasingly adopt blended learning, virtual learning platforms, and AI-supported training systems to improve training accessibility and flexibility(Torres & Delgado, 2025;Priyashantha, 2022). However, the literature simultaneously indicates that technology-based learning systems alone are insufficient without organizational learning cultures that support continuous competency development.

This finding reinforces the assumptions of Competency Theory, which argues that competency development requires continuous interaction between individual capability enhancement and organizational support systems (Monang et al., 2022; Martínez-Bravo et al., 2022). Consequently, effective competency-based training should not only emphasize learning methods but also organizational learning culture, leadership support, and long-term workforce development strategies.

Based on the overall synthesis, this study proposes that competency gap analysis functions as the central link between organizational change, competency assessment, training needs analysis, and competency-based workforce development (Hsu, 2023; Ratna et al., 2025). Unlike previous studies, which frequently examine these dimensions separately, this research demonstrates that competency gaps should be positioned as strategic diagnostic tools within organizational capability development systems.

The integrated framework developed in this study suggests that organizations capable of continuously identifying and responding to competency gaps will possess stronger adaptability, workforce resilience, and sustainable competitiveness. Therefore, competency gap analysis should not merely function as an evaluative HR mechanism but as a strategic organizational capability management system supporting long-term organizational sustainability in increasingly dynamic work environments.

CONCLUSION

This study shows that the human resource competency gap is a crucial factor influencing individual and organizational performance. This gap arises from a mismatch between the competencies the workforce actually possesses and the competency standards required by the organization. Therefore, identifying competency gaps is a strategic step that serves not only as an evaluation tool but also as a basis for systematic human resource development planning. The results of the literature review indicate that competency gaps have a significant impact on declining productivity, work quality, and organizational competitiveness if not managed appropriately. Conversely, organizations that can proactively identify and manage competency gaps will have an advantage in improving performance and adapting to changes in the work environment. This study confirms that competency gap analysis is a key foundation in developing effective training. A needs-based training approach based on the gap analysis results has proven more relevant and capable of significantly improving competencies than general training. Thus, integrating competency gap analysis and training needs analysis is a key element in designing targeted training programs.

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