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PMENT OF FEASIBILITY DECISION SUPPORT SYSTEM FOR REHAP HOME ASSISTANCE USINGSMART METHOD IN PIDIE DISTRICT

[1] Cut Lilis Setiawati, Asmaul Husna,[2] Fitriyani[3]
[1.2] Jabal Ghafur University
E-mail: [1] cutlilissetiawati@gmail.com [2] husna841@gmail.com [3] fitryani10juni@gmail.com

ABSTRACT

In the Decision Support System, the feasibility of rehab housing assistance can be used to overcome the problem of rehab housing, especially in the Pidie district. there are tens of thousands of uninhabitable houses that must be rehabilitated in the district of Pidie. This decision support system uses the *Simple Multi Attribute Rating Technique* (Smart) method and the criteria used in determining the participants for the rehabilitation housing assistance are the underprivileged assessment criteria , the housing condition assessment criteria , the assessment criteria Economics , infrastructure assessment criteria In calculating the weights and scores the author uses the *Simple Multi Attribute Rating Technique* (Smart) method, the results of this Decision Support System can help simplify and speed up reducing errors that occur in the process of granting eligibility for home rehabilitation assistance in Pidie Regency

Say key: " SPK ", " SMART Method ", " PHP "

INTRODUCTION

Information technology is a medium that can make it easier for humans to do their jobs effectively and efficiently. So that technology is needed to obtain information and as a medium for leaders in making decisions. One of the increasingly rapid technological developments is the application of technology in almost all fields of work, because it can process data quickly and precisely so as to produce information as a source in determining decisions. The Head of the Pidie Regency Public Housing and Settlement Area (PERKIM) is one of the agencies that deal with the problem of housing rehabilitation, especially in Pidie Regency. there are tens of thousands of uninhabitable houses that must be rehabilitated in Pidie district. The house (residence) is one aspect of community welfare that must be met. Because the house is the main need of human life in addition to clothing and food where humans can shelter, maintain and also improve the quality of their life.

In responding to the condition of the community which is associated with fulfilling the need for livable houses, the Pidie District Government, as well as the Districts together to focus and further improve coordination, synchronization in the acceleration and implementation of poverty reduction programs, namely through the Rehabilitation of Uninhabitable Houses including family sanitation. However, the reality on the ground is that the implementation of the rehabilitation of uninhabitable houses seems slow and many people who receive aid complain and are disappointed because the construction of the rehabilitation of uninhabitable houses has not been completed, there are even houses that are not ready or are still half-finished but are already occupied. In addition, the target recipients of assistance funds for the Rehabilitation of Inappropriate Housesafter the funds are disbursed are not appropriate. Fund management is carried out by other parties outside the recipient's target. This is not in accordance with the technical instructions for the implementation of theRehabilitation of uninhabitable houses.

Development of a Decision Support System for the feasibility of home rehabilitation assistance can be used by several users. The first user is the village government which acts as a system operator that runs this system to comply with existing regulations. The second user is the sub-district government, in this case the task of validating the data of residents who receive housing assistance for restoration. The third user is the community as the recipient

targeted information that gets help. The method used in this Decision Support System research uses the Simple Multi Attribute Rating Technique (Smart) method, generally using a weighting process and giving an assessment of each criterion.

By using the SMART method, the results to select or decide on the eligibility for home rehabilitation assistance in Pidie Regency can be appropriate and on target with assessment decisions based on criteria determined by the government.

LITERATURE REVIEW

Similar research was conducted by Sesnika (2016), namely Application of Multipurpose Building Selection Decision Support System Using Android-Based Smart Method based on criteria, namely rental price,

building capacity, building facilities, type of building, purpose of the event, loan time, and parking area.

Research conducted by Mohammad Guntur (2016), entitled Application of the SMART Method for Eligibility Selection of Recipients of Community Food Business Development Assistance, where using this method is able to carry out a ranking process for alternatives with criteria that have been selected as a result of an assessment based on selection needs, namely Legality, experience in trading activities, have AD/ART, The results of the analysis using the SMART method by taking into account the selected criteria, it is known that the farmer groups that are very eligible to receive food business development assistance are the cooperative farmer groups with a weight value of 94, while the feasible and considered recommendation is the group cooperative farmer groups and independent farmer groups with a weighted value of 82.75 and 74, respectively. So from the results of the analysis using the SMART method, it can help decision makers in choosing farmer groups that are eligible to receive assistance for developing food business. society accurately and objectively.

Subsequent research was carried out by faizal (2017), namely the application of the SMART Method for Ranking Poverty in the Process of Determining the Beneficiaries of the Hopeful Family Program with the criteria of building area, type of floor, type of wall, toilet facilities, lighting, clean water sources, cooking fuel, consumption, buying clothes, eating a day, medical expenses, income, education of head of household, amount of savings, pregnant/postpartum mothers, children under five, elementary school children, junior high school children, children 6-12 years old.

A similar study was also conducted by Santosa (2017), regarding the Early Childhood School Selection Decision Support System using the SMART method with the criteria of cost, facilities, curriculum, school quality and distance. which is about the implementation of a simple multi attribute rating technique for determining the priority of rehabilitation and reconstruction after a natural disaster with the criteria of humanity, housing, infrastructure, social, economic and cross-sector.

The research conducted by Budiman (2013) entitled a decision support system for members of the police against candidates for the Selection of Alin Group (SAG) using the SMART method, this multi-criteria decision-making technique is based on each alternative consisting of several criteria that have value and each criterion has a weight according to the level of importance it has. compared to other criteria used to assess in obtaining the best alternative in the process.

METHODS

Development Research Model

The Software Development Model or what can be called the System Development Life Cycle (SDLC), is the waterfall model, which is a linear sequential model or classical life path. The waterfall model provides a sequential approach to the software life flow starting from the analysis to the support stage" [1]. This study uses a research development model on this system referring to the Waterfall floating model. There are 5 stages in the waterfall development model as shown in the following figure:

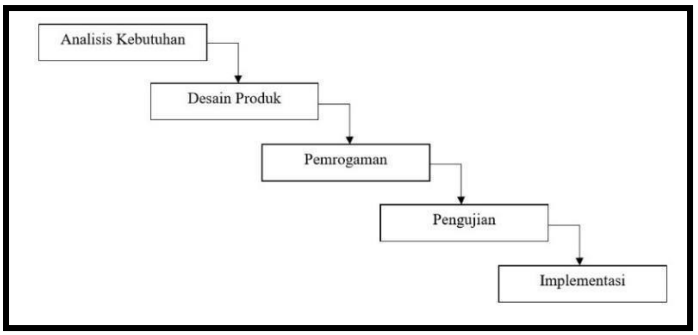


Figure 1. *Waterfall* Development Model

1. Needs Analysis

The data analysis technique used in this study uses the SMART method [1]. The data analysis process uses theSMART method as follows:

1. Determine the number of criteria used.
2. Determine the weight of the criteria for each criterion by using a range of values of 1%-100% for each ofthe criteria with the most important priority getting the largest value.

3. Calculate the normalization value for each criterion by comparing the weight value of each criterion withthe total weight of each criterion. With the formula:

$$Normalisasi = \frac{Wj}{\sum Wj}$$

Information:
Wj = Weight of a criterion $\sum Wj$ = Total number of weights

4. Provide parameter values for each sub-criteria for each alternative.
5. Determine the utility value by converting the parameter values in the sub-criteria into standard data values. $ui(ai) = 100\frac{(Cout\ i - Cmin)}{(Cmax - Cmin)}$

The utility value is obtained by performing calculations using the equation:

6. Determine the final value of each criterion by transferring the value obtained from normalization the value of the standard data criteria with the normalized value of the criteria weights. Then add up the values ofmultiplication the.

2. Product Design

Software design is a multi-step process that focuses on program design including software architecture, data structures, interface representations, and coding procedures. At this stage, application design will be made such as database design and table requirements described in the form of ERD (Entity Relationship Diagram) and DFD (Data Flow Diagram)

3. Program Code Generation

The design is translated into a software program. The results of this stage are computer programs adapted to designs that have been made into programming languages such as HTML, PHP and CSS with the help of Sublime Text programming language processing software with Apache as a web server and MySQL as a database.

4. Testing

At this stage, the system will be tested, to look for errors so that they can be corrected. Then an analysis will be carried out on the focus of the research problem, whether it is in accordance with what is desired. The test used is white box testing which is a test based on checking the design details and black box testing which is a functional test such as testing for validation.

5. Implementation

The system is implemented in software form using the SMART method. In this stage the author prepares supporting software infrastructure such as installing the XAMPP web server, installing the SPK application, and telling how to operate the SPK application.

RESULTS AND DISCUSSION

A. Calculation Process Smart Method

Based on the research method that has been carried out, the results obtained are a decision support system using the Smart method to determine the feasibility of housing rehabilitation assistance in Pidie Regency.The assessment model to determine whether or not it is appropriate to provide a rehab house consists of 4 requirements or criteria, including the Recipient Status assessment model, the Roof Material assessment model, the Wall Material model, and the Floor Material assessment model . The equation to find the total value for each house to be rehabilitated is:

Jumlah Nilai = Nilai Status Penerima + Nilai Materail Atap + Nilai Material Dinding + Nilai Material Lantai

1. Recipient Status Assessment Model

underprivileged value assessment model is a model that is set to determine the value of the underprivileged owned by the recipients of home rehabilitation assistance . For more details, the assessment model

can be seen in Table 1.1.

Table 1.1 Recipient Status Assessment Model

No.	Recipient Status Assessment Criteria	Score	Weight
1.	Lansia	10	2 2 %
2.	Health and Education Personnel	8	
3.	ASN	6	

2. Roof Material Assessment Model

The model for assessing the value of the condition of the damage to the house is the model that is set to determine the value of the roofing material or the damage to the house owned by the recipient of the rehabilitation house assistance . For more details, the assessment model can be seen in Table 1.2.

Table 1.2 Roof Material Value Assessment Model

No.	Criteria for Valuation of Roofing Materials	Score	Weight
1.	rumbia	10	2 5 %
2.	Rooftile	8	
3 .	Zinc	6	

3. Wall Material Assessment Model

The Wall Material assessment model is a model that is set to determine the value of the condition of the house owned by the recipient of the rehabilitation house . For more details, the assessment model can be seen in Table 1.3.

Table 1.3 Wall Material Valuation Model

No.	Criteria for Assessment of Wall Material Value	Score	Weight
1.	rumbia	10	28 %
2.	Bamboo	8	
3.	Wood/Board	6	
4.	Plaster Wall	4	

4. Floor Material Assessment Model

This Floor Materials assessment model is a model used to assess the infrastructure assessment criteria of prospective Rehabilitation Recipients. The assessment model for assessing rehabilitation homes can be seen in Table1.4

Table 1.4 Floor Material Assessment Model

No.	Floor Material Assessment Criteria	Score	Weight
1.	Soil	10	25 %
2.	Bamboo	8	
3.	Wood	6	
4.	Plaster	4	
5.	Ceramic	2	

The equation for finding the Criteria value is as follows:

Nilai Kriteria = Skor x Bobot %

B. Calculation Steps Manually

The steps for the manual calculation process can be described in the Development of a Decision Support System for the Eligibility of Rehab Home Assistance Using the Smart Method in certain Pidie Districts. There are 4 criteria and utility values that have been determined, and can be changed as needed. So the criteria and values are adjusted to the needs.

Table 1.5 Alternative Criteria

Kriteria	Alternatif		
	Usman (A1)	M.Ali (A2)	Bustami (A3)
Status Penerima	Lansia	Tenaga Kesehatan	ASN
Material Atap	Rumbia	Genteng	Seng
Material Dinding	Rumbia	Papan	Tembok Plaster
Materia Lantai	Bambu	Plasteran	Keramik

1. Usman (A1)

a. Recipient Status (Elderly) = Score x weight

= 10 x 2 2

= 220

b. Roofing Material (Rumbia) = Score x weight
= 10 x 25
= 250

c. Wall Material (Rumbia) = Score x weight
= 10 x 28
= 280
d. Floor Material (Bamboo) = Score x weight
= 10 x 2 5
= 250
2. M.Ali (A2)
a. Recipient Status = Score x weight(Health Personnel)= x 2 2
= 176
b. Roofing Material (tile) = Score x weight
= 8 x 25
= 200
c. Wall Material (Board) = Score x weight
= 6 x 28
= 168
d. Floor Material (Plaster) = Score x weight
= 4 x 2 5
= 100
3. Bustami (A3)
a. Recipient Status (ASN) = Score x weight
= 6 x 2 2
= 132
b. Roofing Material (Zinc) = Score x weight
= 6 x 25
= 150
c. Wall Material (Plaster) = Score x weight
= 4 x 28
= 128
d. Floor Material (Ceramic) = Score x weight
= 2 x 2 5
= 50

Table 1.6 Alternative Criteria

Kriteria	Alternatif		
	A1	A2	A3
Status Rumah	220	176	132
Kondisi Rumah	250	200	150
Ekonomi	280	168	128
Prasarana	250	100	50
Total Nilai	**1000**	**644**	**460**

In the table above, the final result of the calculation using the SMART method can be obtained. It can be explained that the greater the value, the higher the ranking, where the preference value of the largest alternative is the best alternative and is the chosen alternative, and the alternative with the lowest optimization value is the worst from the existing data. Therefore, the alternative after being selected as the recipient of Eligibility Assistance for Rehab Assistance with the highest score, which is 1000.

C. System and Database Design

Designing a decision support system and database system that will provide an overall understanding of the

relationship between data entities, information flow and transformation from input data to output which is depicted graphically in *Entity Relationship Diagrams (ERD)* , context diagrams, and *Data Flow Diagrams* (*DFD*) .

D. *Entity Relationship Diagram* (ERD)

Entity Relationship This diagram describes the relationship that occurs tarentitas, some business rules that must be considered in describing the entity relationship diagram
for the design of this website can be seen in Figure 1.1

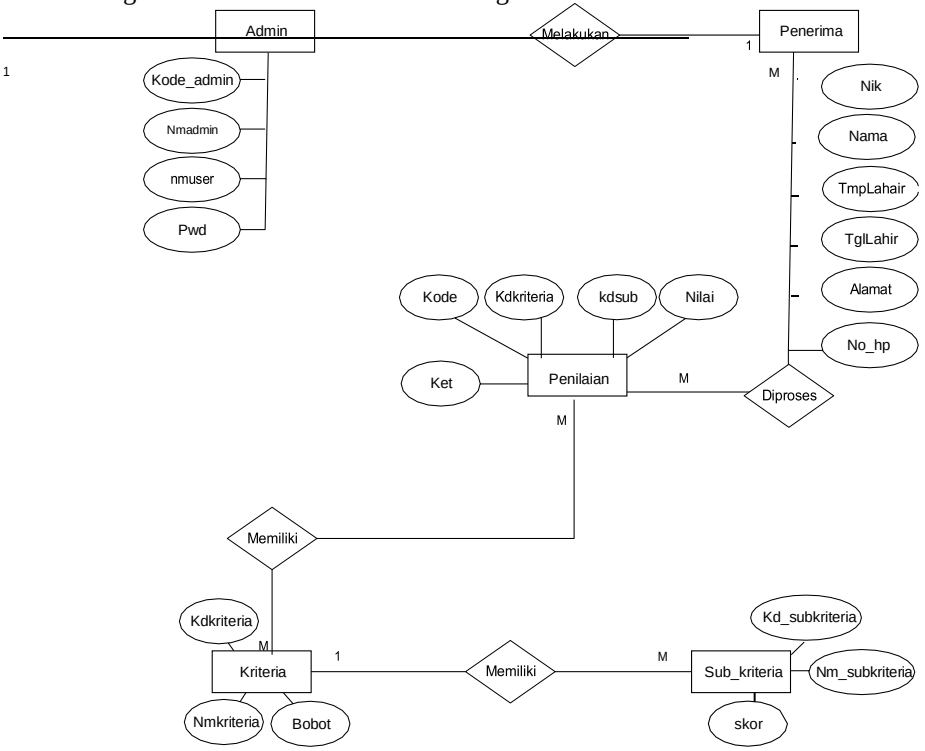
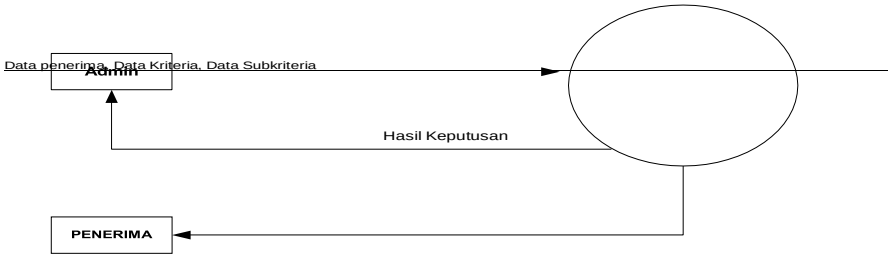


Figure 1. 1 *Entity Relationship Diagram* (ERD)

E. Context Diagram

Context diagram is a model that describes globally how data is used and transformed for processing. Based onthe designed system, the context diagram can be seen in Figure 1.2

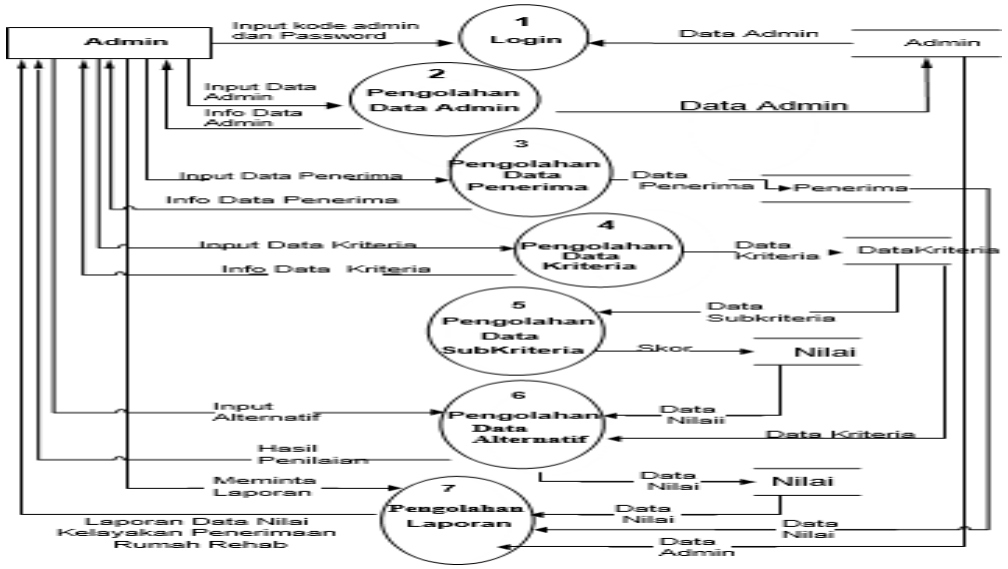


Hasil Keputusan, Laporan Data penerima dan Rincian Penilaian

Figure 1. 2 Context Diagram

F. Data Flow Diagrams (DFD)

Data Flow Diagram (DFD) is a graphical representation that describes the flow of data from a system and aids incommunicating with system users to understand logically without taking into account the physical



environment.

Figure 1. 3 Data Flow Diagrams

G. Index Page Display

page is an index page or more specifically called the main page when the user accesses the system . The display for this page can be seen in Figure 1.4

Figure 1.5 Index Page Display

H. Criteria Input Page Display

This page functions to manage criteria data that will be involved in the process of assessing candidates for home rehabilitation assistance . The display of this page can be seen in Figure 1.6

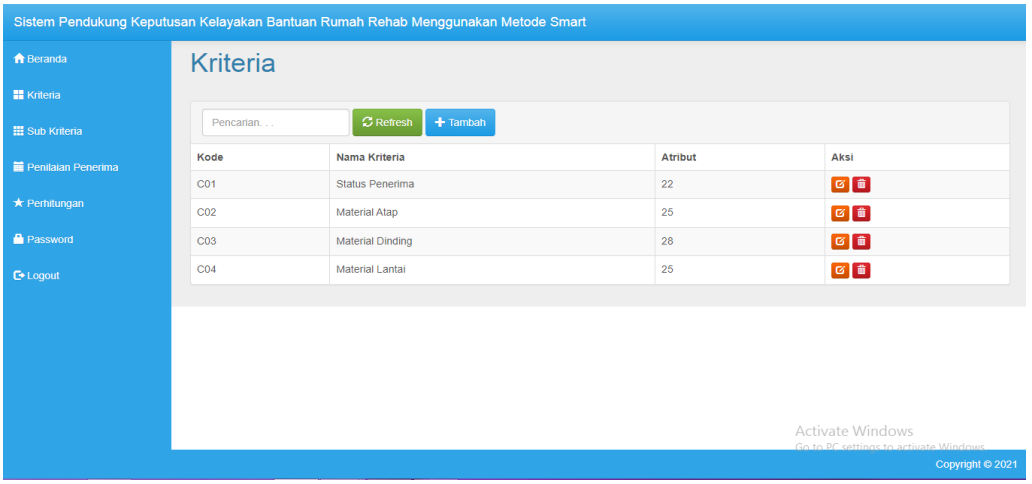


Figure 1. 6 Criteria Input Page Display

I. Data Entry Page Display

this page is to input data for determining the value for prospective recipients of home rehabilitation assistance . The display of this page can be seen in Figure 1.7.

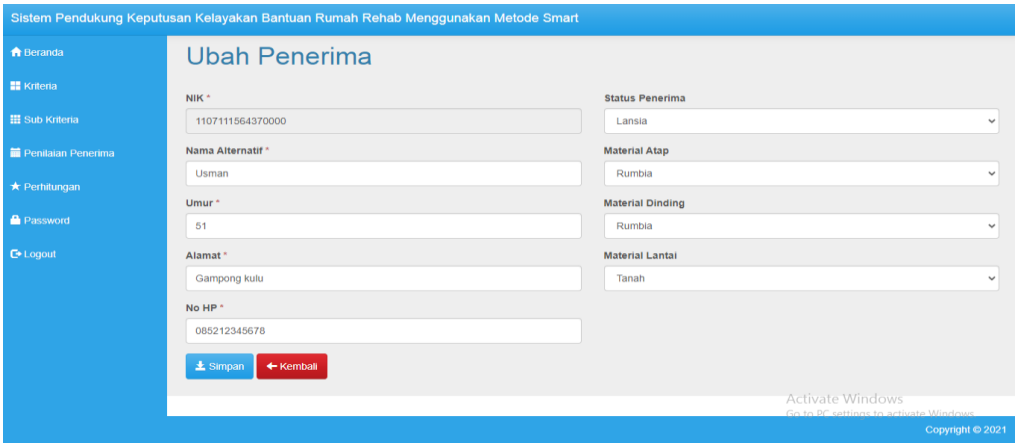


Figure 1. 7 Display of Data Input Pages

J. Display of the Assessment Page for Prospective House Recipients

This page serves to carry out an assessment process for determining the value for prospective recipients of home rehabilitation assistance , from the results of this assessment will be obtained a decision on eligibility for recipients of housing assistance that is appropriate and according to the criteria. The display of this page can be seen in Figure 1.8

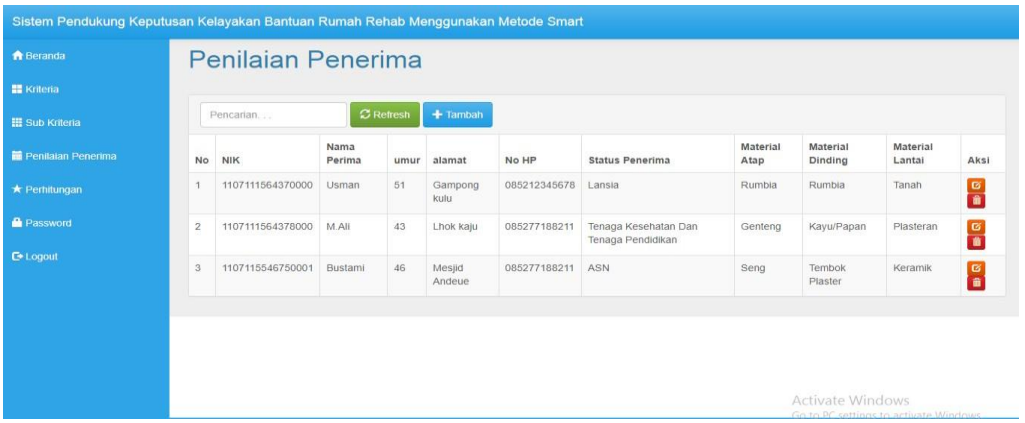


Figure 1. 8 Display of the Assessment Page for Prospective Recipients

K. Calculation Page Display Score

This page serves to carry out the calculation process for determining eligibility for prospective recipients of home rehabilitation assistance in the Pidie Regency , from the results of the assessment it will be calculated that a decision on eligibility will be obtained for prospective recipients of housing assistance for rehabilitation that is appropriate and according to the criteria. The display of this page can be seen in Figure 1.9

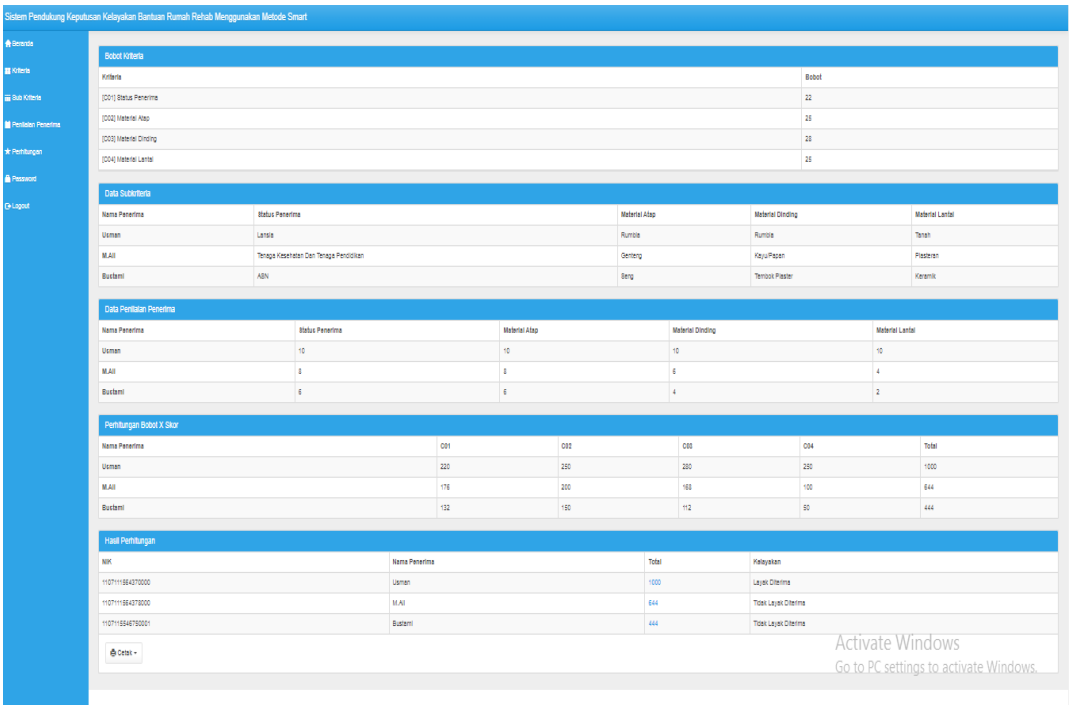


Figure 1.9. Value Calculation Page Display

L. Feasibility Report Rehab Home Recipients Data

To access this report, click "print" in the calculation results table. This report produces information on the eligibility data of candidates for receiving rehab assistance in the order that has been determined. For more details can be seen in Figure 1.10

Laparan Hasil Penilaian Kelayakan Bantuan Rumah Rehap Mengunakan Metode Smart

NIK	Nama Penerima	umur	Alamat	No Hp	Total	Keterangan
1107115546750001	Bustami	46	Mesjid Andeue	085277188211	444	Tidak Layak Diterima
1107111564378000	M.Ali	43	Lhok kaju	085277188211	644	Tidak Layak Diterima
1107111564370000	Usman	51	Gampong kulu	085212345678	1000	Layak Diterima

Figure 1.9. Beneficiary Eligibility Report

CONCLUSION

The conclusions that can be drawn from the results of the Development of a Decision Support System for the Eligibility of Rehab Home Assistance Using the Smart Method in Pidie Regency are:

1. With the Development of a Decision Support System for the Eligibility of Rehab Home Assistance Using

This Smart Method in Pidie Regency can help make it easier for the Public Housing and Regional Offices Settlement (PERKIM) Pidie Regency in the assessment of the Provision of Rehab Home Assistance.

2. In designing a Decision Support System for the Eligibility of Rehab Home Assistance Using the Smart MethodIn Pidie Regency, it is necessary to have references and journals to support the preparation of the application.

3. Before this application was implemented as a Decision Support System for the Eligibility of Rehab HomeAssistance

Using the Smart Method in Pidie Regency, it is necessary to design a database first and tables and system interface images.

4. Decision Support System for Eligibility of Rehab Home Assistance Using Smart Methods in Pidie DistrictThis is implemented using the Mysql Database and the PHP programming language .

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