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# Evaluation of New Employee Selection using the *Multi Factor Evaluation Process Method*

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**Abstract**

The process of accepting and selecting prospective employees is the earliest process for a company to get quality employees that the company or agency needs. Companies must have criteria for the employees they want. On CV. Adtuil Photocopying in recruiting employees is still less efficient, namely prospective employees still send application files to the company or via expedition delivery. So HRD will have difficulty in selecting prospective employees because they have to record and double-check incoming application files as well as the process of determining the right criteria . Solutions used to overcome problems on CV. Adtuil uses a decision support system for selecting new employees, using the Multi Factor Evaluation Process (MFEP) method. This method is quantitative which uses a weighting system in decision making. Application design using the Vb programming language. Net and MySQL databases that can manage data quickly and accurately. The results of this research show that there were 3 employees who received 10 alternative data, namely A1, A5, A9 with scores > 75. After using this decision support system it can help CV. Adtuil Photocopy in determining employee acceptance precisely, quickly and accurately.

Keywords: Employees, Admissions, , Multi Factor Evaluation Process, Selection



## 1. Introduction

Today's very rapid progress in science and technology has made the need for information one of the main characteristics that is very important in the current era of globalization. This has had a huge influence in various fields both now and in the future , especially in the computer field which has experienced very rapid progress due to demands for the information produced. Currently, the application of technological systems is increasingly developing and starting to spread to various sectors. All activities carried out by a business sector are increasingly inseparable from the influence of technology [1][2]. The impact of the rapid development of technology today, especially in the field of information and computers, means that what is very difficult can actually be done easily and in a short time [3].

On CV. Adtuil Photocopying in recruiting employees is still less efficient, namely prospective employees still send application files to the company or via expedition delivery. So HRD will have difficulty selecting prospective employees because they have to record and double-check incoming application files as well as the process of determining the right criteria. Therefore it really takes a long time.

The aim of this research is to increase the effectiveness and efficiency of management, increase the speed and validity of decision making related to operational activities, and improve the quality of human resources for prospective employees and create a computerized recruitment system to make it easier to process data, search for data and information. vacancies offered for human resources candidates[4][5]. In order to reduce the risk of wrong targets, it is necessary to classify employees in selecting them based on certain criteria that have become standard using a Decision Support System with the Multi Factor Evaluation Process (MFEP) method.

Decision Support Systems are interactive fact systems that provide facts, modeling and data manipulation that are used to assist decision making in semi-structured and unstructured situations [6][7]. The Multi Factor Evaluation Process (MFEP) method is a quantitative method that uses a weighting system in decision making. In this MFEP method, decision makers will weigh factors that have an influence on other choices in a subjective and intuitive manner [8]. In the Multi Factor Evaluation Process (MFEP) method, all criteria that are factors in the consideration are given appropriate weighting, as well as every other method will be given a value against the existing factors, then each other method will be assessed using the following factors. these consideration factors. The alternative that obtains the highest assessment value is the best solution based on the necessary factors that have been selected [9].

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The Multi Factor Evaluation Process (MFEP) method is a quantitative method that uses a weighting system in decision making [10]. In this MFEP method, decision makers will weigh factors that have an important influence on alternative choices subjectively and intuitively. The Multi Factor Evaluation Process (MFEP) method means that all criteria that are important factors in making considerations are given appropriate weighting, likewise each alternative will be given a value against the existing important factors, then an evaluation of each alternative will be carried out in relation to the factors. these consideration factors [11].

## 2. Research methodology

The research framework is the concept or stages that will be carried out in the research. So that the steps taken by the author in this design do not deviate from the main discussion and are easier to understand, the sequence of research steps will be made systematically so that it can be used as a clear and easy guide for solving existing problems. The research framework that the author carried out in the research can be depicted in Figure 1.

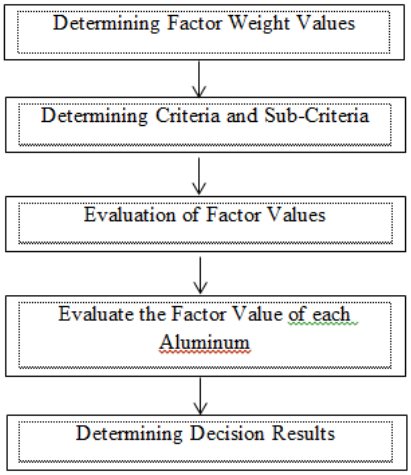



Figure 1. Research Framework

The calculation process using the MFEP method is: Determining factors and factor weights where the total weighting must be equal to 1 (Σ weighting = 1), namely factor weight. Fill in a value for each factor that influences decision making from the data to be processed . The value entered in the decision making process is an objective value, which is definitely an evaluation factor whose value is between 0 -1. The weight evaluation calculation process is the process of calculating the weight between the weight factor and the evaluation factor by adding up all the results of the weight evaluations to obtain the total evaluation results.

Calculation of evaluation weight values:

$$Nbe = Nbf \; x \; Nef$$

Information :
Nbe = Evaluation Weight Value
Nef = Factor Evaluation Value
Nbf = Factor Weight Value

Calculation of the total evaluation value

$$Tne = Nbe1 + Nbe2 + Nbe3$$

Information :
Tnb = Total evaluation value
Nbe = Evaluation weight value

## 3. Results and Discussion

MFEP is a quantitative method that uses a weighting system. In multifactor decision making, subjectively and intuitively weighing various factors that have an important influence on the available alternative choices. For decisions that have a strategic impact, it is more advisable to use a quantitative approach such as MFEP. In MFEP, first of all, all criteria that are important factors in making considerations are given appropriate weighting. The same steps are also taken for the alternatives to be selected, which can then be evaluated in relation to these consideration factors. The MFEP method determines that the alternative with the highest value is the solution.

Table. 1. Criteria and Factor Weights

| Code | Criteria | Percentage | Weight |
|---|---|---|---|
| K1 | Education | 25% | 0.25 |
| K2 | Work experience | 25% | 0.25 |
| K3 | Age | 10% | 0.1 |
| K4 | Interview | 15% | 0.15 |
| K5 | Skills/Abilities | 25% | 0.25 |
| | **Total** | **100%** | **1** |

The table above is a table that presents the criteria and factor weights used in an evaluation or decision making. Each criterion has a unique code, a brief description, a percentage contribution to the overall evaluation, and an appropriate weight. With the table above, you can understand the factors considered in an evaluation or decision making, as well as the weight given to each factor to determine their relative contribution to the final result. Furthermore, the criteria and weights table is divided into each value of the criteria, which can be seen in Table 2 below

Table. 2. Range of each Criteria

| No | Code | Criteria | Information | Mark |
|---|---|---|---|---|
| 1 | K1 | Education | elementary school | 40 |
| | | | JUNIOR HIGH SCHOOL | 60 |
| | | | SENIOR HIGH SCHOOL | 80 |
| | | | D3-S1 | 100 |

| No | Code | Criteria | Information | Mark |
|---|---|---|---|---|
| 2 | K2 | Work experience | Never | 50 |
| | | | 1-2 Years | 75 |
| | | | >2 Years | 100 |
| 3 | K3 | Age | >35 | 20 |
| | | | 30-35 | 40 |
| | | | 25-29 | 60 |
| | | | 20-24 | 80 |
| | | | 19 | 100 |
| 4 | K4 | Interview | Not smooth | 40 |
| | | | Not that smooth | 60 |
| | | | Fluent | 100 |
| 5 | K5 | Skills/Abilities | Can't | 20 |
| | | | Photocopy & Volume | 60 |
| | | | Computers & Copy/ Computers & Volumes | 80 |
| | | | Computers, Photocopying & Binding | 100 |

The table above presents the range of values or categories for each criterion used in an evaluation or assessment. With the table above you can classify individuals or objects based on established criteria, as well as understand where they are in the context of the range of values given for each criterion.

Table. 3. Alternative Table

| Code | Alternative |
|---|---|
| A1 | Chairannisa |
| A2 | Imam Maulana |
| A3 | Heru Saputra |
| A4 | Annisa Mega |
| A5 | Yudi Arif Wiratama |
| A6 | Diana Sartika |
| A7 | Wahidah Rahma |
| A8 | Rizki Tanjung |
| A9 | Arya Miranda |
| A10 | Andy |

The table above is an alternative table, namely prospective employees who will be selected based on predetermined criteria. There are 10 alternatives that will be used in testing this decision support system. Next, the value of each alternative will be displayed based on the criteria they meet to apply.

Table. 4. Criteria and Factor Weights

| Code | Criteria | | | | |
|---|---|---|---|---|---|
| | K1 | K2 | K3 | K4 | K5 |
| A1 | SENIOR HIGH SCHOOL | 2 Years | 23 | Fluent | Computers & Copy/ Computers & Volumes |
| A2 | SENIOR HIGH SCHOOL | Never | 26 | Not that smooth | Photocopy & Volume |
| A3 | SENIOR HIGH SCHOOL | Never | 22 | Not that smooth | Photocopy & Volume |
| A4 | SENIOR HIGH SCHOOL | Never | 21 | Not that smooth | Photocopy & Volume |
| A5 | S1 | Never | 24 | Fluent | Computers & Copy/ Computers & Volumes |
| A6 | SENIOR HIGH SCHOOL | Never | 21 | Not that smooth | Computers & Copy/ Computers & Volumes |
| A7 | SENIOR HIGH SCHOOL | Never | 22 | Not that smooth | Photocopy & Volume |
| A8 | SENIOR HIGH SCHOOL | Never | 24 | Not that smooth | Photocopy & Volume |
| A9 | S1 | Never | 23 | Fluent | Computers & Copy/ Computers & Volumes |
| A10 | SENIOR HIGH SCHOOL | Never | 22 | Not that smooth | Photocopy & Volume |

The table above will be converted into values, which can be seen in Table 5 below:

Table. 5. Assessment of each criterion for each alternative

| Code | Criteria | | | | |
|---|---|---|---|---|---|
| | K1 | K2 | K3 | K4 | K5 |
| A1 | 80 | 75 | 80 | 100 | 80 |
| A2 | 80 | 50 | 60 | 60 | 60 |
| A3 | 80 | 50 | 80 | 60 | 60 |
| A4 | 80 | 50 | 80 | 60 | 60 |
| A5 | 100 | 50 | 80 | 100 | 80 |
| A6 | 80 | 50 | 80 | 60 | 80 |
| A7 | 80 | 50 | 80 | 60 | 60 |
| A8 | 80 | 50 | 80 | 60 | 60 |
| A9 | 80 | 50 | 80 | 100 | 80 |
| A10 | 80 | 50 | 80 | 60 | 60 |

The following is the process of calculating *the weight evaluation* from each prospective new employee's data as follows:

1. Chairannisa = (0.25 x 80) + (0.25 x 75) + (0.1 x 80) + (0.15 x 100) + (0.25 x 80)= 81.75
   The calculation results for Chariannisa employees have a value of 81.75, which means Accepted.

2. Imam Maulana = (0.25 x 80) + (0.25 x 50) + (0.1 x 60) + (0.15 x 60) + (0.25 x 60)= 62.50
   The calculation results for Imam Maulana employees have a value of 62.50, which means Failed.

3. Heru Saputra = (0.25 x 80) + (0.25 x 50) + (0.1 x 80) + (0.15 x 60) + (0.25 x 60)= 64.50
   The calculation results for Heru Saputra employees have a value of 64.50, which means Failed.
4. Annisa Mega = (0.25 x 80) + (0.25 x 50) + (0.1 x 80) + (0.15 x 60) + (0.25 x 60)= 64.50
   The calculation results for Annisa Mega employees have a value of 64.50, which means Failed.

5. Yudi Arif Wiratama = (0.25 x 100) + (0.25 x 50) + (0.1 x 80) + (0.15 x 100) + (0.25 x 80)= 80.50
   The calculation results for employee Yudi Arif Wiratama have a score of 80.50, which means Pass.

6. Diana Sartika = (0.25 x 80) + (0.25 x 50) + (0.1 x 80) + (0.15 x 60) + (0.25 x 80)= 69.50
   The calculation results for employee Diana Sartika have a value of 69.50, which means Failed.

7. Wahidah Rahma = (0.25 x 80) + (0.25 x 50) + (0.1 x 80) + (0.15 x 60) + (0.25 x 60)= 64.50
   The calculation results for employee Wahidah Rahma have a value of 64.50, which means Failed.

8. Rizky Tanjung = (0.25 x 80) + (0.25 x 50) + (0.1 x 80) + (0.15 x 60) + (0.25 x 60)= 64.50
   The calculation results for Rizky Tanjung employees have a value of 64.50, which means Failed.

9. Arya Miranda = (0.25 x 80) + (0.25 x 50) + (0.1 x 80) + (0.15 x 100) + (0.25 x 80)= 80.50
   The calculation results for Arya Miranda employees have a score of 80.50, which means Pass.

10. Andy = (0.25 x 80) + (0.25 x 50) + (0.1 x 80) + (0.15 x 60) + (0.25 x 60)= 64.50
    The calculation results for employee Andy have a value of 64.50, which means Failed.

Employees are said to meet the requirements to become new rich if the total score is above 75 then they pass and below 75 they do not pass. The decision-making results of 10 prospective new employees can be seen in Table 6

Table. 6. Criteria and Factor Weights

| Code | Total value | Decision |
|---|---|---|
| A1 | 81.75 | Accepted |
| A2 | 62.50 | Rejected |
| A3 | 64.50 | Rejected |
| A4 | 64.50 | Rejected |
| A5 | 80.50 | Accepted |
| A6 | **69.50** | Rejected |
| A7 | **64.50** | Rejected |
| A8 | **64.50** | Rejected |
| A9 | **80.50** | Accepted |
| A10 | **64.50** | Rejected |

The results of evaluation or decision making regarding several of the alternatives above have been obtained based on the MFEP method calculations and ranked in Table 6 below.

Table. 6. Criteria and Factor Weights

| Code | Alternative name | Total value | Decision |
|---|---|---|---|
| A1 | Chairannisa | 81.75 | Accepted |
| A9 | Arya Miranda | **80.50** | Accepted |
| A5 | Yudi Arif Wiratama | 80.50 | Accepted |
| A6 | Diana Sartika | **69.50** | Rejected |
| A8 | Rizki Tanjung | **64.50** | Rejected |
| A7 | Wahidah Rahma | **64.50** | Rejected |
| A10 | Andy | **64.50** | Rejected |
| A4 | Annisa Mega | 64.50 | Rejected |
| A3 | Heru Saputra | 64.50 | Rejected |
| A2 | Imam Maulana | 62.50 | Rejected |

So, the results for calculating the acceptance value of employees who passed were 3 employees out of 10 prospective employee data.

3.1 System Interface Testing

1. Calculation Process Data Page Display

On the Calculation Process Data page, the admin must first select the Process Data menu on the Main menu in order to enter the Calculation Process Data menu. In this menu, the Employee Value Data that has been entered will be processed by the MFEP assessment method so that admin/leadership can see who the best employees are.

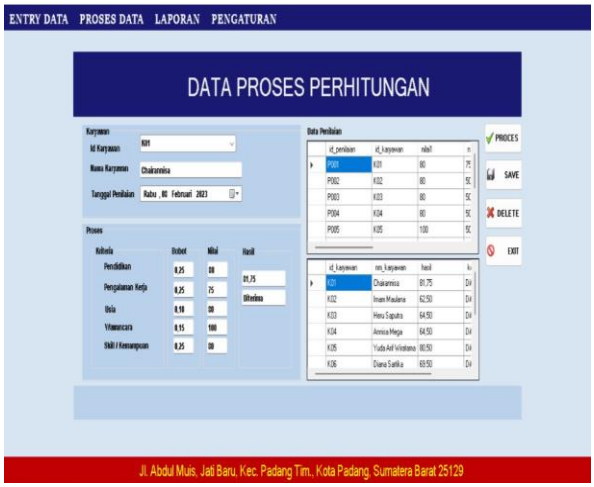
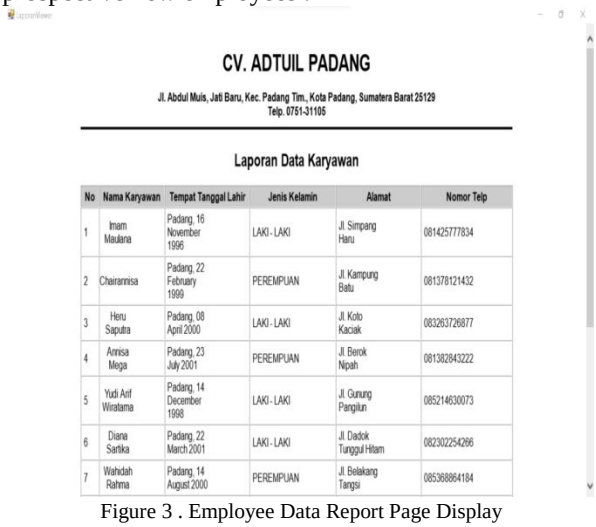



Figure 2 . Calculation Process Data Page Display

2. Employee Data Report Page Display

The Employee Data Report is a report of Employee Data that has been entered in the Employee Data menu, employee data contains Employee Name, Place, Date of Birth, Gender, Address and Telephone Number of prospective new employees .


CV. ADTUIL PADANG

Jl. Abdul Muis, Jati Baru, Kec. Padang Tim., Kota Padang, Sumatera Barat 25129
Telp. 0751-31105

Laporan Data Karyawan

| No | Nama Karyawan | Tempat Tanggal Lahir | Jenis Kelamin | Alamat | Nomor Telp |
|---|---|---|---|---|---|
| 1 | Imam Maulana | Padang, 16 November 1996 | LAKI-LAKI | Jl. Simpang Haru | 081425777834 |
| 2 | Chairannisa | Padang, 22 Februany 1999 | PEREMPUAN | Jl. Kampung Batu | 081378121432 |
| 3 | Heru Saputra | Padang, 08 April 2000 | LAKI-LAKI | Jl. Koto Kaciak | 083263726877 |
| 4 | Annisa Mega | Padang, 23 July 2001 | PEREMPUAN | Jl. Berok Nipah | 081382843222 |
| 5 | Yudi Arif Wiratama | Padang, 14 December 1998 | LAKI-LAKI | Jl. Gunung Pangilun | 085214630073 |
| 6 | Diana Sartika | Padang, 22 March 2001 | LAKI-LAKI | Jl. Dadok Tunggul Hitam | 082302254266 |
| 7 | Wahidah Rahma | Padang, 14 August 2000 | PEREMPUAN | Jl. Belakang Tangsi | 085368864184 |

Figure 3 . Employee Data Report Page Display

3. Decision Result Report Page Display

On the Decision Result Report Page, employee values that have been processed in the Calculation Process Data menu will be printed like a report containing Employee ID, Employee Name, Total Value and CV Data Results. Adtuil Padang. You can see the score or value of each employee that has been previously entered in the Calculation Process Data menu.

CV. ADTUIL PADANG

Jl. Abdul Muis, Jati Baru, Kec. Padang Tim., Kota Padang, Sumatera Barat 25129
Telp. 0751-31105

Laporan Hasil Keputusan

Tahun : 2023

| Rank | ID Karyawan | Nama Karyawan | Total Nilai | Hasil Data CV. Adtuil Padang |
|---|---|---|---|---|
| 1 | K01 | Cheiranniisa | 81.75 | Diterima |
| 2 | K09 | Anya Miranda | 80.50 | Diterima |
| 3 | K05 | Yuda Arif Wiratama | 80.50 | Diterima |
| 4 | K06 | Diana Sartika | 69.50 | Ditolak |
| 5 | K08 | Rizky Tanjung | 64.50 | Ditolak |
| 6 | K07 | Wahidah Rahma | 64.50 | Ditolak |
| 7 | K10 | Andy | 64.50 | Ditolak |
| 8 | K04 | Annisa Mega | 64.50 | Ditolak |
| 9 | K03 | Heru Saputra | 64.50 | Ditolak |
| 10 | K02 | Imam Maulana | 62.50 | Ditolak |

Figure 4 . Decision Result Report Page Display

## 4. Conclusion

Based on research that has been carried out in selecting new employees using the Multi Factor Evaluation Process (MFEP) method, it can overcome semi-structured problems to help CV. Adtuil Photocopy in selecting new employees, so that decisions can be made quickly and accurately. As a result, of the 10 alternatives tested using the MFEP method, 3 alternatives were accepted and 7 were rejected.

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