

# DECISION SUPPORT SYSTEM FOR NEW EMPLOYEE PLACEMENT ON AN OFFICE DEPARTMENT BY USING SAW FUZZY (CASE STUDY: CV.KENCANA ABADI)

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## ABSTRACT

*CV. KENCANA ABADI is a company engage for sale Castrol Oil in which there are several departments of HRD, accounting, finance & tax (tax), lubricant general manager and IT. During this time to determine the placement of new employees to the appropriate department still using the manual system. So needed a system needs that can be a decision support system for placement of new employees to appropriate departments that help the HRD and GA in order to decide the right position placement for new employees. The model used in this decision support system is Fuzzy Multiple Attribute Decision Making (FMADM). This SAW method is chosen because it determines the weight value for each attribute, followed by a ranking process that will select the best alternative from a number of alternatives. Based on the results of testing HRD departments are eligible received Fajar Ferdhina, the test results of the Finance department, Accounting, Tax Budi Setyawan eligible, the results of testing IT departments eligible Gatot Nugroho, and the results of testing department Lubrican General Manager eligible Imelda Oktavia F.*

**Keywords:** *Fuzzy Multiple Attribute Decision Making (FMADM), SAW.*

## 1. INTRODUCTION

CV. ABADI DISASTER is a company engaged in the sale of lubrol oil in which there are several departments of HRD, accounting, finance & tax (tax), lubricant general manager and IT.

During this time to determine the placement of new employees to the appropriate department still using the manual system. Because, the absence of a program to determine the placement of new employees against which department feasible. Often the problem that occurs is the placement of new employees positions that are not appropriate, resulting in the slow process of work in each department.

The model used in this decision support system is Fuzzy Multiple Attribute Decision Making (FMADM). This SAW method is chosen because it determines the weight value for each attribute, followed by a ranking process that will select the best alternative from a number of alternatives, in this case the alternative in question is the placement of new employees in a decent departmental position.

Based on the above description, then this research can be concluded that the researcher will make a program entitled "Decision Support System of New Employee Placement to Eligible Department using Fuzzy SAW Method (case study: CV KENCANA ABADI)".

## 2. THEORETICAL BASIS

Making (FMADM) is a method used to find the optimal alternative of a number of alternatives of certain criteria. The core of FMADM is to determine the weight value for each attribute, then continue the ranking process to select the alternatives already given. basically, there are 3 approaches to find the value of attribute weights that is subjective, objective and subjective approaches between subjective & objective.

In a subjective approach, the weighting value is determined on the basis of the decision makers so that some alternative ranking factors can be determined freely. Whereas in the objective approach, the weight value is calculated mathematically so that it ignores the subjectivity of decision making. There are several methods that can be used to solve FMADM problems such as:

1. *Simple Additive Weighting (SAW)*
2. *Weighted Product (WP)*
3. *Elimination Et Choix Traduisant la Realite (ELECTRE)*

4. Technique for Order Preference by Similarity to Idea Solution (TOPSIS)
5. Analytic Hierarchy Process (AHP).

SAW (Simple Additive Weighting) is often also known the term addition method weighted. The basic concept of SAW is to find the weighted sum of performance ratings on each alternative on all attributes. The SAW method requires the process of normalizing the decision matrix (X) to a scale comparable to all existing alternative ratings.

$$r_{ij} = \begin{cases} \frac{x_{ij}}{\max x_{ij}} & \text{jika } j \text{ adalah atribut keuntungan (benefit)} \\ \frac{\min x_{ij}}{x_{ij}} & \text{jika } j \text{ adalah atribut biaya (cost)} \end{cases}$$

Information:

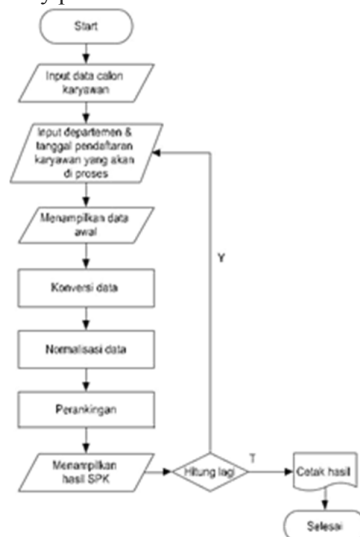
- rij = normalized performance rating value
- xij = attribute value owned by each criterion Max
- xij = the largest value of each criterion i Min
- xij = the smallest value of each criterion i
- benefit = if the largest value is best
- cost = if the smallest value is best where rij is the normalized performance rating of the alternative Ai on the attribute Cj;
- i = 1,2, ..., m and
- j = 1,2, ..., n. Value

preference for each alternative Vi is given as:

$$V_i = \sum_{j=1}^n W_j r_{ij}$$

### 3. SYSTEM DESIGNATION

Flowchart is a depiction a graph of the steps and sequence of procedures of a program. Flowcharts usually facilitate the solving of a problem, especially problems that need to be studied further.



Gambar 3.1 Flowchart Flowchart pada gambar 3.1 di atas

Describes the process flow of new employee placement of the appropriate departments using the Fuzzy SAW method, the first stage is the input of prospective employee data in which there are 8 criteria that is age data, work

experience, education last, communication, leadership, management skills, IQ, and gender that will be processed. Then, enter the date registration and department to display data of prospective employees to be processed. After the data of prospective employees to be processed is displayed, then the data is converted according to the weight that has been determined. The next step, the converted data is normalized. After getting the result of normalization, data then do the ranking by multiplying the result of normalization with the weight of each criterion. After getting the ranking results, then got the results SPK. If you want to count again, then re-enter the registration date and department to recalculate. If you do not want to count anymore, print the results you've got.

**4. CALIBRATION**

Decision Support Systems New Employee Placement Against Appropriate Departments using Fuzzy SAW Methods, system testing apply black-box with endurance testing technique.

Endurance testing is a test case that is repeated with a certain amount in order to evaluate the program whether in accordance with the requirements specification. The testing process is carried out in every department. Test results are as follows:

a. HRD Department



Figure 4.1 Department of HRD

In Figure 4.1 decent employees are Fajar Ferdina Accounting, finance, tax Department



Figure 4.2 Department of accounting, finance, tax

In Figure 4.2 a decent employee is Budi Setiyawan.

b. IT Department



Figure 4.3 IT Department

In Figure 4.3 decent employees are Gatot Nugroho.

c. Lubrican General Manager Department



The screenshot shows a web-based interface for employee management. At the top, there is a search bar with a dropdown menu and a 'Cari' button. Below the search bar, there are two tables displaying employee data. The first table is titled 'Karyawan yang sesuai' and lists employees with their names and scores. The second table is titled 'Karyawan yang tidak sesuai' and lists employees with their names and scores. The data is as follows:

Departemen	Nama Lengkap	Nilai
Karyawan yang sesuai	Fajar Ferdhina	3,50%
	Budi Setyawan	4,50%
	Gatot Nugroho	5,00%
	Imelda Oktavia F.	3,40%
	Imelda Oktavia F.	4,50%
Karyawan yang tidak sesuai	Andi Anggrawan	2,00%
	Bungas Teguh F.	2,00%
	Imelda Oktavia F.	2,00%
	Imelda Oktavia F.	2,00%
	Imelda Oktavia F.	2,00%
	Imelda Oktavia F.	2,00%
	Imelda Oktavia F.	2,00%
	Imelda Oktavia F.	2,00%
	Imelda Oktavia F.	2,00%
	Imelda Oktavia F.	2,00%

Gambar 4.4 Lubrican General Manager Departemen

In Figure 4.4 decent employees are Imelda Oktavia F.

## 5. CONCLUSION

Based on the results of research and discussion that has been done, it can be concluded that:

- New decision support placement system of employees to the appropriate departments in CV. ABADI DESIGN can provide solutions in making the decision-making process as needed.
- From the results of testing HRD department eligible accepted Fajar Ferdhina, the results of testing department of Finance, Accounting, Tax which is acceptable Budi Setyawan. Acceptable IT department testing results received by Gatot Nugroho, and the results of the Lubrican General Manager's department testing eligible for Imelda Oktavia F.
- The application of the Fuzzy Simple Additive Weighting (SAW) method to perform the calculation yields the value according to the needs of CV KENCANA ABADI.

## 6. PREFERENCE

- [1] Anjarwati Sri, Nursekha, (2014), Systems Supporting Decision of YMI Tegal Scholarship Recipient using Fuzzy Multiple Attribute Decision Making.
- [2] Dewi Y.L.W., Rani M.S., Heni Rachmawati, (2011), Decision Support System of Best Employee Determination using SAW (Simple Additive Weighting) Method Case Study PT.Pertamina RU II Dumai.
- [3] Handayani Dian Novita, Fitro Nur Hakim, Achmad Solechan, (2014), Systems Decision Support Support for Election Using Fuzzy Multiple Attribute Decision Making Method with Simple Additive Weighting Method Case Study At Islam High School Sultan Agung 1 Semarang
- [4] Handayani Tri, Wawan Laksito YS, Teguh Susyanto, (2013), Decision Support Support System of Training Scholarship with Fuzzy MADM,
- [5] Kusumadewi Sri, Sri Hartati, Agus Harjoko, Retantyo Wardoyo, (2006), Fuzzy Multi-Attribute Decision Making (FUZZY MADM).
- [6] Son Apriyansah, Dinna Yunika Hardiyanti,(2011), Acceptance Determination Scholarship by using Fuzzy Multiple Attribute Decision Making.
- [7] Rifqi M.M., (2012), Performance Appraisal Employees at IFUN JAYA TEXTILE with Fuzzy Multiple Method Attribute Decision Making.
- [8] Saleh Alfa, Ria Eka Sari, Harris Kurniawan, (2014), Fuzzy Simple Method Additive Weighting (SAW) in determine the quality of snake skin for handwork (study kasus: CV. Asia Exotica Medan).
- [9] Sulistiyo H., (2010), Supporting System Decision to Determine Scholarship recipients in SMA Negeri 6 Pandeglang.
- [10] Verina Wiwi, Yudhi Andrian, Iwan Fitrianto Rahmad, (2015), Implementation Fuzzy SAW Method for
- [11] Acceptance of New Employees (study case: STMIK Potential).
- [12] Wibowo S.H., Riska A., Andi F.M., Kurnia A., (2009), Support System Decision to Determine Scholarship recipients of Bank BRI Using FMADM (study case: Faculty Student University Industrial Technology