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Decision Support System For Selecting The Best Employee: A Literature Review

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Abstrak: *To achieve organizational goals effectively, human resources play a critical role. Selecting the best employees is essential to ensure optimal performance. However, conventional employee selection methods often rely on subjective judgments, leading to less accurate outcomes. Therefore, the use of a Decision Support System (DSS) or Sistem Pendukung Keputusan (SPK) is necessary to improve objectivity and efficiency in the selection process. This study adopts a literature review approach by analyzing various national and international journal articles related to the selection of the best employees. The purpose of this research is to identify the criteria commonly used in DSS/SPK for employee selection. Based on the analysis of the literature, it is concluded that the most effective systems incorporate three key aspects: quantitative (such as performance metrics or scores), qualitative (including attitude and behavior), and technical (skills and expertise related to the job). However, it is also found that many systems still face challenges in balancing all three criteria comprehensively. This highlights the need for a more integrated and holistic approach in developing DSS/SPK for employee selection to ensure that decisions are fair, measurable, and aligned with organizational needs.*

Keywords : *Best Employee, DSS, Objective Criteria, SPK*



INTRODUCTION

To achieve organizational goals effectively and optimally, the role of various organizational resources becomes crucial. The resources required by an organization may include money/capital, facilities and infrastructure, and human resources (HR/employees). Among all these resources, human resources (employees) hold a strategic position as the primary driver in accomplishing organizational objectives. Human resources are a vital asset for building a company's competitive advantage compared to other assets (Hoar et al., 2021). An organization requires employees who have not only sufficient technical competence but also high integrity to contribute optimally to the organization.

To obtain competent human resources, it is crucial to implement a process of selecting the best employees. This step is not only important for identifying high-performing individuals but also serves as a motivational driver for all employees to enhance their performance. The recognition of the "best employee" title is designed to encourage others to strive for excellence, particularly in delivering exceptional service to customers (Munthe & Sindar, 2018). The process of selecting the best employees has not been carried out professionally or optimally. However, the selection methods commonly used in both government and private institutions remain conventional.

In conventional methods, each employee is asked to mutually assess others based on criteria set by management, such as performance-based evaluations, understanding of regulations, discipline, attitude, and behavior. Each aspect is scored. However, this scoring process faces several fundamental weaknesses, including the tendency for subjectivity in scoring due to non-technical factors. For example: discomfort in assigning low scores, a commitment to give special recognition to employees nearing retirement, or considerations of equal opportunity distribution among all employees. These factors lead to

biased assessment results. Consequently, the evaluations fail to accurately identify employees who genuinely possess outstanding capabilities.

Employee assessments conducted manually or in a semi-structured manner risk resulting in inconsistencies, inefficiencies, and even potential human errors or biases in decision-making. Therefore, a more systematic, measurable, and data-driven approach is necessary to ensure the selection process can objectively identify the best candidates. The current selection process still relies on conventional methods, which create several issues. One of these is manual assessment, which is prone to calculation errors and is time-consuming. Additionally, there is no systematic recommendation system to determine the best candidates. To enhance the accuracy and efficiency of decision-making, a Decision Support System (DSS) application has been developed (Diana et al., 2021). In line with this, it is also stated that the process of selecting the best teachers often faces various issues, such as subjectivity, inefficiency, and a lack of transparency. Therefore, it is necessary to develop a decision support system by applying the TOPSIS method to enhance objectivity and efficiency in teacher selection, while also promoting the improvement of education quality in the school (Fransiska et al., 2024a).

To achieve this, a system is needed that can provide objective conclusions based on accountable data and information, namely a Decision Support System (DSS). A decision support system is a system capable of generating decision recommendations by utilizing multiple predetermined criteria through methods such as AHP, SAW, TOPSIS, WP, SMART, and others within the decision support system framework ((Khatib Sulaiman et al., n.d.). The implementation of a Decision Support System (DSS) can serve as an effective solution to assist the selection process by considering various predetermined criteria (Firdonsyah et al., 2022).



Decision Support Systems (DSS) have been widely applied across various fields, including human resource management (HRM), to assist in complex decision-making processes by leveraging computational technologies. Some alternative methods in Decision Support Systems include Multi-Criteria Decision Making (MCDM), Fuzzy Logic, Analytical Hierarchy Process (AHP), Machine Learning, Simple Additive Weighting (SAW), Metode Perbandingan Eksponensial (MPE), Rank Order Centroid (ROC), Additive Ratio Assessment (ARAS), Weighted Product (WP) dan Technique For Other Reference by Similarity to Solution (TOPSIS). DSS (Decision Support Systems) can integrate various assessment criteria, provide consistent weighting, and generate more accurate recommendations. In the context of employee recruitment, the implementation of DSS can improve selection quality by minimizing subjectivity, enhancing transparency, and expediting the evaluation process.

Between 2021 and 2025, several researchers have conducted studies on selecting the best employees using Decision Support Systems (DSS). The evaluation process is often still manual, relying on assessment sheets, making it prone to subjectivity. Another critical consideration is the determination of criteria weights, which is based on input and judgments provided by experts and relevant competent stakeholders (Ayu Megawaty & Setiawan, n.d.). This is due to the absence of structured standard criteria in employee performance evaluations. (Aritonang et al., 2024).

To gain a deeper understanding of selecting the best employees, a Literature Review study was conducted to explore Decision-Making for Employee Performance Evaluation using Decision Support Systems (DSS), with a focus on defining the criteria applied in DSS to identify top-performing employees. The aim of this study is to identify the criteria used in Decision Support Systems for selecting the best employees..

METHOD

The research method used in this study is a Systematic Literature Review (SLR) focusing on the use of Decision Support Systems (DSS) for selecting the best employees. A Systematic Literature Review (SLR) is a rigorous methodology designed to identify, evaluate, and interpret all relevant research related to the formulation of a problem or topic under investigation. This approach ensures a comprehensive and structured analysis of existing studies to address the research question effectively (Yusril et al., n.d.).

The article search was conducted using the Publish or Perish application through Google Scholar and Google Cendekia. In the initial stage of journal article retrieval, approximately 200 articles from the years 2021 to 2025 were obtained using the keywords "pemilihan pegawai terbaik" (best employee selection) and "the best employee". These articles were then screened for relevance and compiled. From this total, only around 42 articles were deemed relevant. Subsequently, 10 articles of high quality were selected for further analysis.

RESULTS AND DISCUSSION

A literature review of 10 research journals on the best employee selection methods yielded the following results and discussion.

4.1 RESULT

In this literature study, a comparative analysis was conducted on 10 scientific journals addressing the topic of best employee selection using a literature review approach. The various methods and criteria employed in selecting the best employees were explored to identify whether the criteria used align with the research topic through the application of various Decision Support System (DSS) methods. By synthesizing findings from previous studies, this research aims to determine the significance of criteria that support more effective, objective, and organizationally aligned best employee selection. The results of this study are expected to contribute to the development of more measurable and accurate employee selection methods. The data on criteria used in the analysis of the 10 reviewed journals are presented in the following table:

Tabel 1



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Num	Authors, Title, and Publication Year	Criteria Used	Decision Support Method
1	Puspa Dewi et al., (2021) Title: Decision Support System (DSS) for Selecting the Best Salesperson	Salesperson tenure, motorcycle sales data, annual sales transaction records, customer service evaluations, salesperson violation records, and attendance data.	ROC and ARAS
2	(Roki Herdianto et al., n.d.) Title: Implementation of a Decision Support System for Selecting the Best Lecturer in Early Childhood Education	Educational background, functional position, rank/grade, teaching certification, and academic publications.	AHP
3	Diana et al., (2021) Title: Implementation of a Decision Support System Using the Profile Matching Method for Information Technology Manager Selection (TI)	Education, Skills/Abilities, Candidate Potential, Strategic Vision, Communication Skills, English Language Proficiency Level, Appearance & Personality, Leadership & Decision-Making Skills, Customer Focus, Loyalty & Ethical Values, Motivation, Overall Impression, Overall Interview Assessment	<i>Profile Matching</i>
4	Isnaini et al., (2024) Title: Decision Support System for Photographer Selection at Widya Photography Using AHP	Skill assessment, work experience, age, and education.	AHP
5	Aritonang et al., (2024) Title: Implementation Exponential Comparison	Attendance, attitude, loyalty, responsibility, and task completion.	MPE
6	Marentek et al., (2025) Title: Decision Support System for Security Personnel Performance Ranking Using AHP and TOPSIS	User satisfaction, attendance, SOP and mastery, monthly reports, case-handling ability, work planning, task responsibility, and administrative control.	AHP and TOPSIS
7	Fransiska et al., (2024b) Title: Decision Support System Using TOPSIS for Best Teacher Selection	Mastering the characteristics of learners Mastering learning theories and principles of teaching Curriculum development Educational learning activities Developing learners' potential Communication with learners Assessment and evaluation Acting in accordance with religious, legal, social, and cultural norms Demonstrating a mature and exemplary personality Work ethic, responsibility, and pride in being a teacher Being inclusive, objective, and non-discriminatory Communication with fellow teachers, educational staff, parents, learners, and the community	TOPSIS





		Mastery of the subject matter being taught	
		Professional development through reflective practice	
8	Susanto & Ramadhani, (2025) Title: Optimizing Annual Employee Bonuses Using Weighted Product (WP)	Attendance, professionalism, cleanliness, creativity, teamwork, responsibility, appearance, and etiquette.	WP
9	Chen & Utama, (2022) Title : Decision Support Model for Determining the Best Employee using Fuzzy Logic and Simple Additive Weighting	technical skills, problem-solving, communication skills, teamwork, discipline, work progress, time management, formal education, and informal education	Fuzzy Logic and SAW
10	Firdonsyah et al., (2022) Title : Comparative Analysis of SAW and TOPSIS on Best Employee Decision Support System	Presence, discipline, work target, leave, working period, permission, communication, and cooperation	SAW and TOPSIS

In selecting the best employees using the Decision Support System (DSS) presented in Table 1, the most commonly employed methods are AHP, SAW, and TOPSIS.

4.2 DISCUSSION

Based on the literature review, the implementation of Decision Support Systems (DSS) in selecting the best employees reveals variations in the criteria used. Generally, these criteria can be classified into three main aspects: quantitative, qualitative, and technical/competency criteria. Quantitative performance indicators are measured based on numerical data, while qualitative indicators are assessed based on quality (Stella Gracia, 2022).

According to (Wahyuni & Budiono, n.d.) in Wibowo, (2014) competency is the ability to perform work based on knowledge and skills driven by the required work attitude. Based on this definition, the criteria can be grouped as follows:

Tabel 2

Author	Criteria Grouping (Quantitative, Qualitative and Technical/Competency)
(Puspa Dewi et al., 2021) Title: Decision Support System (DSS) for Selecting the Best Sales person	Quantitative : Sales volume, number of violations, tenure. Qualitative : Service evaluation, discipline. Technical/Competency: There are no criteria.
(Roki Herdianto et al., n.d.) Title: Implementation of a Decision Support System for Selecting the Best Lecturer in Early Childhood Education	Quantitative : Academic publications. Qualitative : There are no criteria. Technical/Competency: Educational background, functional position, rank/grade, teaching certification.
(Diana et al., 2021) Title: Implementation of a Decision Support System Using the Profile Matching Method for Information Technology Manager Selection (TI)	Quantitative : There are no criteria. Qualitative: Candidate Potential, Customer Focus, Motivation, Loyalty & Ethical Values, Overall Impression, Overall Interview Assessment, Leadership & Decision-Making, Appearance & Personality, Strategic Vision. Technical/Competency: Education, Skills/Abilities, Communication Skills, English Language Proficiency Level,
(Isnaini et al., 2024) Title: Dicission Support System for Photographer Selection at Widya Photography Using AHP	Quantitative : Work experience, age Qualitative : Skill assessment Technical/Competency: Education.



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(Aritonang et al., 2024)	Quantitative : Attendance and task completion.
Title: Implementation	Qualitative: Attitude, loyalty, responsibility
Exponential Comparison	Technical/Competency: There are no criteria
Method in Dicission	
Support System for Selecting the Best Employee	
(Marentek et al., 2025)	Quantitative : Attendance, monthly reports
Title: Dicission	Qualitative : Task responsibility, User satisfaction, administrative control.
Support System for Security Personnel Performance Ranking Using AHP and TOPSIS	Technical/Competency: SOP mastery, case-handling administrative control.
(Fransiska et al., 2024b)	Quantitative : Assessment and evaluation, Demonstrating a mature and exemplary personality,
Title: Dicission	Work ethic, responsibility, and pride in being a teacher,
Support System Using TOPSIS for Best Teacher Selection	Being inclusive, objective, and non-discriminatory, Qualitative : Mastering the characteristics of learners, Educational learning activities, Developing learners' potential, Communication with fellow teachers, educational staff, parents, learners, and the community, Acting in accordance with religious, legal, social, and cultural norms, Professional development through reflective practice. Communication with learners,
	Technical/Competency: Mastering learning theories and principles of teaching, Curriculum development, Mastery of the subject matter being taught,

(Susanto & Ramadhani, 2025)	Quantitative : Attendance
Title: Optimizing Annual Employee Bonuses Using Weighted Product (WP)	Qualitative : Professionalism, cleanliness, creativity, teamwork, responsibility, appearance, and etiquette.
	Technical/Competency: There are no criteria
(Chen & Utama, 2022)	Quantitative : Work progress, time management
Title : Decision Support Model for Determining the Best Employee using Fuzzy Logic and Simple Additive Weighting	Qualitative : Problem-solving, communication skills, teamwork, discipline. Technical/Competency: technical skills, formal education, and informal education.
(Firdonsyah et al., 2022)	Quantitative: Presence, discipline, work target, leave, working period, permission,
Title : Comparative Analysis of SAW and TOPSIS on Best Employee Decision Support System	Qualitative : Communication, and cooperation Technical/Competency: There are no criteria

The fulfillment of criteria based on these studies indicates that quantitative criteria generally include measurable indicators such as sales volume, attendance/absence, tenure, task completion, and work targets (Puspa Dewi et al., 2021), (Isnaini et al., 2024), (Marentek et al., 2025), (Firdonsyah et al., 2022). Meanwhile, qualitative criteria focus more on behavioral and interpersonal aspects, such as service, discipline, loyalty, creativity, leadership, and work ethic ((Diana et al., 2021), (Fransiska et al., 2024b), (Susanto & Ramadhani, 2025)). As for competency/technical criteria, they emphasize specific abilities such as education, technical skills, mastery of SOP (Standard Operating Procedures), or work experience (Roki Herdianto et al., n.d.), (Chen & Utama, 2022), (Isnaini et al., 2024)). Several studies, such as those conducted by (Aritonang et al., 2024) dan (Susanto & Ramadhani, 2025) does not





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specify technical criteria, while Anita Diana does not include quantitative criteria.

Studies related to the selection of the best employees/salespeople/lecturers indicate that an ideal evaluation system should combine three main aspects: (1) quantitative criteria (e.g., sales targets, attendance, tenure), (2) qualitative criteria (e.g., discipline, creativity, leadership), and (3) competency/technical criteria (e.g., education, technical skills, mastery of SOP [Standard Operating Procedures]). However, some studies still exhibit imbalances in fulfilling these criteria. For example, (Aritonang et al., 2024) dan (Susanto & Ramadhani, 2025) lacks coverage of technical aspects, (Diana et al., 2021) only focus on qualitative without quantitative indicators, while (Isnaini et al., 2024) has overly general qualitative criteria ("skill values") without detailed measurements. This has the potential to reduce the accuracy and fairness of the assessment.

Another issue that still poses a problem in meeting the criteria is the determination of the criterion weights, which often tends to be subjective, such as management decisions made without data analysis in the study conducted by (Marentek et al., 2025) or uniform weighting without clear justification (Fransiska et al., 2024b). In addition, many still rely on manual processes in assessments, which can lead to inaccuracies (Suprpto et al., 2024) therefore, the integration of digital systems in collecting and processing employee performance data can be a solution to improve transparency and accuracy in evaluations.

Another emerging issue is the lack of a holistic approach in evaluating employee performance. Some studies focus solely on administrative aspects (such as attendance and tenure) without considering qualitative factors like customer satisfaction or work innovation ((Ayu Megawaty & Setiawan, n.d.). The combination of quantitative and qualitative metrics can provide a more comprehensive picture of an employee's contributions. Additionally, there is a need to validate criteria through scientific approaches, such as statistical analysis or discussions with Human Resources (HR) experts, to ensure that the criteria used are truly relevant to organizational goals. Therefore, future Decision Support System (DSS) development must integrate more comprehensive data, objective weighting methods, and technological support to produce more accurate and fair decisions.

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CONCLUSIONS

Based on related research, the ideal performance evaluation system for employees/salespeople/lecturers should integrate three main aspects: quantitative criteria (such as sales targets and attendance), qualitative criteria (such as discipline and creativity), and technical criteria (such as skills and work experience). However, imbalances persist in fulfilling these criteria, including a lack of emphasis on technical or quantitative aspects in some studies, subjective weighting methods, and reliance on manual processes that may compromise the accuracy and fairness of evaluations. Furthermore, holistic approaches and the validation of criteria through scientific methods are often overlooked, necessitating improvements in data integration, objectivity in weighting, and the adoption of technology to enhance evaluation systems..

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