Performance Assessment of Branch Office Assistant (KCP) Leaders Using the Simple Additive Weighting Method

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Performance Appraisal is a process that allows organizations to know, evaluate, measure and assess the performance of their members appropriately and accurately. This activity is closely related and influences the effectiveness of the implementation of human resource activities in the company, such as promotion, compensation, training, career management development and others. This is because the performance appraisal function can provide important information to the company to improve decisions and provide feedback to employees about their actual performance. The implementation of the achievement and performance appraisal of KCP leaders at KSPPS Tunas Artha Mandiri Nganjuk Branch has so far still used manual and has not used a decision support system so that the data generated is not accurate and takes a long time. As a result, if used in decision making, it is not appropriate and causes problems such as non-transparent management, decreased quality and performance of KCP leaders. The author applies and implements the Additive Weighting method (SAW) to measure the achievement and performance assessment of the Sub-Branch Office leadership at KSPPS Tunas Artha Mandiri Nganjuk Branch. With the aim of this decision support system can provide information and recommendations as well as accurate and efficient performance appraisal data.

KeyWords: *Decision Support Sistem, Simple Additive Weighting, Employee Appraisal*

1 Introduction

Performance Appraisal is a process that allows organizations to understand, evaluate, measure, and assess the performance of its members appropriately and accurately. This process is closely related and has a significant impact on the effectiveness of human resource management in the company, such as in aspects of promotion, compensation, training, career development, and others. This happens because the function of performance appraisal provides important information for the company to support better decision-making and provide feedback to employees regarding their performance. The purpose of performance appraisal includes several things, such as knowing the level of employee achievement, providing appropriate rewards (for example, periodic salary increases, basic salary, and incentives), developing human resources (through reassignment, transfer, job rotation, job promotion, or training), increasing work motivation and work ethic, and as a source of information for HR planning, careers, and strategic decision-making[1]. This assessment also functions to maintain the quality of performance and encourage employees to take the initiative in improving work results [2],[3],[4].

The performance assessment of the Branch Office Assistant (KCP) leaders at KSPPS Tunas Artha Mandiri Nganjuk Branch is based on two main criteria, namely target achievement and experience related to work culture targets. Target achievement is measured through the work results achieved, while the experience of work culture targets is assessed based on the frequency of KCP leaders demonstrating appropriate work abilities and behaviors. Currently, the implementation of KCP leader performance assessments at KSPPS Tunas Artha Mandiri Nganjuk Branch is still carried out manually without using a decision support system, so the results obtained are less accurate and time-consuming. This has a negative impact on decision making, including non-transparent management, declining quality, and performance of KCP leaders. Based on these problems, the author plans to apply the Simple Additive Weighting (SAW) method to assess the achievements and performance of KCP leaders at KSPPS Tunas Artha Mandiri Nganjuk Branch. The purpose of this decision support system is to provide accurate and efficient information and recommendations in the performance assessment process [5],[6],[7].

2 Method

2.1 Simple Additive Weighting (SAW). The Simple Additive Weighting (SAW) method is also often known as the weighted summation method. The basic concept of the SAW method is to find the weighted summation of the performance ratings on each alternative on all attributes (Fishburn, 1967) (MacCrimmon, 1968). The SAW method requires a normalization process of the decision matrix (X) to a scale that can be compared with all existing alternative ratings. This method is the most famous and most widely used method in dealing with Multiple Attribute Decision Making (MADM) situations. MADM itself is a method used to find the optimal alternative from a number of alternatives with certain criteria[8],[9].

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(1) Calculation Formula (SAW)

$$r_{ij} = \begin{cases} \dfrac{X_{ij}}{\max X_{ij}} & \text{benefit} \\[2ex] \dfrac{\min X_{ij}}{X_{ij}} & \text{Cost} \end{cases} \qquad (1)$$

If j   is a benefit attribute
If j   is a cost attribute
r_{ij} = normalized performance rating.
$Maxi$ = maximum value of each row and column.
$Mini$ = maximum value of each row and column.
X_{ij} = row and column of the matrix.

Where (r_{ij}) is the normalized performance rating of the alternative (Ai).on the attribute (C_j) i= 1,2...,m and j= 1,2...,n.

(2) Alternative preference formula (V_i)

$$V_i = \sum_{j=1}^{n} W_j r_{ij} \qquad (2)$$

Where:
$V_i =$ final value of the alternative.
$W_i =$ predetermined weight.
$r_{ij} =$ matrix normalization

A larger Vi value indicates that the Ai alternative is more selected where a larger value indicates that the alternative is more selected.

There are several steps in completing the Simple Additive Weighting (SAW) method. Which are applied as follows:

a) Determine the criteria used as a reference in decision support, namely Ci.
b) Determine the suitability rating of each alternative for each criterion.
c) Create a decision matrix based on the criteria (Ci).
d) Then normalize the matrix based on the equation that is adjusted to the type of attribute (benefit attribute or cost attribute so that the normalized matrix R is obtained.
e) The final result is obtained from the ranking process, namely the sum of
f) multiplication of the normalized matrix R with the weight vector so that the largest value is selected as the best alternative (Ai) as a solution.

2.2 Database MySQL. A database is a collection of interrelated data, organized in such a way that it makes it easy for users to access and manage the data." (Adhi Nugroho, 2020). Databases are generally located on computer devices and are managed automatically by the Database Management System (DBMS). Some aspects related to databases are as follows [13],[12],[14]:

(1) Database concept: basic concepts related to databases, such as data, information, and databases.
(2) Database model: database models used to store data, such as the relational model, hierarchical model, and network model.
(3) Database management system: a system used to manage databases, such as MySQL, PostgreSQL, and Oracle.
(4) SQL commands: a standard language for interacting with relational databases.
(5) Database security: methods to protect data in a database from unauthorized access.

MySQL is an open source and free relational database management system (RDBMS) that can be used by anyone without a license fee. MySQL is one of the most popular RDBMS in the
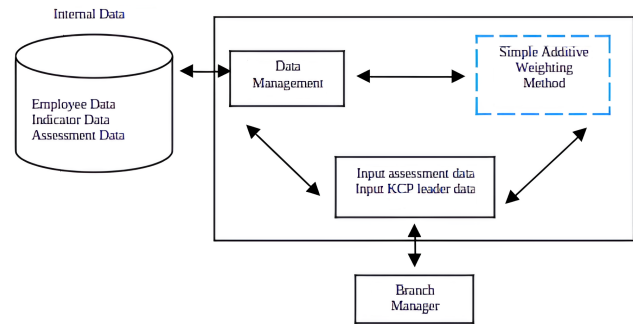

Fig. 1 Architecture of KCP Leader Performance Assessment SPK

world, and is used by a wide variety of applications, from small websites to enterprise applications. MySQL is a popular RDBMS and is often used for web, desktop, and embedded applications. MySQL has high performance, high stability, and good security [11]. MySQL has several features that make it a popular choice for a variety of applications, including:

(1) High performance: MySQL is designed to provide high performance, even for large and complex applications.
(2) High stability: MySQL has a good reputation for stability and reliability.
(3) Good security: MySQL has advanced security features to protect user data.

A stored procedure is a collection of SQL statements that are stored in a database and can be executed as a single unit [11]. Stored procedures can be used to run repetitive tasks automatically.

A stored procedure consists of two parts, namely the header and the body. The header contains information about the stored procedure, such as the name, parameters, and parameter data types. The body contains the SQL statements that will be executed by the stored procedure.

3 Results and Discussion

In the study conducted a study on the Performance Indicator assessment process which still uses Microsoft Excel. The data used are employee data, indicator data and employee assessment data. The problem was solved using the SAW method with the results of the research on the employee performance Performance Indicator software engineering system by implementing a decision support system that provides an efficient assessment process and provides the right reference value when observing for evaluating the performance of each employee. Based on several studies above, the author conducted a problem analysis from the existing background, namely how to design and build a decision support system to facilitate the determination of the performance assessment of the KCP Leader at KSPPS Tunas Artha Mandiri Nganjuk Branch. The materials used in this study are the Performance Indicator Data Form File for the Leader. Data is taken from the performance assessment data of the KCP Leader at KSPPS Tunas Artha Mandiri Nganjuk Branch in October 2022. At this stage, the system design process is carried out as follows.

Based on Figure 1 above, it can be explained that the internal supporting data for the SPK process for assessing the performance of KCP leaders include:

a. Employee Data: This data is data on employees who have leadership positions
b. Indicator Data: There are 2 indicators, namely target achievement containing 7 criteria and work culture target experience containing 12 criteria

c. Assessment Data Is assessment input data in the form of qualitative data filled in by one level of position above it, namely branch managers and quantitative data based on data on the achievement of leader performance for one month.

The Implementation Process for processing KCP leader achievement and performance assessment data, the author applies a decision support system with the SAW method. So that it is expected to provide information and recommendations as well as accurate and efficient performance assessment data.

3.1 Discussion and Results of SAW Method Calculation.

Criteria data required in making decisions to select the best performance. In the criteria data there are benefit and cost attributes. Benefit is if the criteria that has a large value as the best value, while cost is if the smallest value is the best assessment. The criteria in the performance assessment can be seen in Table 1 and Table 2 which are indicator data and criteria for achieving targets and target experience and work culture.

Criteria for Employee Performance Assessment include:

a. Target Achievement Criteria Obtained through the calculation of the recapitulation of the performance achievement of KCP leaders including the Achievement of Funding Given (PYD) from the beginning of the Year against the Work Plan (RK).
b. Target Achievement Criteria Obtained through the calculation of the recapitulation of the performance achievement of KCP leaders including the Achievement of PYD from the beginning of the Month against the RK
c. Target Achievement Criteria Obtained through the calculation of the recapitulation of the performance achievement of KCP leaders including the Achievement of Members from the beginning of the Year against the RK.
d. Target Achievement Criteria Obtained through the calculation of the recapitulation of the performance achievement of KCP leaders including the Achievement of Members from the beginning of the Month against the RK.
e. Target Achievement Criteria Obtained through the calculation of the recapitulation of the performance achievement of KCP leaders including Non Performing Loan (NPL) data of 7.5% / SKM reaching the standard (target).
f. Target Achievement Criteria Obtained through the calculation of the recapitulation of the performance achievements of the KCP leadership including maximum unpaid Members 10% (K4) / Collectibility 95% (K3).
g. Target Experience Criteria for Work Culture Obtained based on service to Members and/or co-workers. In direct assessment given by the direct superior in this case the Branch Manager
h. Target Experience Criteria for Work Culture Obtained based on Orientation on the quality of work results. In direct assessment given by the direct superior in this case the Branch Manager
i. Target Experience Criteria for Work Culture Obtained based on Efforts to achieve predetermined targets/self-confidence. In direct assessment given by the direct superior in this case the Branch Manager
j. Target Experience Criteria for Work Culture Obtained based on Initiative to make improvements. In direct assessment given by the direct superior in this case the Branch Manager
k. Target Experience Criteria for Work Culture Obtained based on Ability in problem solving. In direct assessment given by the direct superior in this case the Branch Manager
l. Target Experience Criteria for Work Culture Obtained based on Attitude of cooperation. In direct assessment given by the direct superior in this case the Branch Manager
m. Target Experience Criteria for Work Culture Obtained based on the Ability to convince/persuade members. In direct assessment given by the direct superior in this case the Branch Manager
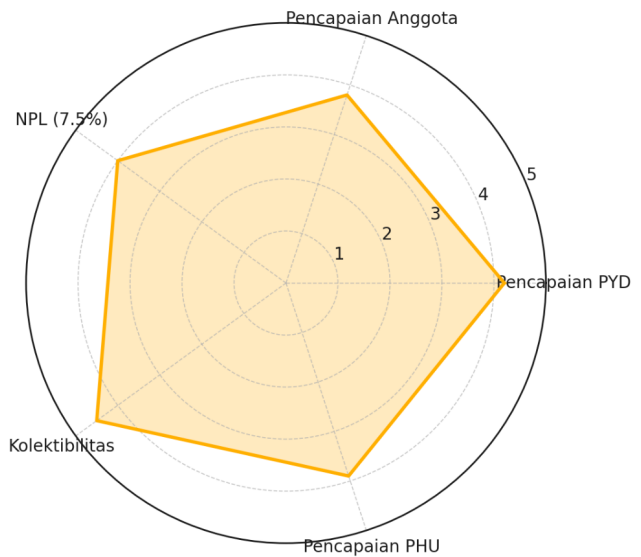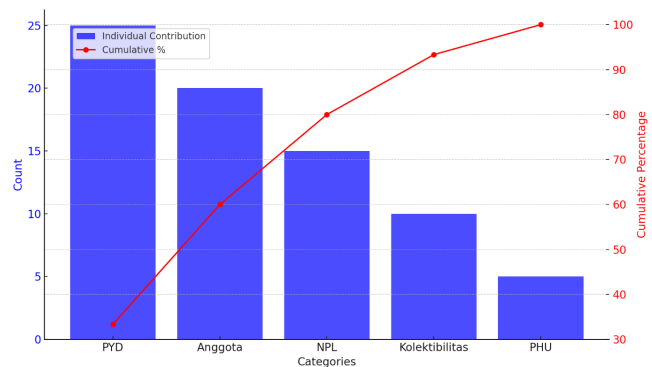

Fig. 2   Crips Data Target Achievement

Fig. 3   Crips Data Target Work Culture Experience

n. Target Experience Criteria for Work Culture Obtained based on the Sense of togetherness and dedication to the company. In direct assessment given by the direct superior in this case the Branch Manager
o. Target Experience Criteria for Work Culture Obtained based on the Ability to appreciate subordinate performance. In direct assessment given by the direct superior in this case the Branch Manager
p. Target Experience Criteria for Work Culture Obtained based on Group management ability. In direct assessment given by the direct superior in this case the Branch Manager
q. Target Experience Criteria for Work Culture Obtained based on Integrity (Honesty, Commitment and Consistency). In direct assessment given by the direct superior in this case the Branch Manager
r. Target Experience Criteria for Work Culture Obtained based on the Ability to foster subordinates. In direct assessment given by the direct superior in this case the Branch Manager as in Table 3.

The weighted data on the performance and achievement assessment criteria of KCP leaders with a total weight of 100 is used as a reference in the ranking of the performance and achievement assessment of KCP leaders.

In Table 4 and Table 5 below there is a table of Crips target achievement and work culture target experience which is a limiter of the value of each criterion. Each crips has its own weight which will be processed in the SAW calculation.

The values   used in the calculation of the Simple Additive

Table 1 Data on Indicators and Criteria for Achieving Targets

Indicator	Criteria	Code	Description
	PYD Achievement from the beginning of the Year to RK	C1	
	PYD Achievement from the beginning of the Month to RK	C2	
	Member Achievement from the beginning of the Year to RK	C3	
Target Achievement	Member Achievement from the beginning of the Month to RK	C4	Benefit
	NPL (7.5%) / SKM reaches standard (target)	C5	
	Members do not pay a maximum of 10% (K4) / Collectibility 95% (K3)	C6	
	PHU Achievement to RK (Per month of disconnection)	C7	

Table 2 Data on Indicators and Criteria for target experience and work culture

Indicator	Criteria	Code	Description
	Prioritize service to customers and/or co-workers.	C8	
	Orientation on the quality of work results.	C9	
	Efforts to achieve predetermined targets. / self-confidence	C10	
	Initiative to make improvements.	C11	
	Ability in problem solving.	C12	
Target Work Culture Experience	Attitude of cooperation.	C13	Benefit
	Ability to convince/persuade members	C14	
	A sense of togetherness and dedication to the company.	C15	
	Ability to appreciate the performance of subordinates.	C16	
	Group management skills.	C17	
	Integrity (Honesty, Commitment and Consistency)	C18	
	Ability to foster subordinates.	C19	

Table 3 Quality and Quantity Assessment Parameters Table

Value	Assessment
Far Exceeds target (JMS)	5
Exceeding Goals (MLS)	4
Meeting Goals (MMS)	3
Almost Meets target (HMS)	2
Does not meet targets (TMS)	1

Table 4 Data Bobot Penilaian

Code Criteria	Criteria	Weight
C1	PYD Achievement from the beginning of the Year to RK	8.57
C2	PYD Achievement from the beginning of the Month to RK	8.57
C3	Member Achievement from the beginning of the Year to RK	8.57
C4	Member Achievement from the beginning of the Month to RK	8.57
C5	NPL (7.5%) / SKM reaches standard (target)	8.57
C6	Members do not pay a maximum of 10% (K4) / Collectibility 95% (K3)	8.57
C7	PHU Achievement to RK (Per month dropped out)	8.57
C8	Prioritize service to customers and / or co-workers.	3.33
C9	Orientation to the quality of work results.	3.33
C10	Efforts to achieve predetermined targets. / self-confidence	3.33
C11	Initiative to make improvements.	3.33
C12	Ability in problem solving.	3.33
C13	Attitude of cooperation.	3.33
C14	Ability to convince / persuade members	3.33
C15	Sense of togetherness and dedication to the company.	3.33
C16	Ability to appreciate the performance of subordinates.	3.33
C17	Group management skills.	3.33
C18	Integrity (Honesty, Commitment and Consistency)	3.33
C19	Ability to foster subordinates	3.33

Weighting (SAW) method are values that have been determined based on the crisp value. The initial data used in the SAW calculation comes from the HR Division, in the form of the results of the recapitulation of the performance assessment of the Head of the Nganjuk Branch Office in October 2022. This data is displayed in Tables 5 and 6, with the resulting value categories including Far Exceeding Targets (JMS), Exceeding Targets (MLS), Meeting Targets (MMS), Almost Meeting Targets (HMS), and Not Meeting Targets (TMS). Meanwhile, Table 5.7 presents alternative data on the Head of the Nganjuk Branch Office which will be used as alternative input in the calculation using the SAW method.

The next step is to change the value of the alternative according to the weight of the crips data, so that data such as Table 7 and Table 8 are obtained.

From the data on Table 8, 9, normalization is carried out on each criterion. For criterion C1 because of the benefit, then the max $(1,5,5,1,1,5) = 5$ is sought. It is obtained:

$$k1 = \frac{1}{(max(1,5,5,1,1,5))} = \frac{1}{5} = 0.2$$

$$k2 = \frac{5}{(max(1,5,5,1,1,5))} = \frac{5}{5} = 1$$

$$k3 = \frac{5}{(max(1,5,5,1,1,5))} = \frac{5}{5} = 1$$

$$k4 = \frac{1}{(max(1,5,5,1,1,5))} = \frac{1}{5} = 0.2$$

$$k5 = \frac{1}{(max(1,5,5,1,1,5))} = \frac{1}{5} = 0.2$$

$$k6 = \frac{5}{(max(1,5,5,1,1,5))} = \frac{5}{5} = 1$$

(3)

The results at the normalization stage can be seen in Table 10 and Table 11.

The next stage is to carry out ranking using the SAW ranking formula (2), a larger Vi value indicates that alternative Ai is more selected. At the ranking stage, the criteria weights are multiplied by each row of the normalized value matrix in the previous stage:

$$V_1 = (0.2 * 8.57142857142857) + (0.2 * 8.57142857142857) +$$
$$(0.2 * 8.57142857142857) + (0.2 * 8.57142857142857) +$$
$$(0.2 * 8.57142857142857) + (0.333 * 8.57142857142857) +$$
$$(0.2 * 8.57142857142857) + (1 * 8.57142857142857) +$$
$$(0.75 * 8.57142857142857) + (0.8 * 8.57142857142857) +$$
$$(0.8 * 8.57142857142857) + (0.75 * 8.57142857142857) +$$
$$(0.8 * 8.57142857142857) + (0.75 * 8.57142857142857) +$$
$$(1 * 8.57142857142857) + (1 * 8.57142857142857) +$$
$$(0.75 * 8.57142857142857) + (1 * 8.57142857142857) +$$
$$(0.75 * 8.57142857142857) = 46.98$$
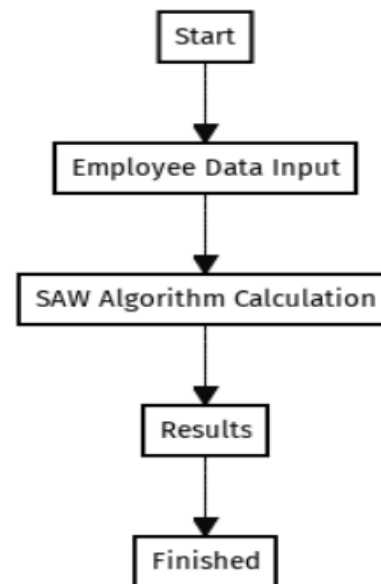
The ranking results can be seen in Table 12

Fig. 4   System Flowchart

Table 12   Ranking Results

Alternative	Name	Total	Rank
A2	Tumiran	96.29	1
A3	Tarmin	88.12	2
A4	Ibnu mundir	70.67	3
A5	Dy kasturi	70.48	4
A6	Hari adi aksono	59.98	5
A1	Agus sutoko	46.98	6

From the ranking results table above, the results of the KCP Leader performance assessment rankings from 1st to 6th are as follows: A2 (Tumiran), A3 (Tarmin), A4 (Ibnu Mundir), A5 (DY Kasturi), A6 (Hari Adi Aksono), and A1 (Agus Sutoko).

3.2   Discussion and Results of System Calculations. At this stage, the author uses a MySQL database and premiumsoft navicat to process data on the performance assessment of the leaders of KSPPS Tunas Artha Mandiri Nganjuk Branch using the SAW method. The steps are as follows:

3.2.1   System Flow Design. Figure 4 explains that employee data and assessment data will be inputted into the MySQL database. After the data is entered, the SAW algorithm calculation process will be carried out and produce a ranking of the KCP leader's performance assessment.

3.2.2   Database Design. The database design can be seen in the following Figure 5.

3.2.3   System Implementation. In the implementation stage, we use Premium Navicat to conduct the data input process and performance assessment of the Head of the Assistant Branch Office (KCP) of KSPPS Tunas Artha Mandiri Nganjuk Branch by implementing the Simple Additive Weighting (SAW) method. The implementation process is carried out through the following steps:

Data Input. The data input process includes filling in Employee Data and Leader Assessment Data. The data is initially prepared in Excel file format, then converted into a file with CSV (Comma

Table 5   Alternatives

Alternatif (Ai)	Name	Date of Entry	Office	Position
A1	Agus Sutoko	2004-02-09	K4 Tanjunganom	Leader
A2	Tumiran	1989-04-17	K4 Bagor	
A3	Tarmin	1984-07-11	K4 Berbek	
A4	Ibnu Mundir	1987-07-10	K4 Nganjuk	
A5	Dy Kasturi	1989-05-20	Tunas Motor	
A6	Hari Adi Aksono	2016-01-05	BMT	

Table 6   Initial Data on Target Achievement

Alternative	C1	C2	C3	C4	C5	C6	C7
A1	-88.14	-363.52	-73.68	(2.50)	0.12	0.22	0.79
A2	177.1	415.58	106.25	2.5	0.03	0.11	1.68
A3	192.24	198.92	200	-	0.05	0.13	3.87
A4	57.19	746.86	(9.52)	(1.43)	0.07	0.20	1.32
A5	-24.94	1425.06	180	11	0.08	0.18	-2.72
A6	124.45	51.55	27.23	-	0.07	0.28	(1.38)

Table 7   Initial Data on Target Experience and Work Culture

Alternative	C8	C9	C 10	C 11	C 12	C 13	C 14	C 15	C 16	C 17	C 18	C 19
A1	MLS	MMS	MLS	MLS	MMS	MLS	MMS	MLS	MLS	MMS	MLS	MMS
A2	MLS	MLS	MLS	JMS	MLS	MMS	MLS	MLS	MLS	MLS	MLS	MLS
A3	MLS	MLS	MLS	MLS	MLS	JMS	MLS	MLS	MLS	MLS	MLS	MMS
A4	MLS	MLS	JMS	MLS	MLS	MLS	MLS	MLS	MLS	MLS	MLS	MLS
A5	MMS	MLS	MMS	MLS	MMS	MMS	MMS	MLS	MLS	MLS	MLS	MMS
A6	MLS	MMS	MMS	MLS	MMS	MLS	MLS	MLS	MLS	MMS	MLS	MLS

Table 8   Alternative Results of Target Achievement

Alternative	C1	C2	C3	C4	C5	C6	C7
A1	1	1	1	1	1	1	1
A2	5	5	4	5	5	3	5
A3	5	5	5	1	5	2	5
A4	1	5	1	1	4	1	5
A5	1	5	5	5	3	1	1
A6	5	1	1	1	4	1	1

Table 9   Alternative Results of Target Experience and Work Culture

Alternative	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
A1	4	3	4	4	3	4	3	4	4	3	4	3
A2	4	4	4	5	4	3	4	4	4	4	4	4
A3	4	4	4	4	4	5	4	4	4	4	4	3
A4	4	4	5	4	4	4	4	4	4	4	4	4
A5	3	4	3	4	3	3	3	4	4	4	4	3
A6	4	3	3	4	3	4	4	4	4	3	4	4

Table 10   Results of Normalization of Target Achievement

Alternative	C1	C2	C3	C4	C5	C6	C7
A1	0.2	0.2	0.2	0.2	0.2	0.33	0.2
A2	1	1	0.8	1	1	1	1
A3	1	1	1	0.2	1	0.67	1
A4	0.2	1	0.2	0.2	0.8	0.33	1
A5	0.2	1	1	1	0.6	0.33	0.2
A6	1	0.2	0.2	0.2	0.8	0.33	0.2

Table 11   Results of Normalization of Target Experience and Work Culture

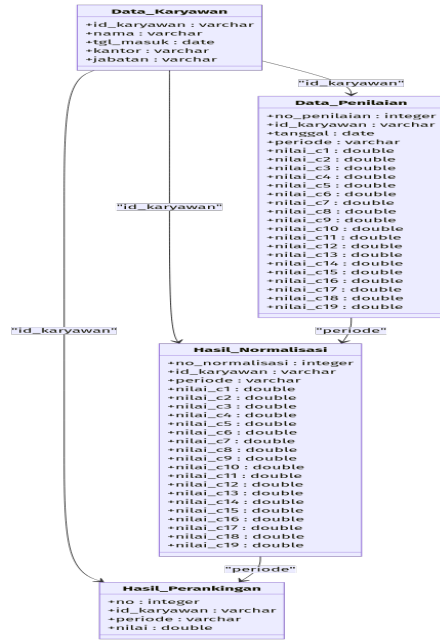| Alternative	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
A1	1	0.75	0.8	0.8	0.75	0.8	0.75	1	1	0.75	1	0.75
A2	1	1	0.8	1	1	0.6	1	1	1	1	1	1
A3	1	1	0.8	0.8	1	1	1	1	1	1	1	0.75
A4	1	1	1	0.8	1	0.8	1	1	1	1	1	1
A5	0.75	1	0.6	0.8	0.75	0.6	0.75	1	1	1	1	0.75
A6	1	0.75	0.6	0.8	0.75	0.8	1	1	1	0.75	1	1

Fig. 5   Database Design

```
mysql> LOAD DATA INFILE 'D:\Lampiran Data Karyawan.csv'
INTO TABLE data_karyawan
FIELDS TERMINATED BY ','
ENCLOSED BY '"'
LINES TERMINATED BY '\n'
IGNORE 1 ROWS;
Query OK, 6 rows affected
Records: 6  Deleted: 0  Skipped: 0  Warnings: 0
```

Fig. 6   Employee Data Input

Separated Values) format. This CSV file is then uploaded and entered into a MySQL database using Premium Navicat.

1) The steps taken include: 2) Prepare an Excel file containing employee data and assessment data. 3) Convert the Excel file to CSV format to be compatible with the MySQL database. 4) Import the CSV file into the relevant table in the MySQL database. 5) Verify the inputted data to ensure its completeness and accuracy.

This process is documented with screenshot illustrations in Figures 6, 7, and 8 which show the technical steps from filling in to storing data into the database. This stage ensures that all required data is available and ready to be used in the analysis and calculation of the assessment using the SAW method.

SAW method calculation process. This calculation process uses a Stored Procedure named procHitSAW in the MySQL database with the following pseudocode.:

Then the command is executed with the period parameter '202210" in Figure 9 and the results are in Figure 10.

```
mysql>
mysql> select * from data_karyawan;
+-------------+----------------+------------+----------------+----------+
| id_karyawan | nama           | tgl_masuk  | kantor         | jabatan  |
+-------------+----------------+------------+----------------+----------+
| 001         | AGUS SUTOKO    | 2004-02-09 | K4 TANJUNGANOM | pimpinan |
| 002         | TUMIRAN        | 1989-04-17 | K4 BAGOR       | pimpinan |
| 003         | TARMIN         | 1984-07-11 | K4 BERBEK      | pimpinan |
| 004         | IBNU MUNDIR    | 1987-07-10 | K4 NGANJUK     | pimpinan |
| 005         | DY KASTURI     | 1989-05-20 | TUNAS MOTOR    | pimpinan |
| 006         | HARI ADI AKSONO| 2016-01-05 | BMT            | pimpinan |
+-------------+----------------+------------+----------------+----------+
6 rows in set
mysql>
mysql>
```

Fig. 7   Employee Data Input Results

```
mysql>
mysql> LOAD DATA INFILE 'D:\Lampiran Rekap Hasil Penilaian KCP Bulan Oktober 2022.csv'
INTO TABLE data_penilaian
FIELDS TERMINATED BY ','
ENCLOSED BY '"'
LINES TERMINATED BY '\n'
IGNORE 1 ROWS;
Query OK, 6 rows affected
Records: 6  Deleted: 0  Skipped: 0  Warnings: 0

mysql>
```

Fig. 8   Assessment Data Input

Algorithm 1 SAW Assessment System

1: **/* Program to calculate SAW Assessment System */**
2: **/* Stored Procedure Name: procHitSAW */**
3: Declare variable xIdKary as string;
4: Declare variables bobot_c1, bobot_c2, ..., bobot_cN, max_nilai_c1, max_nilai_c2, ..., max_nilai_cN, nilai_c1, nilai_c2, ..., nilai_cN as double or integer;
5: Initialize variables bobot_c1, bobot_c2, ..., bobot_cN with criteria weights from data_indikator table;
6: Initialize variables max_nilai_c1, max_nilai_c2, ..., max_nilai_cN with the maximum value of each criterion in the assessment_data for a certain period;
7: Open connection to database;
8: Perform query to retrieve employee_data and values from assessment_data for a certain period;
9: **for** each row in the query result **do**
10:    Store employee id and values to variables xIdKary, c1_value, c2_value, ..., cN_value;
11:    Calculate normalized value of each criterion:

$$c1\_value/max\_c1\_value, c2\_value/$$
$$max\_c2\_value, ..., cN\_value/$$
$$max\_cN\_value;$$

12:    Calculate final employee value:

$$c1\_weight \cdot c1\_value+$$
$$c2\_weight \cdot c2\_value + ...+$$
$$cN\_weight \cdot cN\_value;$$

13:    Store final value into database in ranking_result table for the certain period;
14: Close connection to database;
15: Done.

```
mysql> call procHitSAW('202210');
Query OK, 0 rows affected
```

Fig. 9   SAW method calculation process

```
mysql>
mysql> select * from hasil_perangkingan;
+------+-------------+---------+-------------------+
| no   | id_karyawan | periode | nilai             |
+------+-------------+---------+-------------------+
| 1    | 001         | 202210  | 46.97619047333333 |
| 2    | 002         | 202210  | 96.28571428571422 |
| 3    | 003         | 202210  | 88.11904761333328 |
| 4    | 004         | 202210  | 70.66666666380947 |
| 5    | 005         | 202210  | 70.4761904733333  |
| 6    | 006         | 202210  | 59.97619047333329 |
+------+-------------+---------+-------------------+
6 rows in set
```

Fig. 10   Results of SAW method calculations

```
mysql>
mysql> select * from hasil_perangkingan order by nilai desc;
+-----+------------+---------+--------------------+
| no  | id_karyawan | periode | nilai              |
+-----+------------+---------+--------------------+
|   2 | 002        | 202210  | 96.28571428571422  |
|   3 | 003        | 202210  | 88.11904761333328  |
|   4 | 004        | 202210  | 70.66666666380947  |
|   5 | 005        | 202210  |  70.4761904733333  |
|   6 | 006        | 202210  | 59.97619047333329  |
|   1 | 001        | 202210  | 46.9761904733333   |
+-----+------------+---------+--------------------+
6 rows in set
```

Fig. 11   Results of Ranking Sorting

Fig. 12   Comparison of Reality Results and SAW Confusion Matrix Method

Fig. 13   Determination of TP, TN, FP and FN values

method states "Less Good" or lower. Based on the TP, TN, FP, and FN values listed in Figure 13, the accuracy level of the SAW method can be calculated using a certain formula. The formula allows measuring the accuracy of the calculation in matching the actual results with the results produced by the SAW method:

$$A = (TP + TN)/(TP + TN + FP + FN) \times 100\%$$

$$= \frac{6}{6} \times 100\%$$

$$= 100\%$$

Based on the results obtained, the Simple Additive Weighting (SAW) method shows potential to be further developed as a tool in measuring the performance and achievement assessment of Branch Office Assistant (KCP) Leaders at KSPPS Tunas Artha Mandiri. With a systematic and structured approach, the SAW method is able to provide a more accurate, objective, and efficient evaluation compared to the manual method. This development is expected to support a more transparent and reliable decision-making process, thereby helping to improve the quality of management and performance of KCP leaders as a whole.

4   Conclusion

The assessment of the achievements and performance of the Branch Office Assistant (KCP) Leaders at KSPPS Tunas Artha Mandiri Nganjuk Branch using the Simple Additive Weighting (SAW) method produces a ranking ranging from Alternative 1 to 6 based on predetermined criteria, namely Target Achievement and Work Culture Target Experience. The test results using the confusion matrix show that the level of calculation accuracy with the SAW method reaches 100%, which indicates high accuracy in matching the calculation results with existing reality. With these results, the SAW method has proven to be effective and reliable, so it is worthy of being implemented and further developed in supporting the process of measuring the achievement and performance assessment of KCP Leaders at KSPPS Tunas Artha Mandiri Nganjuk Branch.

SAW Calculation Results. After carrying out the calculation process according to the command above, the calculation results will be stored in the ranking_results table. The results after being sorted are in Figure 11.

3.2.4   Testing using Confusion Matrix. The final results of V and ranking using the SAW method calculation, then tested using the Confusion Matrix method, so that the True Positive (TP), False Positive (FP), True Positive (TP), and False Negative (FN) values are obtained. Confusion matrix testing is carried out by comparing the results of reality (reality) with the results of the SAW method calculation. The comparison of the results of reality (reality) with the results of the SAW method calculation is in Table 10 and 11. The TP, TN, FP, and FN values are presented in Figure 12 and 13. In this case, the symbol Y (Yes) indicates that the results of the comparison of rankings based on reality are in accordance with the rankings according to the SAW method. Conversely, the symbol T (No) indicates that the results of the comparison of rankings between reality and the SAW method are not in accordance. Determining the suitability or non-suitability affects the True Positive (TP), True Negative (TN), False Positive (FP), and False Negative (FN) values. The following is an explanation of each:

a) True Positive (TP): Has a value of Y if the alternative is stated as "Good" or higher, both according to reality and the results of the SAW method calculation.

b) True Negative (TN): Has a value of Y if the alternative is stated as "Less Good" or lower, both according to reality and the results of the SAW method calculation.

c) False Positive (FP): Has a value of Y if the alternative is stated as "Less Good" or lower based on reality, but the results of the SAW method calculation state "Good" or higher.

False Negative (FN): Valued Y if the alternative is stated as "Good" or higher based on reality, but the calculation result of the SAW
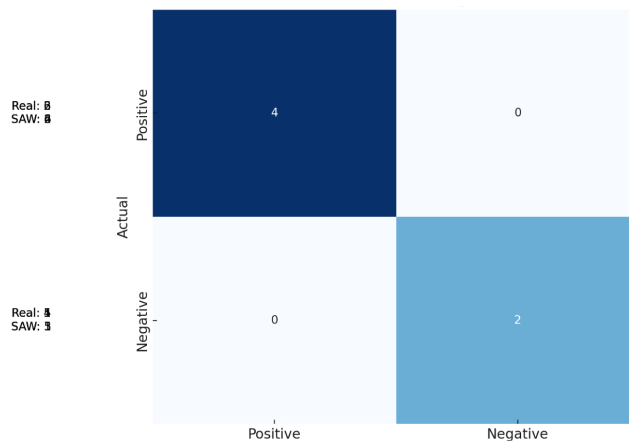
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