Decision Support System Determination for Poor Houses Beneficiary Using Profile Matching Method

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ABSTRACT

The poverty rate in Bireuen were high, it has forced many residents in need of housing assistance, especially to the poor house, considering the number of people who occupy the house uninhabitable. Baitul Mal in Bireuen has also allocated funds for the development of poor houses. But in this case we need a system that can help the performance of the officials to select the people who deserve the poor house. This research will be appointed a case of determining the beneficiary of the poor houses by using the profile matching method based on the criteria that have been determined. The results of the selection process in the form of rankings as a recommendation for the decision to select a worthy candidate and held in accordance with the criteria.

Keywords: Decision support systems, baitu mal, poor houses, profile matching

INTRODUCTION

Decision making requires information that is thorough, accurate, and precise analytical methods. It is important to support the decision-making can be done well and right. Based on the existing information will be able to determine the attitude and making the right decisions to a faced problem, one of the important issues closely related to the information is the information system for selecting beneficiaries candidates for the the poor houses who are in an area.

Baitul Mal Bireuen requires a change in the system from the old system which was queuing system, residents signing up to the Baitul Mal with term and conditions that have been determined Baitul Mal, officer then checks the data and then review the location. The number of people who will receive the poor houses will be selected in the area which amounts to thousands of people so that the selectors really feel difficulty in selecting the nominee holding the poor houses, in order to get the people who really need a poor house in accordance with the terms that have been set.

To assist in the determination of a person's determination would be eligible for aid poor house then takes a decision support system that is using the profile matching. This method was chosen because it is able to select the best alternative from a number of alternatives. Alternatives which meant that the right to receive housing assistance based on criteria that have been determined.

Profile Matching method is the process of comparing individual competencies with the competencies specified so as to know the difference competence (also called gap), the smaller the gap the resulting value is greater than the weight (Kusrini, 2007). Profiles matching will give the final result of the ranking for each competency. The ranking will be the basis for deciding a decision.

RESEARCH METHODS

Stages in the design of decision support systems determining the beneficiaries of poor houses are as follows:

1. Identify the Problem
2. System Requirements Analysis
3. System Design
   a. Design Flow System

      On the Design of Flow Systems DFD designing applications to determine the grooves of the program.
   b. Design Results

      At this stage the application is designed and created with the data - data that has been collected and input into the application. Determined by analyzing the problem, the problem can be well understood.
4. Making Application
5. Testing System

Software Development Methods

Data analysis techniques in making software using the waterfall software paradigm, which includes several processes including: (a) System / Information Engineering is part of the largest system in the execution of a project, begin by setting the various needs of all the necessary elements into the system and allocate decision support systems. (b) The analysis phase is to analyze the data obtained from the Baitul Mal Bireuen for the implementation of decision-making support system. (c) Design Phase translation of the data obtained from the office of Baitul Mal bireuen into a form that is easily understood by the user. (d) Coding is the translation phase of data or solving a problem that has been designed into a particular programming language. (e) Testing is the testing phase of a decision support system is built. (f) Maintenance This stage is the final stage where a decision support system that has been completed can occur implemented changes or additions that are tailored to the user wishes.

Analysis System

From the research and observations made, problems that occur in the office of district Baitul Mal bireuen namely the selection of candidates for the poor is still done manually. Identification of problems is done to find the concepts and theories that can support to solve the existing problems. When the poor recipients submit a request to the clerk file Baitul Mal, Baitul Mal officers to check the completeness of data for the names of candidates submitted to the head of Baitul Mal, hen head of Baitul Mal choosing poor candidates for a decent house and handed back to the officer to immediately check the location to check the condition of the home to determine where the poor house recipients are eligible to receive aid, after obtaining prospective data from the direct inspection, officers submit data to the head of Baitul Mal for mutually agreed Bapel Baitul Mal and Supervisory Board. Distribution of Zakat and infaq Baitul Mal Agency Bireuen attended by Vice Regent, Head of the Office of Religious Affairs, head of banking institutions, the sub district head, as well as a number of the recipient or the recipient's representative.

A decision maker has the responsibility to determine the required standard requirements in the selection of candidates for the poor based on existing provisions. To determine a person's determination to establish a viable receiving aid orphan's home is a decision support system. The method can be used for decision support system by using one matching profile. To solve the problems that occur, it takes a application program that is able to perform all the processes that assist decision makers in determining the candidate receiving the poor house without having to go through the selection process manually.

System Design

In the design of this system is described sequence of processes that occur in the application. Flowchart of the process of matching the profile to be used in the application program. In this matching process takes input profile name of the poor beneficiaries directly obtained from the results of a survey conducted by officers of existing data. Having obtained the data, performed the mapping process competency gaps, which is the excess of the beneficiary candidate profile desired orphans and profiles of candidates who have registered recipients. Then the results obtained from the mapping of the gab will do the weighting value gap. The next step is the process of grouping and calculation of core factors and secondary factor. The results will be the calculation of the total value and the final step is the calculation of ranking candidates.

Mapping Competency Gap

The definition of the gap is the difference between the debates or with the candidates Profile Baitul Mal. Collection gaps that occur in each aspect has a different calculation. Variables and calculation method used in mapping the competency gap consists of several aspects, namely:

a. Home condition, this aspect describes the condition of the poor house recipients; the size of the house, roofs, floors and walls, this aspect is composed of several sub-aspects: (1) The Size of The House; (2) Roof; (3) Floor; (4) Wall.

b. General, this aspect depicts the profile of poor recipients in the form of income, employment, electricity bills; this aspect is composed of several sub-aspects, namely: (1) Income; (2) Employment; (3) Electricity Bills.

c. Personal assets, this aspect remains the property illustrates the poor recipients, this aspect is composed of several sub-aspects, namely: (1) Vehicle; (2) Gardens; (3) Cattle.

d. Household, this aspect describes the nominee poor families if they are eligible or not to accept the poor house, this aspect is composed of several sub-aspects, namely: (1) Marital Status, (2) Number of Dependents.

The process of determining the value of each aspect will be determined by the Baitul Mal, with a range of values ranging from 1-6 (approximately once so good at all). Having obtained the values of these aspects made the calculation process gap between the candidate profile and the profile Baitul Mal. Then the gaps were collected into 2 tables consisting of fields '(-)' to put the sum of the value of the gap is negative and the field '(+)' to the value of the gap is positive.

Table 1. Grades of sub criteria

	Criteria	Grade		Criteria	Grade
	The Size of The House	4	Personal Assets	Vehicle	3
Home Condition	Roof	3		Cattle	4
	Floor	4		Gardens	3
	Wall	4	Household	Marital Status.	3
	Income	4		Number of Dependents	3
General	Employment	3			
	Electricity bills	4			

Value entered in accordance with the conditions necessary Baitul Mal. Having obtained the gap each respective location so each profile name Prospective weighted value of the benchmark.

Calculation and Grouping Core and Secondary Factor

After determining the weighting value gap to four aspects: housing conditions, public, private and household assets in the same way. Then each aspect are grouped into two (2) groups: Core Factor and Secondary Factor. For the calculation of core factor can be shown in the formula below (source literature):

$$NCF = \frac{\Sigma\ NC\ (k,u,a,r)}{\Sigma\ IC}$$

Explanation

NCF: The average value of core factor

NC(k,u,a,r): The total number of core values factor (housing conditions, public, private assets, household)

IC: The number of core items factor

As for the secondary factor calculation can be shown in the formula below (source literature):

$$NCS = \frac{\Sigma\ NS\ (k,u,a,r)}{\Sigma\ IS}$$

Explanation

NSF: The average value of the secondary factor

NS(k,u,a,r): Total number of secondary factors (housing conditions, public, private assets, household)

IS: The number of secondary items factor

Total Value Calculation

From the results of the calculation of each aspect of the above then calculated based on the total value of the presentation of the *core* and the *secondary* is expected to affect the performance of each profile. Example calculations can be seen in the formula below (source literature):

$$N\ (k,u,a,r) = (x)\%NCF(k,u,a,r).(x)\%NSF(k,u,a,r,)$$

Explanation

(k,u,a,r): (housing conditions, public, private assets, household)

N (k,u,a,r): The total value of the aspect

NCF(k,u,a,r): The average value of core factor

NSF(k,u,a,r): The average value of the secondary factor

(x)%: Percent of the entered value

Calculation of Final Determination/Ranking

The end result of this process is the ranking of the candidates who filed for the poor recipients. Determination of the rank refers to the results of a particular calculation. The calculation can be shown in the formula below (source literature):

$$Ha = (x)\%Nk + (x)\%Nu + (x)\%Na + (x)\%Nr$$

Explanation

Ha: Final Results

Nk: The value of the home conditions

Nu: Common Values

Na: Private Asset Value

Nr: The value of household

(x)%: Percent who entered

Table 2. Example Results

No	Name of Candidate	NKR	NU	NAP	NRT	Final Results
1	Andy Bayu	4,2	4,2	4,2	4	4,08
2	Nuraini Abdullah	4,5	4,4	5,6	4,8	4,835
3	Kartika	4,9	5,4	4,8	5,4	5,075

Context Diagram

Context Diagram serves to illustrate the relationship between external entities, input and output system, which is represented by a single circle representing the whole system. *Contex Diagram* determination of a decision support system receiver orphans homes, can be seen in the image below:
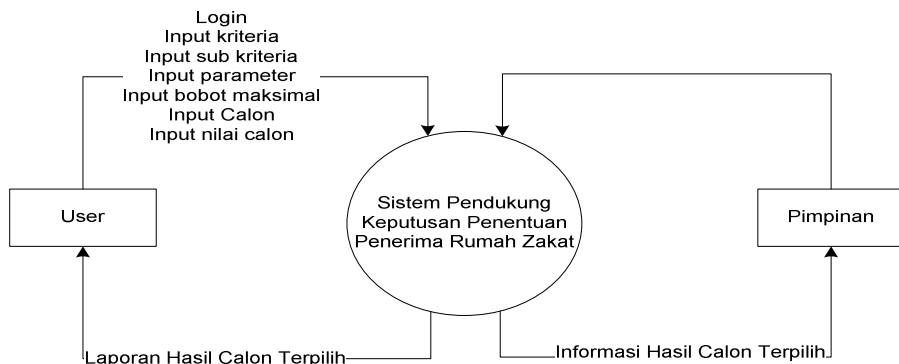
Figure 1. Context Diagram Decision Support System receiver determination orphans home

## ERD (*Entity Relationship Diagram*)
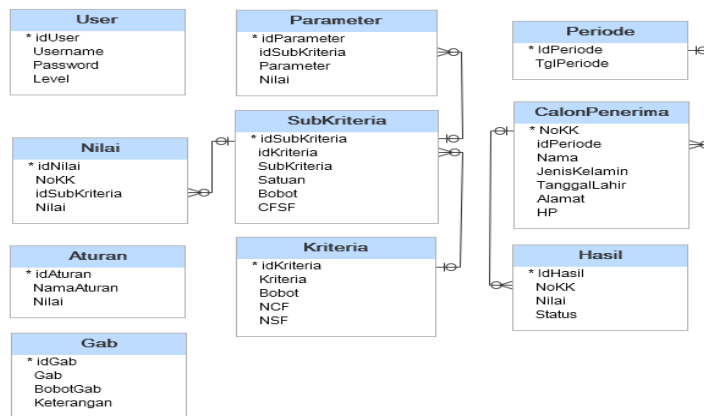
Figure 2. Entity Relationship Diagram Model Crow's foot

Entity Relationship Diagram or ERD used to analyze the table that will be created in the database along with their relationships. For more details, ERD is needed for decision-making system to be built can be seen in the above figure 2.

System implementation

Implementation of the system is the entire modeling process and interface as outlined in a programming language to determine whether the system is run in accordance with needs. The appearance of a decision support system is a poor determination of the receiver as follows:

Figure 3. Main Menu Display System

The menu is a list of criteria aimed to see a list of the criteria used in the system.
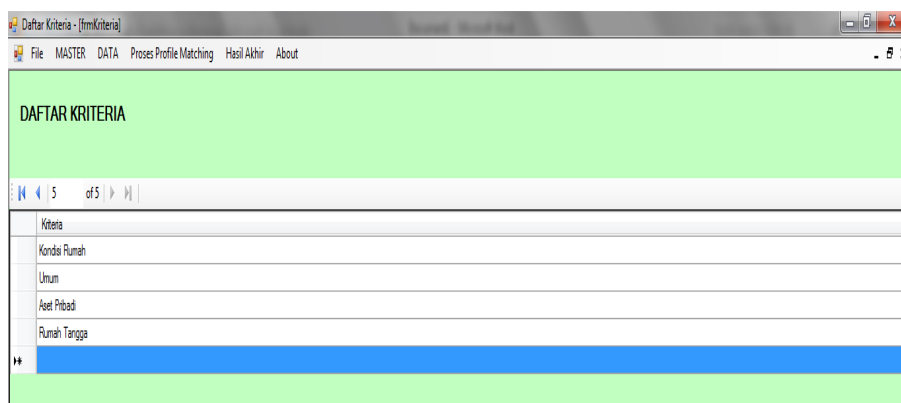
Figure 4. Menu Criteria

Weights of criteria aimed to input the weights of criteria and determine the weight and weight factor of the secondary core factors as required by the receiving institution for determination of orphans home.
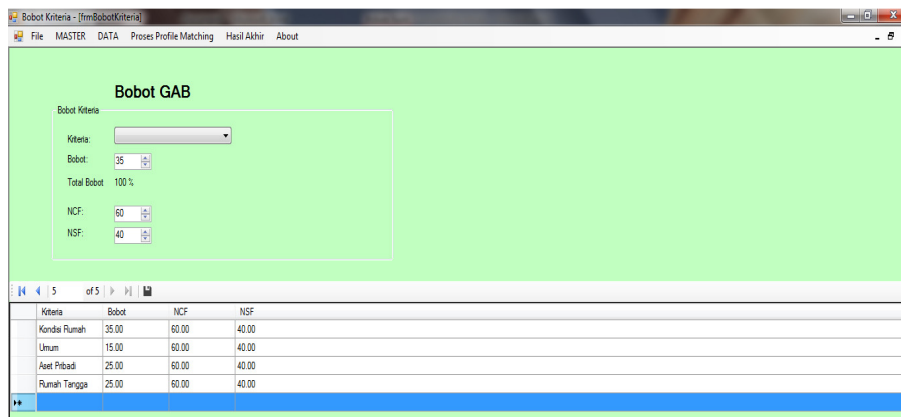

Figure 5. Menu Grades Criteria

Sub criteria weights aiming to enter sub-criteria and weights determining factor as well as the secondary core factor of the sub-criteria.
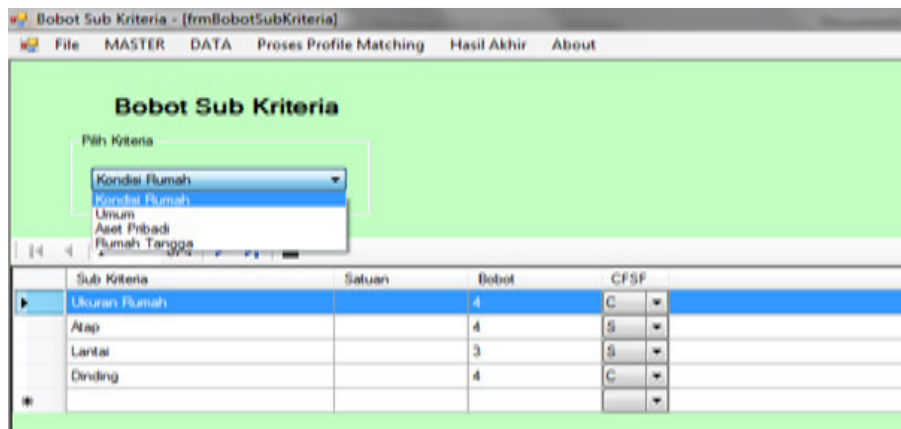

Figure 6. Menu Grades sub-criteria

Parameters aiming to add, modify, delete and save data parameters.
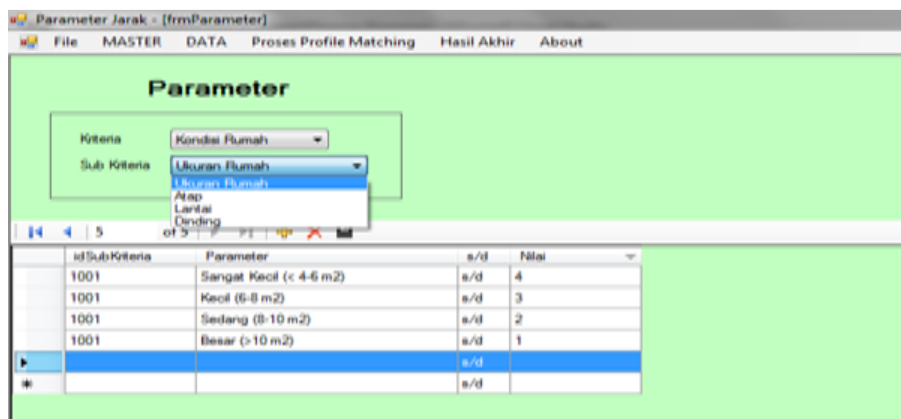
Figure 7. Menu Parameters

Table gap aiming to determine the maximum gap weights according to user needs.
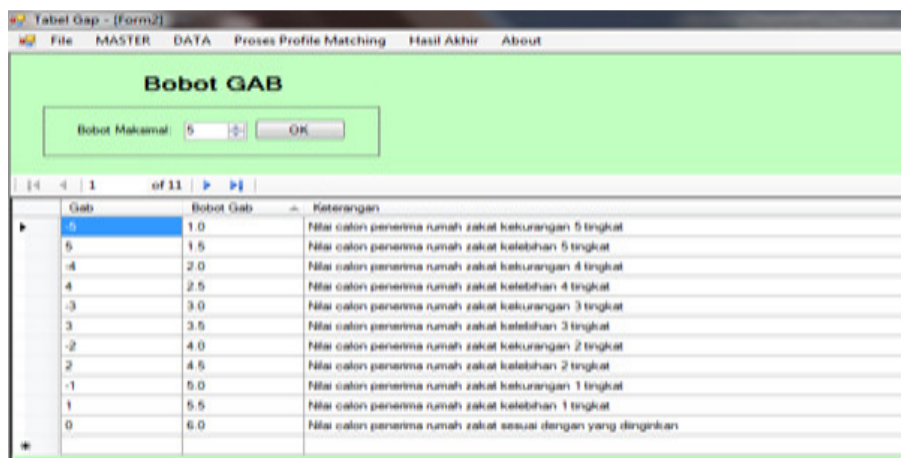

Figure 8. Table Gap

Intended prospective data menu to add, change or delete data candidates.
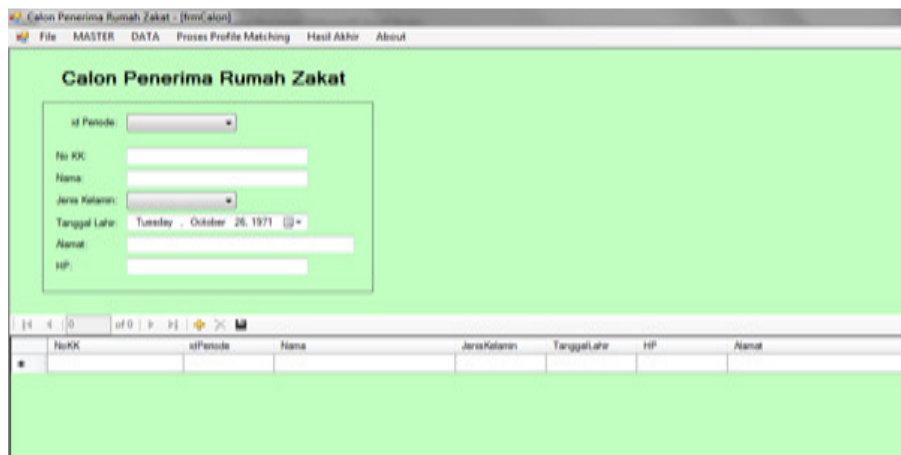
Figure 9. Prospective Data Menu

Value prospective candidates aiming to enter values based on predetermined parameters.
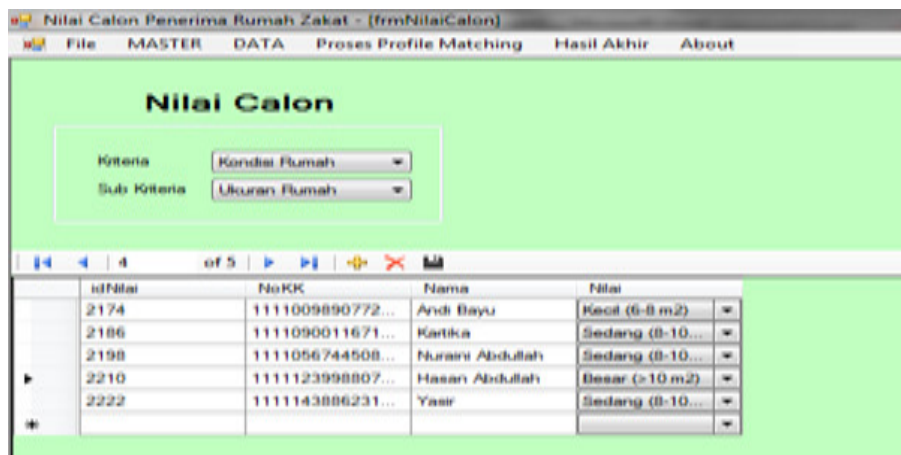

Figure 10. Prospective Value Menu

Weights gap criterion aims to show the gap weight of the calculation of each criterion.
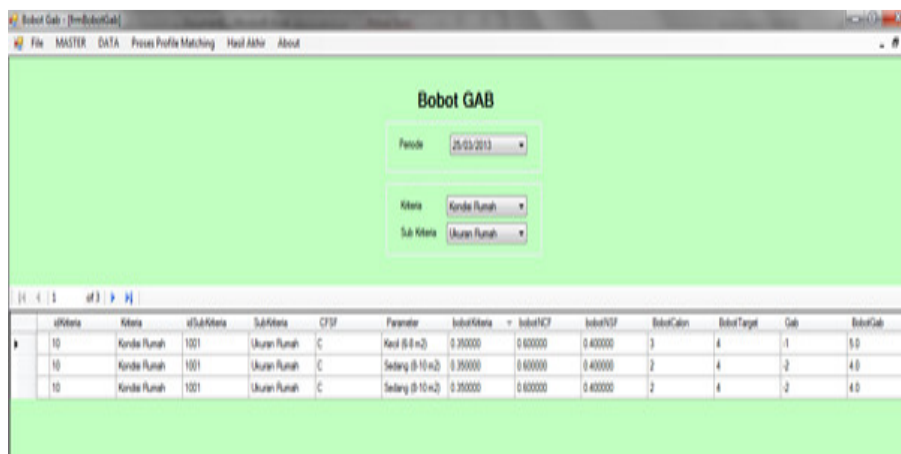
Figure 11. Calculation Weight Gap Criteria

Grouping core factor/factor secondary aims to show the value of the weight factor core/ secondary factors from the calculation process for each criterion.

Figure 12. Grouping Cf/Sf

Perhitungna aims to show the total value of the process of calculating the total value of each criterion.

Figure 13. Calculation of Total Value

Total final value calculation aims to show the total value of the end of the calculation process for each criterion.

Figure 14. Calculation of Total Value End

The final report aims to present a viable candidate receives poor house seen from the highest total score.

Figure 15. Reports

CONCLUSION

From the discussion, it can be concluded:

1. Use of Decision Systems based on profile matching method can generate decision-making process that poor housing beneficiaries in accordance with the standards prescribed by the Baitul Mal quickly and accurately.

2. By utilizing computer technology, software, profiles matching method so that it becomes a system can help the Baitul Mal to select candidates for the poor as it should.

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