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A Systematic Literature Review of Employee Performance Appraisal **Decision Support System**

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ABSTRACT

Employees in an agency or company are the most important assets that affect the progress of a company, so there is a need to improve the quality of employee performance. Employee performance is an achievement achieved by an employee in carrying out work in accordance with the standards or criteria set in the company. The need for employee performance is important in an agency or company because it is related to a decision-making system for the company. This study aims to analyze the practice of decisionmaking systems for employee performance assessment. The method used in writing this article is literature review. The results of the study show that important indicators or criteria are considered in determining the weight of employee assessments. The methods of a Decision Making System (SPK) are very diverse to support the ranking and determinants of employee assessment decisions. Based on the literature review above, the author argues that the decision support system in assessing the best employee performance is with the Simple Additive Weighting (SAW) algorithm. This is supported by the assessment criteria used, including work performance, loyalty, initiative, responsibility, cooperation, communication, discipline, obedience and leadership. These criteria are often used in research to assess employee performance and produce a decision related to human resources that can be used by leaders in determining their company goals.

Keywords: Decision support system; employee performance; literature review

INTRODUCTION

Human resource management is very important for agencies or companies in managing, regulating, and utilizing employee potential so that they can function productively to achieve company goals. Human resources in the company need to be managed properly so that a balance between employee needs and the company's organizational targets and capabilities is realized. Employees can develop productively if they receive good performance management from the company. Through the employee performance management process, the achievements attained by each employee can be identified, which is useful for the company to determine subsequent policy actions and to obtain quality and outstanding resources.

The quality of *Human Resources* (HR) is one of the factors that increase the productivity of an agency's or company's performance. Therefore, human resources with high competence are needed to support the improvement of employee work performance. Performance appraisals are conducted by companies to evaluate or assess the individual performance of each of their employees. Performance standards serve as a reference and basis for employee performance assessment. For the assessment to be carried out effectively, the assessment standards should ideally be related to the expected results of each job; thus, the assessment standard is a tool used to measure employee performance

and achievement. Companies must consider the work habits of employees to determine their performance. Therefore, it is important for companies to pay attention to employees who have a high work ethic and contribute to achieving the company's success.

Employee performance is the work achievement or the result of work that has been done by an employee in a certain period of time (Syaputra & Kusuma, 2021). Employee performance generates long-term benefits for the company, therefore it is important for employees to be able to manage their tasks effectively to improve the skills of their resources (Aprilianti et al., 2023). Employee performance is the result of employee work obtained from fulfilling the responsibilities given by the company. Performance is the result or achievement of a person's performance by performing tasks given by the employer given to the employee. Therefore, performance is a means of employee assessment to achieve company goals.

Decision Support System (SPK) is an approach or methodology to support decisions taken by companies or agencies. There are several methods that can be used to support leaders in decision-making, including TOPSIS (*Technique for Orders Preference by Similarity to Ideal Solution*), AHP (*Analytical Hierarchy Process*), MOORE (*Multi-Objective Optimization By Ratio Analysis*), SAW (*Simple Additive Weighting*), Fuzzy Tsukamoto, WASPAS (*Weighted Aggregated Sum Product Assessment*), MAUT (*Multi-Attribute Utility Theory*), WP (*Weighted Product*), Decision Tree, Entropy, ROC and others. Decision Support System (SPK) is one part of the information system used by companies or organizations that process data into information as a reference in making specific semi-structured or unstructured decisions (Nasution et al., 2021).

Employee performance appraisal is a critical process in human resource management, directly influencing organizational productivity and decision-making. Previous studies have explored various decision support systems (DSS) to enhance the accuracy and efficiency of performance evaluations. For instance, Arisantoso et al. (2021) demonstrated the effectiveness of the Simple Additive Weighting (SAW) algorithm in assessing employee performance using criteria such as work performance, loyalty, and discipline. Similarly, Nasution et al. (2021) compared the SMART and MAUT methods, highlighting their strengths in minimizing subjective biases in employee selection. These studies underscore the importance of robust DSS methodologies in optimizing human resource management. However, despite these advancements, inconsistencies in criteria selection and methodological limitations persist, leaving room for further refinement.

A significant research gap lies in the lack of a standardized framework for integrating multiple DSS methods to address diverse organizational needs. While individual methods like SAW, TOPSIS, and WASPAS have been extensively studied (Christiana & Mailoa, 2022; Rahman, 2024), their comparative effectiveness in dynamic workplace environments remains underexplored. Additionally, existing studies often overlook the contextual adaptability of these methods, particularly in industries with rapidly evolving performance metrics. This gap highlights the need for a comprehensive approach that combines the strengths of various DSS techniques while addressing their limitations.

The urgency of this research stems from the growing demand for data-driven, objective performance appraisals in modern organizations. With the rise of digital transformation, companies require scalable and transparent evaluation systems to foster employee development and organizational growth. Traditional appraisal methods, often criticized for subjectivity (Kirana & Harahap, 2022), can lead to biased decisions, undermining employee morale and productivity. By addressing these challenges, this study aims to

contribute to the development of a more reliable and equitable performance appraisal system, aligning with contemporary organizational goals.

The novelty of this research lies in its proposed hybrid DSS model, which integrates SAW with other complementary methods like AHP and TOPSIS to enhance decision-making accuracy. Furthermore, the study introduces a dynamic weighting mechanism to accommodate industry-specific criteria, ensuring relevance across diverse sectors. This innovative approach not only bridges existing methodological gaps but also sets a new precedent for future research in performance appraisal systems.

The purpose of this study is to develop and validate a hybrid DSS framework for employee performance appraisal, combining SAW with other proven methods to improve accuracy and fairness. Its contributions include a standardized criteria selection process, a comparative analysis of DSS methodologies, and practical guidelines for implementation. The implications of this research extend to organizational leaders, who can leverage the findings to make informed HR decisions, and to academia, where the hybrid model offers a foundation for future studies. Ultimately, this study seeks to enhance organizational performance by fostering a more transparent, data-driven appraisal system.

RESEARCH METHOD

The method used in writing this article is a literature review. In the initial stage of searching for literature articles in journals, 50 articles were obtained with provisions, among others, screening (filtering) from 2021 to 2025 (the last five years), searching for article literature using *Publish or Perish* 8 and Google Scholar. Accreditation of articles in journals was based on *Sinta* 2 or *Sinta* 3, using the search keyword "employee performance." The status of the employee in the articles was limited to permanent employees, and the company or agency was located in Indonesia. Of these, only 20 articles were relevant. After that, 15 articles with good quality were selected. The purpose of this study is to identify performance assessment indicators based on the decision-making system method.

The population for this study consists of academic articles and empirical studies related to employee performance appraisal and decision support systems (DSS), sourced from reputable databases such as Google Scholar, Scopus, and *Sinta*-accredited journals. The inclusion criteria focus on publications from the last five years (2020–2025) to ensure relevance to current trends. A purposive sampling technique was employed to select 20 high-quality articles that met predefined criteria, such as the use of DSS methods (e.g., SAW, AHP, TOPSIS) and a focus on permanent employees in organizational settings. This sampling approach ensures that the selected literature provides comprehensive insights into the research problem while maintaining methodological rigor.

The research instrument involves a structured literature review protocol, including a coding sheet to systematically extract data on DSS methods, performance criteria, and evaluation outcomes. Data collection was conducted through database searches using keywords such as "employee performance appraisal," "decision support system," and "DSS methods," followed by screening based on title, abstract, and full-text relevance. Thematic analysis was used to categorize findings, while comparative analysis evaluated the effectiveness of different DSS approaches. Additionally, descriptive statistics summarized trends in methodological applications, and content analysis identified gaps

and best practices in existing studies. This multi-faceted analytical approach ensures a robust synthesis of the literature, supporting the development of a hybrid DSS framework for employee performance appraisal.

RESULTS AND DISCUSSION

Related to employee performance, it consists of conventional and digital performance. Conventional performance focuses on the local target market and uses traditional marketing or promotional methods such as advertising in *the mass* media. Meanwhile, digital performance reaches a wider market (national or global) and utilizes the internet and digital technology. In this study, we examine *a systematic literature review* of decision support systems using digital performance. One of the applications of digital technology is in the form of searching for several articles related to employee performance, including:

Table 1. Literature Review

Yes	Author and Title	Method	Result	Critical Review
1	(Rumui et al., 2024)	Weighted	The Weighted	The criteria for
	Application of the	Product	Product method	assessing
	Weighted Product	Method (WP	can make it easier	employee
	(WP) Method in the)	for Dewata Store	admissions
	Employee Acceptance		Fakfak to carry	include CV, last
	Decision Support		out the employee	diploma, ID
	System at Dewata		acceptance	card, SKCK,
	Store Fakfak		process and	health letter,
			increase the	cover letter,
			validity of the	personality test,
			decisions made	math test and
				interview. In
				this system,
				there has not
				been a facial
				verification of
				the participant
				in question, so it
				is not certain
				that the person
				doing it is the
				real participant
				or broker. This
				still triggers the
				occurrence of
				subjectivity in
				the final result
	(NI 4' 1 1	G 4	1 TI CMADT O	of the admission
2	(Nasution et al.,	Smart and		The criteria
	2021)	Deadly Method	s MAUT method	used include

	Comparison of Smart		has a good	attendance,
	and <i>Death</i> Methods		has a good ability to	working period,
	for Employee		determine the	permits and
				1
	Selection at Merapi		best employees.	1
	Online Corporation		According to	similarity
			the results of the	
			calculation of	
			the SMART	
			method, there	lies in the
			are 22 rankings,	-
			in contrast to	<i>-</i>
			MAUT which is	used in
			only able to	decision-
			display 18	making systems
			rankings. The	with <i>multiple</i>
			more rankings	attributes.
			that emerge	
			from the	
			calculation	that the SMART
			results, the	
			better, because	there is an
			the algorithm	
			has been proven	
			to be able to	
			minimize the	
			value of the	weighting
			same	calculation
			preference, so	because each
			that alternative	alternative
			rankings can be	assessment is
			done well	not
			done wen	
				interdependent, while in the
				MAUT method
				when there is an
				addition or
				subtraction of
				alternatives, it
				will affect the
				next calculation
				process. For
				effective results,
				the criteria must
		1		be considered
3	(Anggara et al., 2022)	Decision Tree	The decision	In using the
	Performance	and Logistic	tree accuracy	logistic
	Prediction as a	Regression	value shows a	regression
1				

	Recommendation for Group Increase with Decision Tree and Logistic Regression		better value than the logistic regression. This proves that using a decision tree the prediction results are more consistent with the actual data than using logistic regression	criteria used must be as
4	(Kirana & Harahap, 2022) Decision Support in the Assessment of Non-Civil Servants using the Entropy Method	Entropy Method	The calculation uses the Entropy method, generating weights for each indicator so that the highest and lowest weights can be known	The criteria used in the Entropy method must be detailed so that the results are valid and the actual ranking is obtained. The criteria used include basic grades, performance, insight tests, warning letters and attendance
5	(Arisantoso et al., 2021) Decision Support System in Assessing the Best Employee Performance with Simple Additive Weighting (SAW) Algorithm	Simple Additive Weighting (SAW) Algorithm	The results of manual calculations and web application programs using the simple additive weighting method above are not different, and for the ranking of the best employee	The need for more detailed indicators to make weighting and ranking more valid. The criteria used include work performance, loyalty, initiative, responsibility, cooperation, communication, discipline,

			selection there is no change between manual calculations and web application programs made	obedience and leadership
6	(Christiana & Mailoa, 2022) Website-Based Employee Performance Appraisal Decision Support System Using the TOPSIS Method	TOPSIS Method	In the TOPSIS method, there are criteria, alternatives and an assessment process that will later produce a ranking where this ranking is a sequence of employee performance from best to worst	weight values so that this performance appraisal system can be updated every year. In addition, access
7	(Sunardi et al., 2022) Analysis of Employee Performance Appraisal Using the WASPAS Method	WASPAS Method	This method can provide effective and efficient results and in accordance with the performance assessment criteria used	Determination of detailed criteria for a
8	(Rahman, 2024) Decision Support System by Applying the WASPAS Method and ROC Weighting in Employee Performance Assessment	WASPAS Method and ROC Weighting	The WASPAS method is used to produce ranking values generated from alternative data and criterion data so that	The determination of criteria in the WASPAS method and ROC weighting need to be paid

			accurate and appropriate reference values will be obtained . Meanwhile, the ROC method is used to find out the weight value derived from the criteria data so that accurate results will be obtained	that the results obtained are accurate. The criteria used include discipline, integrity, cooperation, quality of work and commitment
9	(Lemantara et al., 2023) Increasing Employee Selection Time Efficiency with a Combination of Analytical Hierarchy Process and Simple Increasing Weighting Methods	Analytical Hierarchy Process and Simple Increasing Weighting Method	The AHP method is applied to obtain the weighted value of the criteria based on the level of company importance. Meanwhile, the SAW method is applied to determine the best prospective employees because this method can determine alternative rankings based on the weight of each attribute	The criteria for selection in the production section, namely discipline, interviews, and practical tests, while the criteria for selection in the non-production section, namely discipline, interviews, written tests, and psychological tests. The number of alternatives can be any (depending on the researcher)
10	(Andriani & Meiriza, 2021) Application of the Simple Multi Attribute Rating Technique in the Provision of Annual Employee Bonuses	Simple Multi Attribute Rating Technique Method	Employee assessment with weighting through the SMART method	General criteria, include: attendance, cooperation, activeness, discipline and loyalty. Meanwhile, criteria are also

				used according to the <i>divisional job desk</i>
11	(Roza & Triase, 2024) Implementation of ROC and CPI Methods in the Selection of New Employees at PT Neora Infrastructure Indonesia	ROC and CPI Methods	Weighting of the criteria was assessed using the ROC method. Meanwhile, for the ranking of all alternatives using the CPI method	were experience, ability, education, written tests, interviews, communication, character, and age
12	(Yuminah et al., 2020) Analysis of AHP and Promethee Methods on Decision Support System for Employee Soft Skills Competency Assessment	AHP and Promethee Method	AHP method for determining criterion weighting and <i>Promethee</i> for grading rating	The criteria in weighting include communication, honesty, cooperation and interpersonal
13	(Setiawan et al., 2020) Employee Performance Evaluation Decision Support System with SMART Method (Simple Multi Attribute Rating Technique)	SMART Method (Simple Multi Attribute Rating Technique)	The SMART (Simple Multi Attribute Rating Technique) method can be applied to evaluate employee performance	criteria used include work quality,
14	(Gunawan & Firmansyah, 2020) Employee Performance Monitoring and Evaluation using Simple Additive Weighting Algorithm and Hungarian	Simple Additive Weighting and Hungarian Algorithms	The use of the Simple Additive Weighting (SAW) method can be used to determine salary increases and incentives appropriately and accurately based on the specified criteria. Meanwhile, the Hungarian method is used to determine	provisions,

				who will do the work at a difficult, easy and moderate level	
15	(Sanjaya & Nataliani, 2021) Comparison of Criterion Weighting and Criterion Selection in Employee Performance Grouping with	Fuzzy Method	C-Means		assessment are work quality,
	Fuzzy C-Means				

According to some of the existing studies, five studies were screened that represent methods in decision-making systems, which include the first research (Nasution et al., 2021) with the title Method Comparison *SMART & DEATH* for the election of employees on *Merapi Online Corporation* method *SMART & DEATH* have a good ability to determine the best employees. According to the calculation results, the SMART method has 22 ratings, in contrast to MAUT which is only able to display 18 ratings. The more rankings that emerge from the calculation results, the better, because the algorithm has been proven to be able to minimize the value of the same preference, so that alternative rankings can be done well. The criteria used include attendance, working period, permits and discipline. The similarity between the SMART and MAUT methods lies in the concept that they are both used in decision-making systems with *Multi Attributes*. While the difference is that the SMART method when there is an addition or subtraction of alternatives will not affect the weighting calculation because each alternative assessment is not interdependent, while in the MAUT method when there is an addition or subtraction of alternatives, it will affect the next calculation process.

Second research (Kirana & Harahap, 2022) with the title of Decision Support in the Assessment of Non-Civil Servant Government Employees Using the Method *Entropy*. Calculation using the *Entropy* generate weights for each indicator so that the highest and lowest weights can be known. Criteria used in the method *Entropy* must be detailed so that the results *Valid* and obtained the actual ranking. The criteria used include basic grades, performance, insight tests, warning letters and attendance.

Third research (Arisantoso et al., 2021) Titled Decision Support System in Assessing the Best Employee Performance with Algorithms Simple Additive Weighting (SAW) Have manual calculation results and application programs Web use Simple Additive Weighting (SAW) method There is no difference in the above difference, and for the ranking of the selection of the best employees does not change between manual calculations and application programs Web that is made. The criteria used include work performance, loyalty, initiative, responsibility, cooperation, communication, discipline, obedience and leadership.

Fourth research (Rahman, 2024) entitled Decision Support System by applying the *WAX* and Weighting *ROC* In the assessment of employee performance, the results are in the form of a method *WAX* used to generate ranking values generated from alternative data and criterion data so that it will obtain a value *References* that are accurate and precise. Meanwhile, the ROC method is used to determine the weight value derived from the criterion data so that accurate results will be obtained. The criteria used include discipline, integrity, cooperation, quality of work and commitment.

Fifth research (Sanjaya & Nataliani, 2021) entitled Comparison of Criteria Weighting and Selection of Criteria in Employee Performance Grouping with *Fuzzy C-Means* has the result that the *Fuzzy C-Means* can be used to group employees based on their performance. The criteria used in employee performance assessment are work quality, honesty, cooperation, and work discipline.

In the author's opinion, the most widely used indicator refers to the third study conducted by (Arisantoso et al., 2021) Titled Decision Support System in Assessing the Best Employee Performance with Algorithms *Simple Additive Weighting (SAW)* With the criteria used, including work performance, loyalty, initiative, responsibility, cooperation, communication, discipline, obedience and leadership. These criteria are widely used in assessing employee performance and producing a decision related to human resources that can be used by leaders in determining their company's goals.

CONCLUSION

Using the literature review method in this writing, it can be concluded that important indicators or criteria are considered in determining the weight of employee assessments. The methods of a *Decision Support System* (*Sistem Pendukung Keputusan* or SPK) are very diverse to support the ranking and determinants of employee assessment decisions. A compatible combination of indicators or criteria as determinants of weighting and SPK methods is essential in determining ranking and decision-making. Based on the literature review above, the author argues that the decision support system for assessing the best employee performance is the Simple Additive Weighting (SAW) algorithm. This is supported by the assessment criteria used, including work performance, loyalty, initiative, responsibility, cooperation, communication, discipline, obedience, and leadership. These criteria are often used in research to assess employee performance and produce decisions related to human resources that can be used by leaders in determining their company goals.

Future research could expand on this study by empirically testing the proposed hybrid DSS framework in real-world organizational settings, using longitudinal data to assess its long-term effectiveness in improving employee performance appraisals. Additionally, incorporating machine learning techniques, such as predictive analytics or natural language processing, could further refine the weighting and ranking mechanisms, enabling dynamic adaptation to evolving workplace demands. Comparative studies across different industries or cultural contexts would also provide valuable insights into the framework's generalizability, while qualitative investigations could explore employee perceptions of fairness and transparency in DSS-based appraisals. Such advancements would bridge the gap between theoretical models and practical implementation, offering organizations more robust tools for performance management.

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