

Calculating System for Poor Student Assistance (BSM) Using the MFEP (Multi Factor Evaluation Process)

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Abstract

SMA Negeri 2 Muara Beliti was a secondary school establishment that was occupied with understudy undertakings and gives a few grants, one of which is a grant program for the oppressed by using the SIC (Smart Indonesian Card). Up to this point, the understudy office has experienced issues in deciding understudies who were qualified for grants and appears to be abstract in its appraisal disregarding different prerequisites, bringing about disparity in the granting of grants. The motivation behind this exploration is to assemble a choice emotionally supportive network by utilizing the Multi Factor Evaluation Process technique to help the most common way of computing possibility for getting help for helpless understudies. the Multi Factor Evaluation Process technique which has measures like KIP, Student Values, Parental Income, Parental Ownership, Personality, and Dependents. Old. The consequence of this exploration was making by this framework, it can help the appraisal group figure out which understudies were *qualified to get the Poor Student Assistance (BSM) as per the rules set*.

Keywords: Decision Support System; Multi Factor Evaluation Process; Smart Indonesian Card

1. Introduction

The progress of innovation in the digital era is now developing and advancing, seen by the development of innovation use in our daily lives, besides that humans as internet users constantly improve the progress of a system itself, so that each can run well and productive.

In its implementation there were irregularities where students with financially able but seek support and who cannot get support until now there was no application to determine the ideal model, so many steps have been missed to get help. It takes remote and precise data with the right structuring strategy. One of the data that can use the Decision Support System as an answer was identified by the accessibility of student assistance for not getting a grant, so that an emotionally supportive network option was needed by utilizing the coordination profile. In the selection process using a decision support system based on information technology, it requires accurate techniques to be used in the process of handling existing information.

From the background that has been explained, the identification of the problem was as follows:

- a. Create a system like what can be used by SMA Negeri 2 MuaraBelitidi in managing data on prospective recipients of poor student assistance so that data processing was shorter.
- b. How to create a system that can be used by SMA Negeri 2 MuaraBeliti to analyze potential recipients of aid quickly for poor students, so as to improve the performance of SMA Negeri 2 MuaraBeliti.

Based on the existing problems, problem solving must be formulated, they were:

1. How to Determine Criteria for Recipients of poor Student Assistance (BSM) at SMA Negeri 2 MuaraBeliti?
2. How to Apply the Multi Factor Evaluation Process Method in Determining Poor Student Assistance (BSM) Recipients at SMA Negeri 2 MuaraBeliti?
3. How to apply the calculation of the Multi Factor Evaluation Process in determining recipients of Poor Student Assistance.

The limitations of the problem in this study were:

1. This system was only to determine the feasibility of receiving Aid for Poor Students at SMA Negeri 2 MuaraBeliti.
2. The method used in this system was Multi Factor Evaluation Process.
3. The criteria used to determine recipients of poor student assistance include: Parental Ownership, Salary, Personality, Parental Dependents, and Values.
4. Designing a System that can select data on prospective recipients of poor student assistance based on criteria. As a means of knowledge that was applied to assist the beneficiary acceptance.

1.1 Objectives

1. To determine Criteria for Recipients of poor Student Assistance (BSM) at SMA Negeri 2 MuaraBeliti?
2. To Apply the Multi Factor Evaluation Process Method in Determining Poor Student Assistance (BSM) Recipients at SMA Negeri 2 MuaraBeliti?
3. To apply the calculation of the Multi Factor Evaluation Process in determining recipients of Poor Student Assistance.

2. Literature Review

. The importance of the government's role in education aspect for underprivileged students. According to Jogiyanto (2009) the system is a collection of components that were interconnected with one another to form a single unit to achieve certain goals.

According to Kusri (2007), DSS was an interactive information system that provides information, modeling, and manipulating data. According to Alter, DSS was used to assist decision making in semi-structured and unstructured situations where no one knows for sure how decisions should be made.

To overcome economic disparities, the Indonesian government has made a policy of providing social assistance (BANSOS) for the Indonesian population. The definition of social assistance was provision of assistance in the form of money/goods from local governments to individuals, families, groups and/or communities that are not continuous and selective in nature which aims to protect against possible social risks (source: Wikipedia). Meanwhile, the definition of social assistance according to the Regulation of the Minister of Finance Number 254/PMK.05/2015 concerning Social Aid Expenditures at State Ministries/Institutions was expenditure in the form of transfers of money, goods or services provided by the Government to the poor or unable to protect the community from possible occurrences. Social risk, increase economic capacity and/or community welfare.

3. Methods

According to Diwanda (2016) The Multifactor Evaluation Process (MFEP) method was a quantitative method that uses a weighting system in decision making. Decision making was done subjectively and intuitively by considering various factors that have an important influence on alternative choices. The MFEP (*Multi Factor Evaluation Process*) method was a method that was fundamental to the development of methods in the *Decision Support System*. The technique of solving this method by subjective and intuitive assessment of indicators or factors causing a problem that is considered important. These considerations were giving a weighting system based on a priority scale based on the level of importance.

The algorithm for solving this method were:

- Step 1: First define the criteria or factors that cause problems and Their weights
- Step 2: Calculate the Evaluation Weight Value (NBE):
- Step 3: Calculate the Total Evaluation Weight (TBE)
- Step 4: Perform ranking for a decision.

The formula used to calculate the NBE value in the MFEP (Multi Factor Evaluation Process) Method was:

$$NBE = NBF * NEF \dots\dots\dots []$$

Description:

NBE = Evaluation Weight Value

NBF = Factor Weight Value

NEF = Factor Evaluation Value

And the formula used to calculate the TBE value in the MFEP (Multi Factor Evaluation Process) method was :
 $TBE = NBE1 + NBE2 + NBE3 + \dots + NBE_n$[]

Note:

Evaluation

NBE Evaluation Weight Value

In order for us to understand better from the explanation of this method, the following was an example of a question from the MFEP (Multi Factor Evaluation Process) Method.

4. Results And Discussion

In this study, 5 students from SMA Negeri 2 MuaraBeliti were recommended to get Aid for Poor Students (BSM) in School.

4.1 Numerical Results

Table 1: Criteria and Factor Weights (NBF)

No	Name Criteria	Value Weight
1	Parental Ownership	0.45
2	Salary	0.25
3	Personality	0.15
4	Parental Dependents	0.1
5	Value	0.05

From the table above a description of criteria and weights of the recommended students according to the existing criteria, namely based on Parental Ownership, Salary, Personality, Parental Dependents and Values. Each criterion has been assigned a weighted value.

Table 2: Consumer Assessment Results or Evaluation Factor (NEF)

No	Name Criteria	BayuAnggara	PutriAyu	Yolanda Putri	M. Raffa	Santika
1	Parental Ownership	9	7	8	6	7
2	Salary	7	8	7	7	5
3	Personality	8	6	9	8	7
4	Dependents Parents	3	5	2	1	3
5	Scores	8	8	8	8	8

Second table shows the results of Consumer Assessment or Evaluation Factor of 5 potential beneficiaries.

1. Calculating the Evaluation Weight Value (NBE) and Total Evaluation Weight (TBE) from BayuAnggara alternative

Table 3: Evaluation Weight Value (NBE) from BayuAnggara

No	Name Criteria	NBF	NEF	NBE
1	Parental Ownership	0.45	9	4.05
2	Salary	0.25	7	1.75
3	Personality	0.15	8	1.2
4	Dependent Parents	0.1	3	0.3
5	Value	0.05	8	0.4
Then TBE of the BayuAnggara type				7.7

In table 3 is the value of Evaluation Weight (NBE) from BayuAnggara with a total of 7.7

2. Calculating the Evaluation Weight (NBE) and Total Evaluation Weight (TBE) from PutriAyu's alternatives W

Table 4: Evaluation Weight Score (NBE) from PutriAyu

No	Name Criteria	NBF	NEF	NBE
1	Parental Ownership	0.45	7	3.15
2	Salary	0.25	8	2
3	Personality	0.15	6	0.9
4	Parental Dependents	0.1	5	0.5
5	Value	0.05	8	0.4
Then TBE of PutriAyu type W				6.95

In table 4 the value of Evaluation Weight (NBE) of PutriAyu with a total of 6.59

3. Calculating the Evaluation Weight Value (NBE) and Total Evaluation Weight (TBE) from Yolanda Putri alternatives

Table 5: Evaluation Weight Score (NBE) from Yolanda Putri

No	Name Criteria	NBF	NEF	NBE
1	Parental Ownership	0.45	8	3.6
2	Salary	0.25	7	1.75
3	Personality	0.15	9	1.35
4	Dependent Parents	0.1	2	0, 2
5	Value	0.05	8	0.4
Then the TBE of the Yolanda Putri type				7.3

In table 5 the value of Evaluation Weight (NBE) of Yolanda Putri with a total of 7.3

4. Calculating the Evaluation Weight Value (NBE) and Total Evaluation Weight (TBE) From M. Raffa's alternative

Table 6: Evaluation Weight Value (NBE) of M. Raffa

No	Name Criteria	NBF	NEF	NBE
1	Parental Ownership	0.45	6	2.7
2	Salary	0.25	7	1.75
3	Personality	0.15	8	1.2
4	Parental Dependents	0.1	1	0.1
5	Value	0, 05	8	0.4
Then the TBE of the M.Raffa type				6.15

In table 6 the value of Evaluation Weight (NBE) of M.Raffa with a total of 6.15

Table 7: Value of Evaluation Weight (NBE) of Santika

No	Name Criteria	NBF	NEF	NBE
1	Parental Ownership	0.45	7	3.15
2	Salary	0.25	5	1.25
3	Personality	0.15	7	1.05
4	Dependent Parents	0.1	3	0.3
5	Value	0.05	8	0.4
Then TBE of the Santika type				6.15

In table 7 the value of the Evaluation Weight (NBE) of Santika with a total of 6.15

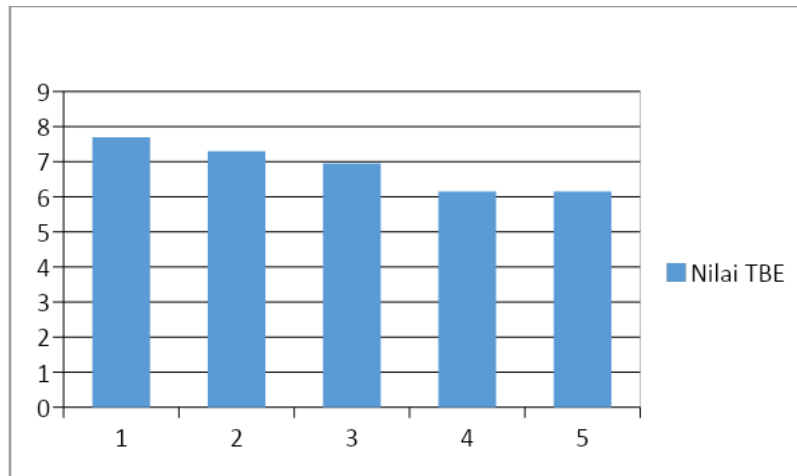
Table 8: Ranking Based on the Total Evaluation Weight (TBE))

No	Alternative Name	Value TBE	Ranking
1	BayuAnggara	7.7	Sequence 1
2	Yolanda Putri	7.3	Sequence 2
3	PutriAyu W	6.95	Sequence 3
4	M.Raffa	6.15	Sequence 4
5	Santika	6.15	Sequence 4

Seen from the highest total with a TBE value of 7.7. So, based on the ranking table above, it was found that BayuAnggara became an alternative to receive Poor Student Assistance (BSM) using the MFEP (*Multi Factor Evaluation Process*) at SMA Negeri 2 MuaraBeliti.

4.2 Graphical Results

The following graph shown, when performing calculations using MFEP (*Multi Factor Evaluation Process*)



4.3 Validation

Table 9: Ranking Based on Total Evaluation Weight (TBE)

No	Alternative Name	Value	TBE
1	BayuAnggara	7.7	Sequence 1
2	Yolanda Putri	7.3	Sequence 2
3	PutriAyu W	6.95	Sequence 3
4	M.Raffa	6.15	Sequence 4
5	Santika	6.15	Sequence 4

From the calculated data, it can be seen that the results were valid because seen from the highest alternative value, the results were obtained.

Conclusion

On the discussion that has been carried out, it can be concluded that the decision support system for poor student assistance recipients (BSM) uses the MFEP(*Multi Factor Evaluation Process*) were:

1. This system can be used to calculate the recipients of the Poor Student Assistance (BSM) MFEP method (*Multi Factor Evaluation Process*) as a method of decision making.
2. By making a decision system like this, it can help the assessment team determine which students were eligible to receive the Poor Student Assistance (BSM) according to the criteria applied.

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Biography

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