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# Advancing the understanding of employee performance: a recent systematic literature review using PRISMA

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## ABSTRACT

Employee performance is a crucial factor for ensuring organizational sustainability and competitiveness. However, the lack of consistency in research findings and the variety of theoretical approaches make it difficult to fully understand what influences employee performance, especially in complex organizations such as manufacturing companies, holding firms, and state-owned enterprises. This study conducts a systematic literature review following the PRISMA 2020 protocol, focusing on Scopus-indexed articles published between 2020 and 2025. A total of 24 articles were selected based on clear inclusion and exclusion criteria. Thematic analysis is used to identify the most frequently studied variables, examine the theories applied, and assess the consistency of research results. Thirteen main variables are identified, including motivation, work environment, leadership style, compensation, job satisfaction, training, organizational culture, work-life balance, digital culture, competence, commitment, organizational learning, and career development. Although many of these variables appear frequently, the findings often differ depending on the organizational context and research methods used. The review also finds that three theories are most commonly applied, namely Social Exchange Theory, Social Capital Theory, and Herzberg's Two-Factor Theory. This review is limited to English-language articles from Scopus. Still, it provides a useful summary for future research and practical use in strategic organizational settings.

## ARTICLE HISTORY

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## SUBJECTS

Business, Management and Accounting; Business Ethics; Administration and Management; Management & Organization

## 1. Introduction

Companies today operate in highly dynamic environments marked by increasing complexity and uncertainty. These conditions create hypercompetitive markets that require organizations to be more agile and responsive. Alqarni et al. (2023) emphasize that only companies capable of detecting environmental changes and adapting quickly can survive. In the modern era, defined by rapid technological advancement, competition among companies is becoming increasingly intense. Therefore, organizations must continuously enhance quality to remain viable and competitive (Susanto et al., 2023). Moreover, globalization poses various challenges for organizations in managing employee performance to achieve their strategic goals (Idris et al., 2020). One key strategy for maintaining competitiveness is the effective management of highly skilled and competitive human resources (Susanto et al., 2023).

Performance refers to an individual's work outcomes when executing assigned tasks, influenced by their skills, experience, sincerity, and time investment (Qomariah et al., 2020). Employee performance reflects the degree to which tasks are completed and how well organizational rules, expectations, or role requirements are met (Ismail & Muafi, 2019). It includes several dimensions, including quality, quantity, timeliness, effectiveness, independence, and employee commitment to achieving organizational goals (Arifin & Narmaditya, 2024). Therefore, focusing on both individual and team performance is essential for organizational success (Najmudin et al., 2024).

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Enhancing employee performance is crucial for organizations to meet their business objectives (Masharyono et al., 2023). Employee performance significantly impacts institutional progress, contributing to increased productivity, efficiency, and effectiveness in achieving organizational targets and goals (Arifin & Narmaditya, 2024). Strong employee performance bolsters organizational productivity, highlighting the necessity for leaders to continually focus on enhancing their members' performance to ensure organizational advancement (Bernanthos, 2018; Jelly et al., 2024). Thus, organizational goals should be realized through optimal and exceptional employee performance. To achieve this, various initiatives must be directed toward the factors that affect employee performance (Agussalim et al., 2022).

Previous studies show that employee performance is influenced by a wide range of factors, including motivation, transformational leadership, and the work environment. Motivation consistently emerges as a key internal driver that shapes employees' enthusiasm, direction, and persistence, ultimately enhancing individual and organizational outcomes (Aliyyah et al., 2021; Ingsih et al., 2022; Udin et al., 2023). Transformational leadership also demonstrates a positive and significant effect on performance by inspiring employees, providing individualized support, and fostering a productive work climate (Haryanto et al., 2022; Layaman et al., 2021; Rawashdeh et al., 2020). Likewise, a supportive work environment, both physically and socially contributes to higher engagement and productivity (Idris et al., 2020; Masharyono et al., 2023; Syarip et al., 2024). Together, these studies indicate that employee performance is shaped by multiple and diverse determinants, highlighting the fragmented nature of the existing literature.

Although prior studies show that motivation, transformational leadership, and the work environment have significant effects on improving employee performance, the changing dynamics of modern organizations show that the factors shaping employee performance are becoming more diverse and complex. Research on employee performance is now widely dispersed, making it difficult for scholars and practitioners to obtain a comprehensive understanding of its key determinants in contemporary settings. This fragmentation shows an urgent need for a systematic and structured review that synthesizes the rapidly growing empirical evidence. Therefore, a Systematic Literature Review is an appropriate approach to identify consistent patterns, evaluate theoretical developments, and map the determinants of employee performance more comprehensively. By consolidating various empirical findings, this SLR provides a stronger evidence-based foundation for future research and for more effective managerial decision-making.

Systematic literature review (SLR) analysis is a structured and transparent methodological approach used to identify, evaluate, and synthesize all relevant literature on a specific topic or research question in a systematic manner. Its goal is to obtain a comprehensive and replicable understanding of the development of knowledge within a particular field (Carrera-Rivera et al., 2022; Chong et al., 2022; Paul et al., 2021; Williams et al., 2021). This method allows researchers to summarize key findings from previous studies, identify research gaps, and provide clear directions for future research by minimizing bias and enhancing the quality of evidence-based scientific synthesis.

Although the body of research on employee performance continues to expand, existing SLR-based studies remain conceptually fragmented and methodologically limited. Atatsi et al. (2019) concentrate solely on selected behavioral constructs, Triansyah et al. (2023) examine only seven Scopus articles, Zapa-Pérez and Cogollo-Flórez (2022) focus on fuzzy evaluation methods rather than synthesizing determinants of employee performance, and Garad et al. (2022) restrict their review to transformational leadership. Collectively, these studies do not offer a comprehensive, systematically synthesized, or up-to-date mapping of the determinants of employee performance, particularly within the rapidly evolving post-2020 landscape shaped by digital transformation and organizational restructuring. Moreover, no prior review applies a PRISMA-guided protocol to examine employee performance specifically within manufacturing companies, holding companies, and SOEs sectors characterized by distinct institutional logics and performance systems. To address these gaps, the present study undertakes a rigorous SLR of Scopus-indexed articles published between 2020 and 2025 with five clearly defined objectives, which are to analyze annual publication trends in employee performance research, to identify the most influential contributing authors, to examine the most globally cited documents that shape the field, to systematically map determinant variables and assess how they are conceptually and empirically employed across studies, and to synthesize the theoretical foundations most commonly used in the literature. Through these focused objectives, the study provides an integrated and context-sensitive understanding of employee performance that is currently absent from existing reviews.

## 2. Literature review

### 2.1. Employee performance

In general, employee performance refers to the work outcomes achieved by individuals in carrying out assigned duties and responsibilities, encompassing quality, quantity, and contributions toward organizational goals. Prior studies define employee performance as the manifestation of productive work behavior and effectiveness in achieving organizational objectives across various contexts (Babu et al., 2024; El Junusi et al., 2023; Lasisi et al., 2024). Overall, employee performance reflects individual efficiency and effectiveness in fulfilling assigned responsibilities.

In empirical studies, employee performance is commonly measured using either self-reported or objective indicators. Self-reported measures capture employees' perceptions of their work outcomes and behaviors, while objective measures rely on observable indicators such as productivity records, output levels, or performance ratings. Differences in measurement approaches may contribute to variation in empirical results across studies.

Employee performance is also conceptualized as a multidimensional construct. Pradhan and Jena (2017) identify three key dimensions: task performance, which relates to the execution of core job duties; adaptive performance, which reflects the ability to adjust to organizational and environmental changes; and contextual performance, which refers to discretionary behaviors that support the social and psychological work environment. These dimensions provide a comprehensive view of employee contributions beyond formal job requirements.

### 2.2. Systematic literature review

Systematic literature review (SLR) is a methodological approach used to identify, select, evaluate, and synthesize research findings relevant to a specific topic or research question. Unlike traditional literature reviews, SLR follows an explicit, transparent, and replicable protocol to minimize bias in the selection and interpretation of literature (Williams et al., 2021). According to Carrera-Rivera et al. (2022), SLR is designed as a two-stage process (planning and execution), starting with formulating focused research questions and selecting literature based on strict inclusion and exclusion criteria. Chong et al. (2022) emphasize that SLR is a quality and protocol oriented method of research synthesis, aiming to yield deep insights and a structured mapping of the literature in a given field. Similarly, Paul et al. (2021) define SLR as a scientific method consisting of systematic processes for collecting, organizing, and evaluating literature to produce up-to-date knowledge and guide future research agendas. Collectively, these four studies affirm that SLR is a systematic, transparent, and replicable scientific method that is highly valuable for summarizing past research findings, identifying knowledge gaps, and establishing a strong foundation for further investigation.

## 3. Research methodology

This study adopts a systematic literature review approach structured and analyzed using the PRISMA 2020 protocol (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), as described by Page et al. (2021). PRISMA provides a methodological framework designed to improve transparency, accuracy, and replicability in reporting systematic reviews. Consistent with recent bibliometric and systematic review studies that emphasize the integration of structured screening procedures with thematic and bibliometric analyses, this approach enables a comprehensive mapping of research trends while maintaining methodological rigor (Ed-Dafali et al., 2023, 2025). This protocol outlines four main stages in the literature selection process, which include identification, screening, eligibility, and inclusion. The article selection process is carried out by four authors based on the title, abstract, and full text according to the established inclusion and exclusion criteria. Data extraction is done manually using a summary table that includes the author's name, year of publication, and main findings. To enhance transparency and reproducibility, the full search strategy, including Boolean search strings and database-specific filters, is explicitly documented and made available as a Supplementary File. A brief explanation of each stage is provided below:

### 3.1. Identification

This stage aims to collect as many relevant documents as possible from a designated database using appropriate keyword combinations. The outcome of this step is the initial pool of articles prior to eligibility screening. The initial search is conducted in the Scopus database, as it is widely recognized for indexing peer-reviewed journals in business, management, and social sciences. The search is performed between 17 May and 19 May 2025.

The literature retrieval uses a predefined and replicable Boolean search string applied to the TITLE-ABS-KEY fields in Scopus, as follows:

(TITLE-ABS-KEY ('Employee Performance') AND TITLE-ABS-KEY ('factor' OR 'driver' OR 'critical factor' OR 'key factor' OR 'determinant') AND TITLE-ABS-KEY ('holding companies' OR companies OR 'state-owned enterprises' OR 'manufacturing companies' OR 'manufacturing company')) AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND (LIMIT-TO (DOCTYPE, 'ar')) AND (LIMIT-TO (PUBSTAGE, 'final')) AND (LIMIT-TO (SRCTYPE, 'j')) AND (LIMIT-TO (LANGUAGE, 'English')) AND (LIMIT-TO (SUBJAREA, 'BUSI') OR LIMIT-TO (SUBJAREA, 'SOCI') OR LIMIT-TO (SUBJAREA, 'ECON') OR LIMIT-TO (SUBJAREA, 'PSYC') OR LIMIT-TO (SUBJAREA, 'DECI'))

To ensure relevance and methodological rigor, several database filters are applied. These include publication year limited to 2020–2025, document type restricted to final journal articles, English-language publications only, and subject areas covering Business, Management and Accounting, Social Sciences, Economics, Econometrics and Finance, Decision Sciences, Psychology, and Environmental Science.

The organizational context is further narrowed to studies focusing on manufacturing companies, state-owned enterprises, and holding companies, which are characterized by complex organizational structures and strategic performance challenges. The initial search yields 438 documents. An automated filtering process is applied to exclude documents based on preliminary criteria: publication year outside the 2020–2025 range ( $n=192$ ), non-article document types ( $n=79$ ), in-press articles ( $n=5$ ), non-English articles ( $n=3$ ), and documents from non-journal sources ( $n=16$ ). After this initial filtering process, 143 articles remain and are considered eligible for the next screening phase.

### 3.2. Screening

In this phase, the collected articles are screened based on their titles and abstracts. Irrelevant or duplicate articles are excluded. A total of 143 articles that pass the identification stage are re-evaluated using predefined inclusion criteria, which were as follows:

- a. The study focuses on manufacturing companies, SOEs, or holding companies;
- b. Employee performance is the primary dependent variable;
- c. The article investigates the direct impact of independent variables on employee performance;
- d. The study employs either quantitative or mixed methods.

Articles that did not meet these criteria ( $n=96$ ) were excluded, resulting in 47 articles eligible for further review.

### 3.3. Eligibility

Following the initial screening, the remaining articles underwent a comprehensive full-text review to ensure methodological alignment, relevance of the variables studied, and consistency with the research focus. To maintain rigor, transparency, and replicability, this review includes only peer-reviewed articles published in Scopus-indexed journals, as Scopus applies standardized criteria related to editorial quality, peer-review integrity, citation performance, and publication ethics. A total of 47 articles were subjected to full-text screening. However, 9 articles could not be retrieved due to the unavailability of full-text versions, leaving 38 articles for in-depth examination. These articles were excluded because the full texts were inaccessible or unavailable through institutional access. A list of the excluded articles and the reason for non-retrieval is provided in the [Supplementary File](#) for transparency. At this stage, exclusion criteria were applied to remove articles that:

- Did not examine the direct impact of independent variables on employee performance ( $n = 11$ );
- Did not investigate the variable employee performance at all ( $n = 3$ ).

As a result, 24 articles met all inclusion criteria and were included in the final synthesis stage.

### 3.4. Inclusion

Articles that fulfilled all criteria in the previous stages were included in the final synthesis and analyzed further. A total of 24 articles were ultimately included in the analysis and synthesis of findings. To minimize subjectivity and enhance assessment reliability, the quality appraisal of the included studies was independently conducted by four reviewers, with discrepancies resolved through discussion and consensus. Thematic analysis was employed to categorize determinant variables, evaluate the consistency of results, and review the theoretical frameworks used in previous studies. The PRISMA flow diagram illustrating this process is presented in Figure 1.

Figure 1 presents the PRISMA flow diagram illustrating the systematic article selection process, including the stages of identification, screening, eligibility, and inclusion. The selection is based solely on Scopus indexing to ensure transparency and replicability of the review process, rather than journal ranking classifications. This procedure results in 24 articles included in the final synthesis. These articles are subsequently analyzed using thematic synthesis to identify key variables influencing employee performance, while bibliometric analysis conducted in R Studio is used to identify leading authors and the most frequently cited documents in the field. A concise summary of the characteristics and main findings of each included article resulting from the PRISMA synthesis is provided in Supplementary Appendix 1.

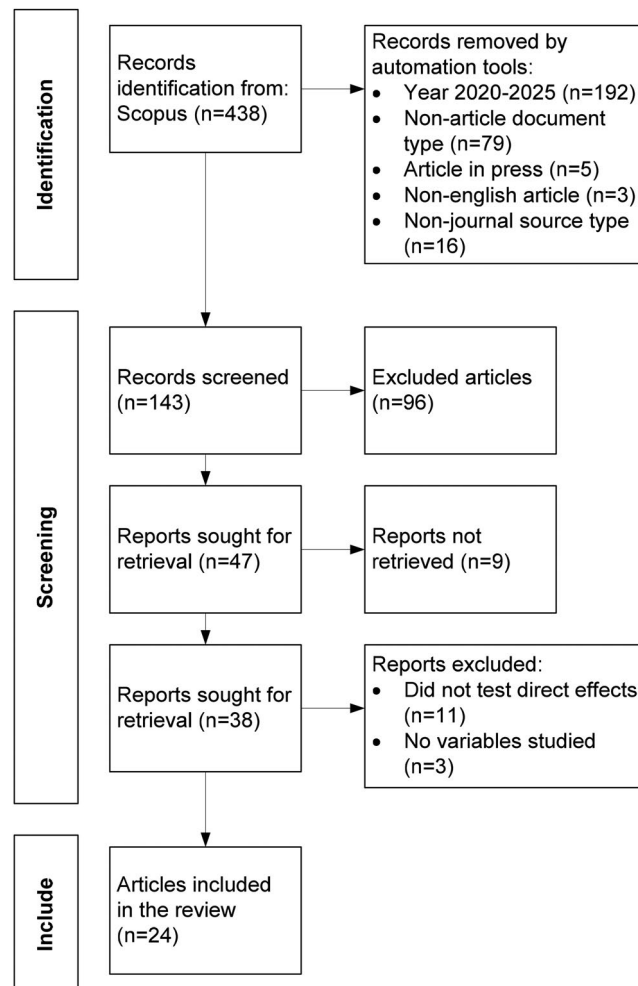


Figure 1. PRISMA flow diagram for the systematic review of employee performance.

## 4. Findings and discussion

### 4.1. Annual publication trends (2020–2025)

Analyzing the number of articles published each year provides an initial overview of academic interest in employee performance. It also reflects the dynamics and urgency of the topic's discussion over time. Figure 2 presents the distribution of employee performance publications in reputable, Scopus-indexed journals during the 2020–2025 period.

Figure 2 presents the publication trend of employee performance articles indexed in Scopus from 2020 to 2025. The data show fluctuations in publication volume over the years. In 2020, there are 24 articles published, followed by a slight decline to 22 in 2021 and a further decrease to 16 in 2022. The trend reverses in 2023, with the number increasing to 28 articles, and reaches its highest point in 2024 with a total of 50 publications. In 2025, the number drops sharply to only 3 articles, which is likely due to the indexing process still being incomplete for the current year.

This pattern reflects varying levels of academic attention to employee performance research. The decline in 2021 and 2022 may relate to the impact of the COVID-19 pandemic and changes in institutional research priorities. The increase in 2023 and 2024 suggests renewed interest, likely driven by digital transformation, workforce restructuring, and a stronger organizational emphasis on performance. Although the number of articles published in 2025 appears relatively low, this should be interpreted with caution, as it is most likely influenced by the Scopus indexing lag, whereby recently published articles may not yet be fully indexed at the time of data retrieval. Overall, the trend confirms that employee performance remains a relevant and evolving research area, particularly within strategic sectors such as manufacturing and state-owned enterprises.

### 4.2. Most relevant authors in employee performance research

Following the review of publication growth trends, the next step in this systematic mapping is to identify the most relevant authors in employee performance research. This identification is essential for understanding which academic contributors have consistently played a significant role in advancing the body of knowledge in this field. Figure 3 presents a list of authors who have published the most relevant articles on the topic of employee performance.

Figure 3 presents the most relevant authors in the field of employee performance, focusing on manufacturing companies and SOEs, based on the number of Scopus-indexed publications. The data indicate that Kilani Q. is the most prolific contributor, with three publications. Sixteen other authors, including Ahmad H., Alnajdawi S., Ghimire B., Jayadi R., and Wolor C.W., follow with two publications each. This author mapping highlights key scholars who actively contribute to advancing employee performance research.

Kilani Q. and his collaborators consistently analyze how organizational factors influence employee performance in public and strategic institutions. Ahmad et al. (2024) examine the effects of task load, structure, and compensation on performance in the Jordan Tourism Board, offering insights relevant to

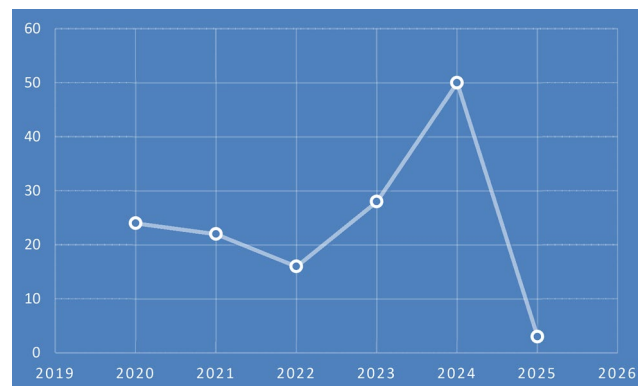


Figure 2. Annual growth of employee performance articles (2020–2025).



**Figure 3.** Most relevant author.

state-owned enterprises. Hanandeh et al. (2024) highlight the positive impact of digital leadership, shaped by digital marketing and technology integration, on performance at the Amman Stock Exchange. Ahmad et al. (2023) assess how big data analytics and work pressure affect productivity in the financial sector, which resembles data-driven holding companies. Together, these studies show that Kilani Q. and his team contribute important theoretical and practical insights into how digital transformation and structural dynamics shape employee performance in complex organizations (Ahmad et al., 2023, 2024; Hanandeh et al., 2024).

#### 4.3. Most global cited documents

This study analyzes the most globally cited documents to identify the most influential scholarly works in the field of employee performance. The number of global citations reflects the extent to which an article is recognized and referenced by the international academic community, indicating its contribution to the development of theory, methodology, or empirical evidence in this field. Figure 4 presents a list of the most cited articles on employee performance published between 2020 and 2025.

Figure 4 presents the most globally cited documents on employee performance, focusing on studies related to manufacturing companies and SOEs, based on Scopus-indexed publications. The article by Wijayati et al. (2022), published in the *International Journal of Manpower*, holds the highest citation count with 127 citations, indicating its significant influence in the field. It is followed by Wolor et al. (2020) with 81 citations, Fadhil et al. (2021) with 55 citations, Tarigan et al. (2021) with 40 citations, and Battisti and Brem (2021) with 27 citations. These highly cited studies serve as foundational references in current academic discourse and managerial practices related to employee performance in strategic organizational settings.

Thematic analysis highlights the importance of digital, social, psychological, and organizational factors in shaping employee performance. Wolor et al. (2020) explore how e-training, e-leadership, and work-life balance sustain motivation and enhance millennial performance in remote automotive work during the COVID-19 pandemic. Fadhil et al. (2021) emphasize soft skills like communication and integrity as key to employability and performance in the tech sector. Tarigan et al. (2021) show that corporate social responsibility improves quality of work life and performance, particularly in ethically sensitive industries. Battisti and Brem (2021) demonstrate that public-private collaboration, supported by technologies such as AI and virtual reality, strengthens both organizational results and workforce development. Wijayati et al. (2022) find that change leadership moderates the impact of AI on employee performance in service and finance, underscoring the need for adaptable leadership during digital transformation.

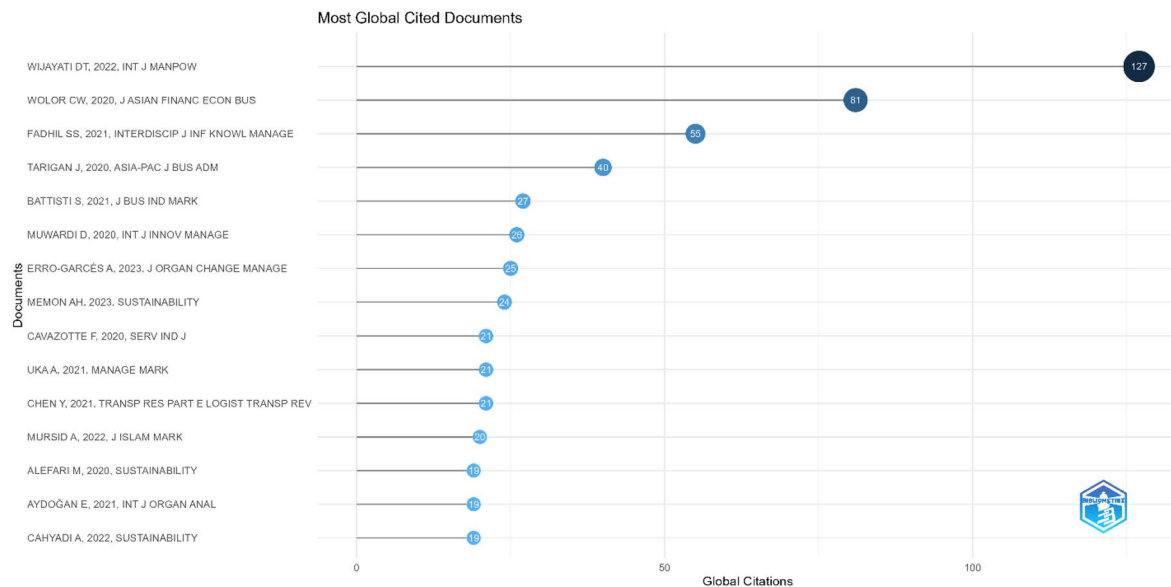


Figure 4. Most global cited document.

Together, these studies underscore that improving employee performance requires a multidimensional approach that integrates structural, technological, and cultural factors. These elements are particularly important for enhancing performance in manufacturing firms and state-owned enterprises operating in an increasingly digital and complex environment.

#### 4.4. Countries' collaboration world map

Following the keyword co-occurrence analysis, a countries' collaboration analysis is conducted to examine the geographic distribution and international research linkages in employee performance studies. This analysis provides insights into the spatial concentration of research activity and cross-country collaboration patterns.

Figure 5 illustrates the world map visualization of countries' collaboration in employee performance research based on the selected Scopus-indexed articles. The results indicate that employee performance studies are geographically concentrated in Asia, the Middle East and parts of Europe, while representation from Africa and the Americas remains relatively limited.

The collaboration network shows several dominant regional clusters. Southeast and South Asian countries, particularly Indonesia, Malaysia, India, China and Bangladesh, emerge as central contributors with multiple international research linkages. Indonesia appears as a key hub, collaborating with countries such as Australia, China, Malaysia, Thailand, Bangladesh, and several Middle Eastern and European countries. Similarly, Middle Eastern countries, including Saudi Arabia, Jordan, Bahrain and the United Arab Emirates, demonstrate active collaboration patterns, often linked to South and Southeast Asia.

European collaborations are present but less dense, mainly involving Germany, Italy, Hungary, the Czech Republic and Slovakia, while collaborations involving the Americas and Africa remain relatively sparse. Overall, the visualization highlights that employee performance research is predominantly driven by cross-country collaboration among emerging economies, reflecting shared institutional, cultural, and managerial challenges.

The world map visualization provides important insights into the geographic and collaborative structure of employee performance research and its theoretical implications. The strong concentration of studies and collaborations in Asia and the Middle East suggests that employee performance has become a critical issue in emerging and developing economies, where organizations face rapid industrialization, workforce expansion, and institutional transformation. This geographic pattern aligns closely with Social Exchange Theory, as many studies conducted in these regions emphasize reciprocal relationships between organizations and employees through leadership support, compensation, and work environment improvements.

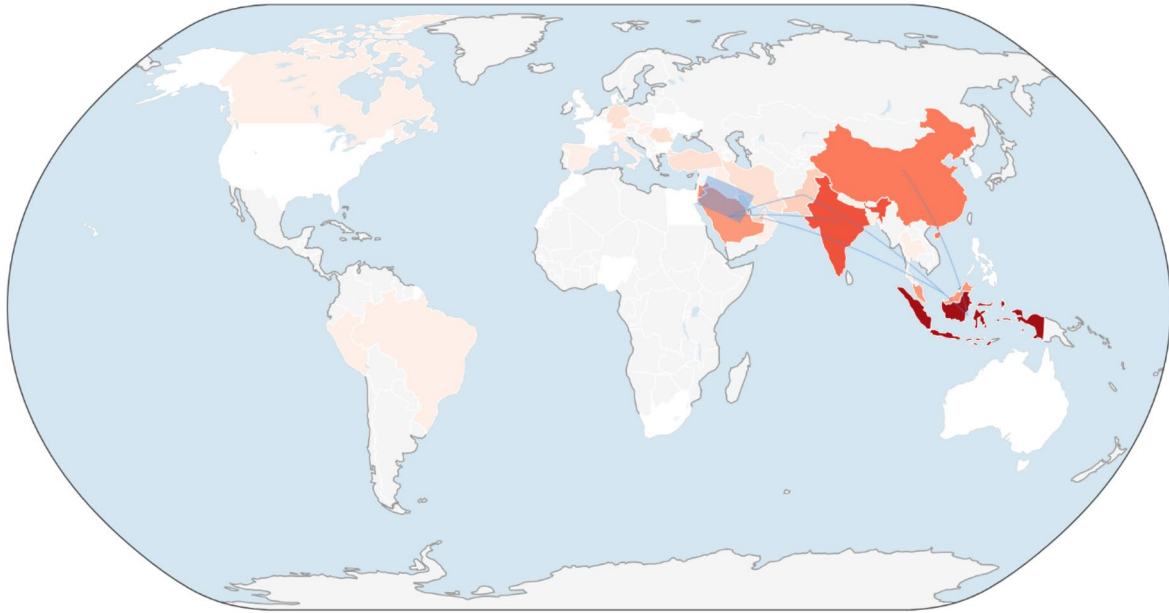


**Figure 5.** Countries' collaboration world map in employee performance research.

The prominence of cross-country collaborations among culturally and institutionally similar countries also supports Social Capital Theory, which highlights the importance of trust, shared norms, and relational networks. Collaborative research between neighboring or socioeconomically comparable countries indicates the transfer of contextual knowledge and shared understanding of organizational practices that influence employee performance. These relational patterns reinforce the role of organizational culture and leadership as socially embedded determinants of performance.

Furthermore, the dominance of emerging economies in the collaboration network helps explain the mixed empirical findings observed in the literature. From the perspective of Herzberg's Two-Factor Theory, differences in economic development and labor market conditions across countries influence whether hygiene factors such as compensation and working conditions merely prevent dissatisfaction or actively enhance performance. This variation contributes to inconsistent results across national contexts.

Overall, the world map visualization demonstrates that employee performance research is not only thematically fragmented but also geographically concentrated. This reinforces the value of the present systematic literature review in synthesizing evidence across countries and theoretical perspectives, while providing policymakers with insights into where employee performance challenges are most intensively studied and where future research collaboration is still needed.

#### 4.5. Keyword co-occurrence analysis

A keyword co-occurrence analysis is conducted using VOSviewer based on Scopus-indexed articles to examine the thematic structure of employee performance research. This analysis identifies six main keyword clusters, indicating distinct yet interconnected research themes within the literature.

Figure 6 illustrates the keyword co-occurrence network, where node size represents the frequency of keyword occurrence and link strength reflects the intensity of co-occurrence between keywords. The central node, employee performance, exhibits the highest occurrence and functions as the core concept connecting all clusters, confirming its role as the primary focus of the literature. A detailed explanation of each cluster is provided below.

- Cluster 1 (Blue) centers on employee performance, job satisfaction, organizational commitment, human resource management, and work-life balance, reflecting studies that emphasize attitudinal and HR-related determinants of performance.
- Cluster 2 (Green) focuses on leadership, motivation, compensation, resource management, and sus-

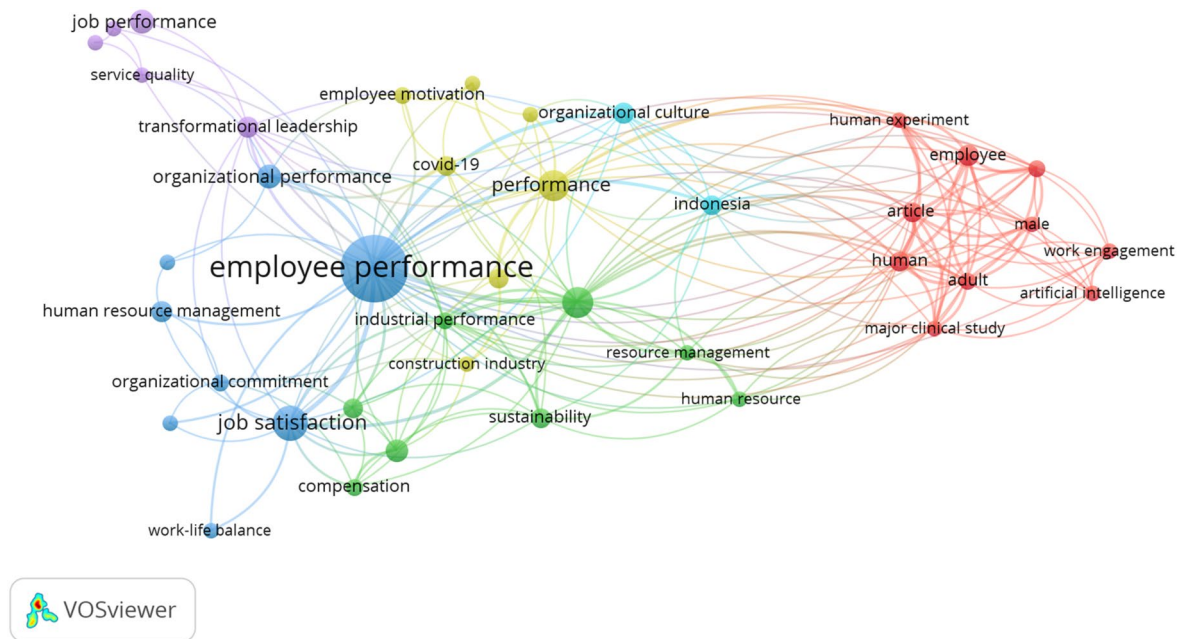


**Figure 6.** Keyword co-occurrence Analysis.

- tainability, highlighting managerial and motivational drivers of employee performance.
- c. Cluster 3 (Yellow) groups keywords such as training, employee motivation, performance, and COVID-19, indicating research attention to capability development and performance dynamics in contexts of organizational change and crisis.
  - d. Cluster 4 (Purple) is dominated by transformational leadership, job performance, and service quality, representing leadership-oriented performance outcomes.
  - e. Cluster 5 (Red) groups keywords such as employee, work engagement, artificial intelligence, human, and demographic terms, reflecting emerging themes related to digitalization and human-centered perspectives.
  - f. Cluster 6 (Light Blue) comprises organizational culture and Indonesia, reflecting context-specific research that emphasizes the role of organizational culture in shaping employee performance, particularly within the Indonesian setting.

Overall, the network demonstrates a high level of interconnectivity among clusters, suggesting that employee performance research is multidisciplinary and driven by overlapping theoretical and practical concerns.

The keyword co-occurrence network provides important insights into the thematic structure and intellectual focus of employee performance research. The strong central position of employee performance confirms that the literature consistently treats performance as a multidimensional outcome influenced by behavioral, organizational, and managerial factors. The close linkage between employee performance, job satisfaction, and organizational commitment supports the prominence of attitudinal perspectives, which align with Social Exchange Theory by emphasizing reciprocal relationships between employees and organizations.

The clustering of leadership, motivation, and compensation highlights the dominance of managerial and motivational explanations of performance. These themes reflect the continued relevance of Herzberg's Two-Factor Theory, where hygiene factors such as compensation and working conditions coexist with motivators such as leadership quality and recognition. However, the dispersion of these variables across multiple clusters suggests that their effects are context-dependent, which helps explain the inconsistent empirical findings reported in prior studies.

The emergence of keywords related to COVID-19, digitalization, artificial intelligence, and work engagement indicates a growing research shift toward contemporary workplace challenges. This cluster reflects how employee performance research increasingly responds to technological change and crisis conditions,

reinforcing the need to reinterpret traditional performance drivers under new organizational realities. Additionally, the presence of industry-specific clusters, such as construction and industrial performance, demonstrates that employee performance determinants vary across sectors, further contributing to heterogeneity in research outcomes.

Taken together, the keyword co-occurrence analysis reveals that employee performance research is fragmented across multiple but interconnected thematic streams. This finding supports the necessity of a systematic literature review to integrate dispersed knowledge, reconcile inconsistent findings, and develop a more coherent theoretical understanding of employee performance across diverse organizational contexts.

#### 4.6. Mapping determinant variables and theoretical foundations in employee performance research

After mapping publication trends, key authors, and the most influential documents, the next step in this analysis is to identify and map the determinant variables that influence employee performance, based on a synthesis of the selected articles. This mapping aims to highlight the extent to which various independent variables have been empirically tested and to assess the consistency or inconsistency of their effects across studies. Table 1 presents the most frequently used determinant variables in employee performance research.

The synthesis of nine studies which is shown in Table 1 confirms that motivation is a key determinant of employee performance across various sectors. Eight studies, including those by Afrin et al. (2023), Baomar et al. (2024), Hasbi et al. (2021), Indrayani and Al Qarny (2020), Maria et al. (2022), Rizmaldi and Jayadi (2022), Sutia et al. (2020) and Wolor et al. (2020), report a significant positive link between motivation and performance in industries such as insurance, telecommunications, automotive, and banking. Motivation reflects both internal psychological drive and external influences such as leadership, training, work-life balance, and organizational culture. However, Purwati et al. (2023) report a non-significant effect, citing weak organizational commitment and poor communication. This suggests that motivation's impact depends on structural and contextual factors. In manufacturing and state-owned enterprises, fair

**Table 1.** Determinant variables in employee performance research.

| No | Determinant variable    | Result                                                                       | Conclusion          | Previous research                                                                                                                                                                                               |
|----|-------------------------|------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Motivation              | Positive/Significant<br>Positive/Not Significant                             | Inconsistent Result | Afrin et al. (2023); Baomar et al. (2024); Hasbi et al. (2021); Indrayani and Al Qarny (2020); Maria et al. (2022); Rizmaldi and Jayadi (2022); Sutia et al. (2020); Wolor et al. (2020); Purwati et al. (2023) |
| 2  | Work Environment        | Positive/Significant<br>Positive/Not Significant                             | Inconsistent Result | Afrin et al. (2023); Rizmaldi and Jayadi (2022); Ghimire and Dahal (2024); Srinivas et al. (2024); Ariani et al. (2025); Putra et al. (2024)                                                                    |
| 3  | Leadership Style        | Positive/Significant<br>Positive/Not Significant                             | Inconsistent Result | Afrin et al. (2023); Ariani et al. (2025); Pudyarningsih et al. (2020); Wolor et al. (2020); Hasbi et al. (2021)                                                                                                |
| 4  | Compensation            | Positive/Significant<br>Positive/Not Significant<br>Negative/Not Significant | Inconsistent Result | Afrin et al. (2023); Ghimire and Dahal (2024); Srinivas et al. (2024); Indrayani and Al Qarny (2020); Purwati et al. (2023)                                                                                     |
| 5  | Satisfaction            | Positive/Significant<br>Positive/Not Significant                             | Inconsistent Result | Afrin et al. (2023); Prasetya et al. (2020); Pudyarningsih et al. (2020); Putra et al. (2024); Indrayani and Al Qarny (2020)                                                                                    |
| 6  | Training                | Positive/Significant<br>Negative/Not Significant<br>Positive/Not Significant | Inconsistent Result | Candana et al. (2024); Marnisah et al. (2021); Wolor et al. (2020); Gustshella et al. (2024); Pham and Ha (2024)                                                                                                |
| 7  | Organizational Culture  | Positive/Significant                                                         | Positive Tendencies | Gustshella et al. (2024); Hasbi et al. (2021); Idris et al. (2022); Shamsudin and Velmurugan (2023)                                                                                                             |
| 8  | Work-Life Balance       | Positive/Not Significant<br>Positive/Significant                             | Inconsistent Result | Prasetya et al. (2020); Rizmaldi and Jayadi (2022); Wolor et al. (2020)                                                                                                                                         |
| 9  | Digital Culture         | Positive/Significant                                                         | Positive Tendencies | Annisa et al. (2024); Idris et al. (2022)                                                                                                                                                                       |
| 10 | Competence              | Positive/Significant                                                         | Positive Tendencies | Gustshella et al. (2024); Marnisah et al. (2021)                                                                                                                                                                |
| 11 | Commitment              | Positive/Not Significant                                                     | Positive Tendencies | Indrayani and Al Qarny (2020); Purwati et al. (2023)                                                                                                                                                            |
| 12 | Organizational Learning | Positive/Significant<br>Positive/Not Significant                             | Inconsistent Result | Maria et al. (2022); Purwati et al. (2023)                                                                                                                                                                      |
| 13 | Career Development      | Positive/Not Significant<br>Positive/Significant                             | Inconsistent Result | Pham and Ha (2024); Santoso et al. (2021)                                                                                                                                                                       |

rewards, strong leadership, recognition, and participatory environments are essential to translate motivation into performance.

The work environment plays a critical role in shaping employee performance by influencing productivity and engagement. A synthesis of six studies shows a generally positive and significant relationship between the work environment and performance. Afrin et al. (2023), Rizmaldi and Jayadi (2022) and Srinivas et al. (2024) find that clean, comfortable, and communicative workplaces enhance employee effectiveness across sectors. Ghimire and Dahal (2024) highlight how physical conditions, such as lighting, temperature, and social interaction, contribute to performance by improving job satisfaction and organizational support. In contrast, Ariani et al. (2025) and Putra et al. (2024) report non-significant effects, suggesting that context matters. Factors such as job satisfaction, organizational commitment, and role clarity likely moderate the impact. Variations in industry sectors, organizational culture, and research design may also explain the inconsistencies. Therefore, in manufacturing and state-owned enterprises, improving performance requires not only better physical environments but also supportive leadership, strong social dynamics, and inclusive policies.

Leadership style is one of the key determinants that directly contributes to improving employee performance, as evidenced by numerous prior studies. Afrin et al. (2023) show that participative leadership improves loyalty and performance by fostering emotional and professional engagement. Pudyaningsih et al. (2020) report that transformational leadership strengthens performance both directly and through increased job satisfaction. Ariani et al. (2025) and Wolor et al. (2020) emphasize the role of e-leadership in digital workplaces, where technology-driven approaches enhance efficiency, especially during the post-pandemic shift. In contrast, Hasbi et al. (2021) find a positive but non-significant effect, possibly due to weak leadership structures, organizational limitations, or cultural influences. These findings suggest that leadership effectiveness depends on context and must be supported by open communication, employee empowerment, and a clear vision. In manufacturing and state-owned enterprises, adaptive, collaborative, and technology-focused leadership is essential to sustain employee performance improvement.

Compensation is widely recognized as a determinant variable that influences employee performance, although research findings reveal varying levels of statistical significance. Afrin et al. (2023), Ghimire and Dahal (2024) and Srinivas et al. (2024) find that fair and competitive compensation improves performance, either directly or through perceived justice and job satisfaction. Ghimire and Dahal (2024) also highlight that fair compensation supports productivity by recognizing employee contributions. Srinivas et al. (2024) note that compensation enhances the link between organizational image and performance through intrinsic motivation. In contrast, Indrayani and Al Qarny (2020) report a positive but non-significant relationship, while Purwati et al. (2023) observe a negative and non-significant effect, possibly due to misaligned expectations or low organizational commitment. These mixed findings suggest that compensation's impact depends on organizational context, perceived fairness, and alignment with individual performance. In manufacturing and state-owned enterprises, compensation policies should be linked to human resource development and objective performance evaluations to drive measurable productivity gains.

Job satisfaction is a critical factor influencing employee performance, as shown in various empirical studies. Afrin et al. (2023) find that higher job satisfaction enhances productivity and loyalty. Prasetya et al. (2020) report that job satisfaction reinforces the effects of work-life balance and workload on performance, particularly in construction. Pudyaningsih et al. (2020) and Putra et al. (2024) show that job satisfaction mediates the influence of leadership and work environment on performance. In contrast, Indrayani and Al Qarny (2020) find no significant effect, possibly due to structural issues or perceived unfairness in rewards. These findings suggest that job satisfaction's impact depends on organizational context. In manufacturing and state-owned enterprises, fostering job satisfaction through fair, transparent, and communicative environments is essential to enhance performance.

Training is a key human resource strategy for improving employee performance in competitive environments. Studies by Candana et al. (2024), Marnisah et al. (2021) and Wolor et al. (2020) show that training significantly enhances performance, especially in manufacturing settings where productivity and adaptability are vital. In contrast, Pham and Ha (2024) report a positive but non-significant impact, noting that training improves competencies but not performance. Gustshella et al. (2024) even find a negative and non-significant relationship, suggesting that competency may act as an intervening variable.

These mixed results indicate that training effectiveness depends on factors such as program quality, relevance to job demands, and organizational support for applying new skills.

Organizational culture plays a critical role in enhancing employee performance, as shown in studies by Gustshella et al. (2024), Hasbi et al. (2021), Idris et al. (2022) and Shamsudin and Velmurugan (2023). Hasbi et al. (2021) find that a culture rooted in collaboration, spirituality, and team orientation significantly improves performance in Telkom's healthcare division. Idris et al. (2022) identify culture as a mediating variable that strengthens the influence of leadership and political skill in a state-owned tourism enterprise. Gustshella et al. (2024) stress the need for alignment between culture and strategic change to foster adaptability and productivity. Shamsudin and Velmurugan (2023) confirm that strong organizational culture boosts motivation and participation, leading to better outcomes. Together, these studies show that culture acts both as a shared value system and a strategic tool that shapes behavior, strengthens commitment, and supports goal achievement. For manufacturing and state-owned enterprises, fostering an inclusive, flexible, and performance-driven culture is essential for effective human resource management.

Work-life balance is a critical factor in employee performance, especially in modern work settings that require flexibility and role integration. Wolor et al. (2020) show that work-life balance directly enhances performance and is mediated by work motivation, making it a strategic element in managing remote workforces. Rizmaldi and Jayadi (2022) support this by demonstrating that balancing personal and professional life improves performance in digital environments that depend on team effectiveness. In contrast, Prasetya et al. (2020) report a positive but non-significant relationship, possibly due to high workload and limited organizational support. These findings suggest that the effectiveness of work-life balance depends on structural conditions, organizational culture, and the level of support provided to employees.

Digital culture is a strategic factor in enhancing employee performance during technological transitions, especially in organizations adopting digital work systems. Annisa et al. (2024) find that digital culture improves performance by strengthening self-efficacy, which supports adaptability, participation, and innovation. Idris et al. (2022) highlight that transparency, collaborative technology use, and work flexibility increase efficiency and productivity in public tourism organizations. These studies show that digital culture is not merely about adopting technology but involves reshaping work values to foster responsiveness and adaptability.

Competence is a key determinant of employee performance, as shown by Marnisah et al. (2021) and Gustshella et al. (2024). Marnisah et al. (2021) find that knowledge, skills, and work attitudes significantly improve task effectiveness and efficiency, enhancing both individual and organizational outcomes. Gustshella et al. (2024) add that competence also mediates the impact of organizational culture and training on performance. These studies suggest that competent employees adapt more easily to change, absorb training effectively, and align behavior with organizational goals. Competence is therefore a vital element in human resource strategies, particularly in manufacturing and state-owned enterprises where technical capability and performance orientation are crucial.

Organizational commitment is theoretically linked to employee performance, but empirical evidence shows mixed results. Indrayani and Al Qarny (2020) find a positive but non-significant relationship, suggesting that loyalty alone may not improve performance without factors such as job satisfaction or fair rewards. Similarly, Purwati et al. (2023) report that commitment acts as a mediating variable between motivation, compensation, and performance rather than having a direct effect. These findings suggest that limited perceptions of fairness, lack of recognition, and low employee involvement may weaken the impact of commitment. Its effectiveness depends on a supportive work environment and strong managerial systems.

Organizational learning is a strategic tool that helps companies adapt to change and improve effectiveness through shared knowledge. Maria et al. (2022) find a positive and significant impact on employee performance, highlighting that structured and participatory learning boosts motivation, efficiency, and goal achievement. In contrast, Purwati et al. (2023) report a positive but non-significant relationship, which may result from low employee participation, limited decision-making involvement, and demographic factors affecting learning readiness. These findings suggest that the impact of organizational learning depends on cultural context, leadership, and the integration of learning into daily practices.

Career development is one of the key organizational strategies for shaping competent, loyal, and productive employees, ultimately contributing to improved performance. Santoso et al. (2021) find that well-designed programs enhance motivation, commitment, and career clarity, which in turn boost individual performance and strengthen loyalty. In contrast, Pham and Ha (2024) report a positive but non-significant effect, citing misalignment between training content and job demands, lack of follow-up, and weak managerial support. These findings suggest that the success of career development depends on how well programs align with employee needs and organizational objectives.

Taken together, the findings of this review suggest that employee performance is increasingly shaped by broader organizational transformations driven by technology adoption, sustainability considerations, and social dynamics, particularly in emerging market contexts. Technology-driven practices, such as digital culture, e-training, and remote working, redefine job demands and performance expectations by enhancing adaptability, self-efficacy, and work flexibility (Annisa et al., 2024; Rizmaldi & Jayadi, 2022; Wolor et al., 2020). At the same time, sustainability-oriented perspectives emphasize employee performance as a long-term organizational capability rather than a short-term output, especially in sectors facing institutional and environmental pressures (Afrin et al., 2023; Srinivas et al., 2024). Social factors, including organizational culture, leadership quality, and work engagement, further reinforce performance outcomes through trust-based relationships and shared norms, which are particularly salient in emerging economies where formal institutional support may be limited. This synthesis highlights that employee performance cannot be fully understood through isolated determinants, but rather through the interaction of technological, sustainable, and socially embedded organizational processes.

#### 4.7. Theoretical foundations employed in employee performance studies

This study explores the theoretical foundations commonly used in employee performance research to identify the most frequently applied conceptual frameworks. Understanding these theories is important for explaining the basis of relationships between variables and for supporting future theoretical development. Table 2 shows the main theories cited in articles related to employee performance.

Table 2 identifies three main theories frequently applied in employee performance research. The most widely used is Social Exchange Theory, as applied by Afrin et al. (2023), Ariani (2023) and Ghimire and Dahal (2024). This theory explains how employee behavior and performance are shaped by perceptions of organizational support and reciprocal exchange. Social Capital Theory, also used by Ariani (2023), highlights the role of social networks, trust, and shared norms in fostering collaboration and productive behavior. Herzberg's Two-Factor Theory, utilized by Baomar et al. (2024), distinguishes between motivator factors and hygiene factors as key elements influencing job satisfaction and performance. Together, these frameworks provide a strong theoretical foundation for understanding the mechanisms that drive employee outcomes in diverse organizational contexts.

While this review offers valuable conceptual insights, it has several limitations. The analysis is restricted to articles indexed in the Scopus database and specific subject areas, excluding potentially relevant studies from other sources such as Web of Science or Google Scholar. Additionally, this study does not include a quantitative meta-analysis of effect sizes, which limits the ability to draw inferential conclusions. Future research should consider integrating bibliometric and meta-analytic methods and exploring causal relationships among variables in sector-specific contexts such as energy, technology, or higher education. It is also essential to examine alternative theoretical perspectives, such as the Resource-Based View or Dynamic Capabilities, to better capture the complex relationship between individual capabilities and organizational performance in a rapidly evolving business environment.

**Table 2.** Theoretical foundations used in employee performance research.

| No | Previous research                                            | Theory                       |
|----|--------------------------------------------------------------|------------------------------|
| 1  | Afrin et al. (2023); Ariani (2023); Ghimire and Dahal (2024) | Social Exchange Theory       |
| 2  | Ariani (2023)                                                | Social Capital Theory        |
| 3  | Baomar et al. (2024)                                         | Herzberg's two-factor theory |

#### **4.8. Theoretical interpretation of employee performance determinants**

The findings of this systematic literature review are primarily interpreted through three theoretical perspectives that dominate employee performance research: Social Exchange Theory, Social Capital Theory, and Herzberg's Two-Factor Theory. Social Exchange Theory (SET) provides the most widely applied explanatory framework, suggesting that employees reciprocate favorable organizational treatment with positive work attitudes and higher performance. This perspective supports the generally positive relationships observed for leadership style, work environment, compensation, and organizational culture, as these factors represent organizational resources that employees perceive as support and fairness (Afrin et al., 2023; Ghimire & Dahal, 2024; Idris et al., 2022). However, the mixed and inconsistent results reported across studies indicate that exchange relationships do not operate uniformly. Several studies show that the strength of these relationships depends on contextual conditions such as sectoral characteristics, organizational policies, and mediating mechanisms, including job satisfaction and supportive work environments (Putra et al., 2024; Srinivas et al., 2024).

Social Capital Theory further complements these findings by emphasizing the role of relational resources, trust, and shared norms in shaping employee performance. Variables such as organizational culture, leadership style, and work environment align closely with this theoretical lens, as they facilitate social interactions and collaboration within organizations. Empirical evidence shows that strong organizational culture and supportive leadership enhance performance by fostering trust, commitment, and knowledge sharing among employees (Ariani, 2023; Hasbi et al., 2021; Shamsudin & Velmurugan, 2023). Nevertheless, the presence of inconsistent outcomes suggests that social capital effects are sensitive to organizational context and may weaken when relational ties are underdeveloped or when institutional constraints limit employee interaction, particularly in highly structured or hierarchical organizations.

Herzberg's Two-Factor Theory provides a useful explanation for the divergent findings related to motivation, compensation, and job satisfaction. According to this theory, hygiene factors such as pay, working conditions, and job security prevent dissatisfaction but do not necessarily enhance performance, while motivators such as recognition, achievement, and personal growth drive higher levels of performance. This theoretical distinction is reflected in the reviewed studies, where compensation and satisfaction sometimes show positive and significant effects and sometimes yield non-significant results (Baomar et al., 2024; Indrayani & Al Qarny, 2020; Prasetya et al., 2020). These inconsistencies suggest that improvements in hygiene factors alone are insufficient to sustain performance unless accompanied by intrinsic motivators that encourage employee engagement and commitment.

Overall, the three theoretical perspectives largely support the direction of the relationships identified in this review, yet they also help explain why several determinants produce inconsistent empirical results. The findings indicate that employee performance is shaped by a combination of exchange-based expectations, social relationships, and motivational conditions. This underscores the importance of integrating Social Exchange Theory, Social Capital Theory, and Herzberg's Two-Factor Theory to develop a more comprehensive understanding of employee performance across diverse organizational contexts.

Based on this theoretical synthesis, the identified determinant variables can be conceptually integrated into an overarching framework in which organizational and individual antecedents influence employee performance through relational and motivational mechanisms. Accordingly, this study proposes an integrative framework that consolidates the key determinants and theoretical foundations of employee performance, as illustrated in Figure 7. This framework provides a structured and holistic representation of how multiple determinants interact to shape employee performance across diverse organizational contexts.

#### **4.9. Articles excluded due to irrelevance**

This section presents articles that initially met the inclusion criteria but were excluded in the final review process because they did not directly examine the relationship between the driving variables and employee performance. These articles focused more on methodological aspects or general concepts that fall outside the scope of this study. To ensure transparency in the selection process, a summary of the excluded articles is provided in Table 3.

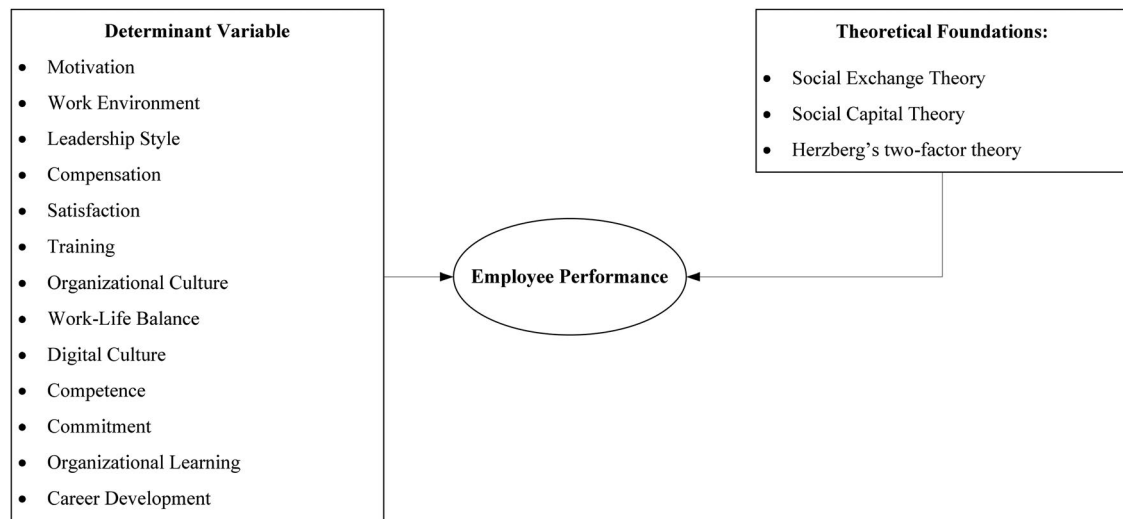


**Figure 7.** Integrative theoretical framework of employee performance.

**Table 3.** Selected excluded articles.

| Author                    | Research objective                                                                                                              | Research method                                                                                                                                                           | Findings                                                                                                                                                    | Reason for exclusion                                                                                                                                                  |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Krishna et al. (2024)     | Develop a grid-based machine learning model to evaluate employee performance and its relationship with company turnover.        | Quantitative study using company data, analyzed with the Grid-Based Machine Learning (GBML) model to measure productivity indicators, efficiency, and motivation systems. | a. GBML is more accurate compared to the EETU model. Improves prediction of efficiency and productivity. Provides a basis for improving motivation systems. | The article is not included in the analysis because its main focus is on enterprise turnover using a machine learning approach that emphasizes predictive algorithms. |
| Islam and Periaiah (2023) | Analyze how the application of AI in HRM can influence the effectiveness of human resource management and employee performance. | Conceptual approach and literature review on the integration of AI in HRM.                                                                                                | a. AI has the potential to improve HRM efficiency. Provides data-driven decision-making support. Can enhance productivity through automation and analytics. | The article is not included in the analysis because it focuses on the integration of AI technology in HRM.                                                            |

At the final stage of selection, some articles meet the initial criteria but are excluded from the analysis because they do not directly examine the relationship between the drivers and employee performance. Examples include articles by Krishna et al. (2024) and Islam and Periaiah (2023). The article by Krishna et al. (2024) focuses on developing a machine learning model to predict turnover by integrating performance indicators, making its orientation more on algorithmic and organizational prediction aspects rather than the relationships between managerial variables. Meanwhile, Islam and Periaiah (2023) emphasize the conceptual integration of artificial intelligence in human resource management, without testing specific variables such as digital literacy, work-life balance, employee engagement, or training & development. Therefore, these two articles are not included in the main synthesis of this study but are still noted as relevant literature that provides additional perspectives on the role of technology in employee performance management.

## 5. Conclusion

Based on a systematic mapping of the employee performance literature published in Scopus-indexed journals from 2020 to 2025, there is a clear upward trend in publication volume, with a notable increase in 2024. This reflects the growing importance of the topic in responding to challenges faced by modern organizations. Prominent authors such as Kilani Q. contribute consistently through empirical studies in strategic sectors. Highly cited studies, such as those by Wijayati et al. (2022), Wolor et al. (2020) and Tarigan et al. (2021), highlight the influence of digital leadership, CSR, and employee adaptability as key drivers of performance, especially in contexts undergoing technological and organisational change. The

synthesis of variables indicates that motivation, leadership style, work environment, compensation, job satisfaction, training, organizational culture, work-life balance, digital culture, competence, commitment, organizational learning, and career development are key determinants, each varying in significance depending on organizational context and research methodology. This study contributes to the literature by providing an integrated and up-to-date synthesis of fragmented empirical findings, clarifying patterns of consistency and inconsistency across determinants, and linking these patterns to dominant theoretical perspectives.

Theoretically, the three dominant frameworks supporting employee performance research are Social Exchange Theory, Social Capital Theory, and Herzberg's Two-Factor Theory. Collectively, these perspectives suggest that relational, structural, and psychological dimensions form the foundational basis for a comprehensive understanding of employee performance (Afrin et al., 2023; Ariani, 2023; Baomar et al., 2024; Ghimire & Dahal, 2024). By systematically mapping determinants and theories, this study offers a clearer conceptual foundation for researchers and practical insights for managers and policymakers, particularly in emerging market contexts where institutional and organizational dynamics remain complex.

## 6. Limitation and further research

Despite offering strong conceptual contributions, this study has certain limitations. The data is limited to articles indexed in the Scopus database and confined to specific subject areas, excluding potentially relevant insights from other databases such as Web of Science or Google Scholar. This restriction may limit the generalizability of the findings, and the diversity of theoretical perspectives captured in the review. In addition, this study does not perform a quantitative meta-analysis of effect sizes among variables, rendering the synthesis descriptive and interpretive rather than inferential.

Future research is encouraged to address these limitations by incorporating multiple databases, applying meta-analytic techniques to estimate effect sizes, and examining causal relationships among determinants within specific sectoral contexts such as manufacturing, energy, technology, and higher education. Furthermore, future studies may extend the theoretical scope by integrating alternative frameworks, including the Resource-Based View and Dynamic Capabilities, to deepen understanding of how individual and organizational capabilities jointly shape employee performance in dynamic and uncertain environments.

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## Ethical approval

This article does not involve any studies with human participants conducted by the authors. As this study does not involve research with human participants, informed consent is not applicable.

## Author contributions

CRedit: **Maryadi Maryadi**: Conceptualization, Data curation, Formal analysis, Methodology, Resources, Visualization, Writing – original draft; **Hamidah Nayati Utami**: Conceptualization, Formal analysis, Methodology, Validation, Writing – review & editing; **Arik Prasetya**: Conceptualization, Formal analysis, Methodology, Validation, Writing – review & editing; **Benny Hutahayan**: Conceptualization, Formal analysis, Methodology, Validation, Writing – review & editing.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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## Data availability statement

This study is a literature review, and the data used consist of published research articles. The datasets generated and analyzed during this study, including the list of included articles and supporting materials, are publicly available via Figshare at <https://doi.org/10.6084/m9.figshare.30876854>. In accordance with the Taylor & Francis 'Share upon reasonable request' policy, additional materials supporting the findings of this study are available from the corresponding author upon reasonable request.

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