Fundamental Harvest Program Reception using AHP Method

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Abstract

The Government program in tackling the economic crisis that has occurred so far is by providing direct assistance to very poor families (KSM) in every village throughout Indonesia. The Family Hope Program (PKH) is one of the government's conditional aid programs as a form of compensation from the fuel price increase, which certainly affects the lives of the wider community, including the poor. In order for the expected results to be more accurate and the system designed is arranged systematically, the authors decided to use Analytical Hierarcy Process (AHP). This decision support model will describe the problem of multi-factor or multi-criteria into a form of hierarchy, From the results of the test the shrill and weight of PKH assistance is the type of work of the head of the family is not fixed in the first rank with 4.9 shrill. With the results of the output is feasible or not prospective recipient in PKH, obtained from the comparison of the lamda weight of the rating category with the weight value of the predetermined ratio.

Keywords: PKH, AHP, Criteria, KSM

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1. INTRODUCTION

1.1 Background

Technology is the whole means to provide the goods necessary for the survival and comfort of human life. The use of technology by humans begins with

conversion of natural resources into simple tools. The prehistoric discovery of the ability to control fire has increased the availability of food sources, while wheel creation has helped humans in the streets and controlled their environment. Recent technological developments, including printing presses, telephones, and the Internet, have narrowed down the physical barriers to communication and allowed humans to interact freely on a global scale.

The development of the times and technological advances encourage us to always try to improve the ability in terms of mastery of information technology.

The Family Hope Program (PKH) is a poverty reduction program and the development of a conditional social protection system for the poor aimed at accelerating the achievement of the Millennium Development Goals (MDGs) objectives by providing conditional cash transfers to Very Poor Families (KSM) , toddlers, elementary school children, junior high school and high school age children. [1]

Acquisition of the amount of aid is determined by the number of categories in the SHG concerned with the obligation of the PKH participants to carry out two important commitments in the field of health and education. Healthcare committees apply to pregnant women and toddlers who must check their health regularly every month at the nearest health facility (puskesmas, pustu, poskesdes, posyandu and others). As for learners are required to meet the absence of at least 85% of the school's effective day each month. [1]

The existence of PKH aims to improve the socio-economic conditions of KSM, improve the educational level of KSM children and improve the health and nutrition status of pregnant women and children under five years old. Ultimately, PKH is expected not only to reduce poverty and increase human resources, especially in very poor communities, but can also break the poverty chain itself. [6]

Analytical Hierarchy Process (AHP) is quite effective in simplifying and accelerating the process and quality of decision-making results which is a flexible model that allows individuals or groups to form ideas and limit problems by making their own assumptions and produce the desired solution. By integrating data and knowledge to improve effectiveness in the decision-making process, it is hoped that later it will be able to assist decision makers in deciding the best alternatives in determining the right target households to receive cash transfers.

1.2 Formulation of the problem

Based on Background above can be formulated problems to be solved are:

1. How to determine the distribution of the pkh assistance,

2. How to Determine the decision support system that must be taken, So that the PKH aid distribution is right on target to be given to people who are less able and deserve to get it.

1.3 Boundaries

In this research, the boundaries are needed to match what has been planned before so that the research objectives can be achieved. The limitations of the problems discussed in this study are:
1. So that the distribution of PKH assistance, the right target to be given to the less fortunate.
2. Sample data conducted for this study was obtained from the Bangun Rejo Village, Punduh Pidada District, Pesawaran Regency.
3. Methods of data retrieval obtained by using questionnaire.

1.4 Goals

1. Applying AHP method in planning of decision support system for beneficiary community
2. The purpose of this research is to build a decision-making model by using Analutical Hierarcy Process (AHP) to determine who will receive PKH Help in accordance with the requirements specified.

1.5 Benefits

With the implementation of Decision Support System Analyical Hierarcy Process (AHP) to facilitate decision making in the village build rejo. So that will help the village head and village chie for the election of citizens who deserve to receive PKH assistance, the research is a study that implements, develops, determines the people who deserve PKH assistance in this Bangun Rejo village.

2. Teoritical

2.1 Decision Support System

Budi, S, in the journal Dita Monita (2013). The concept of decision support system (DSS) was

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developed in the 1960s, but the term Decision support system itself only emerged in 1971, created by G.Antony Gorry and Michael S. Scott Morton with the aim of creating a framework for directing computer applications to management decision making. The system is a computer-based system intended to assist decision makers by utilizing certain data and models to solve unstructured problems. The term decision support system refers to a system that utilizes computer support in the decision-making process. [3]

According to Bonczek (1980), decision support system is a computer-based system consisting of three interacting components namely: language system, knowledge system and problem processing system. [4]

Decision support systems are not emphasized to make decisions. With a set of capabilities to process the information / data required in the decision-making process, the system serves only as a management tool. So this system is not meant to replace decision-making function in making decisions. But this system is designed only to assist decision makers in performing their duties.

2.1.1   Decision Support System Criterion
Decision support systems are designed specifically to support a person who must make certain decisions [3]. Here are some criteria of decision support systems.
1. Interactive
Decision support system has a communicative user interface so that users can access quickly to the data and obtain the required information.
2. Flexible
Decision support systems have as many input variables as possible, the ability to process and deliver output that presents decision alternatives to the user.

3. Quality Data
Decision support system has the ability to receive quantitative quality data that is subjective of its users, as input data for data processing. For example, for beauty that is quality, can dikuantitaskan by giving weight value like 75 or 90.

4. Expert Procedure
Decision support system contains a procedure that is designed based on formal formulation or also in the form of person or group expertise procedure in solving a problem area with certain phenomenon.

2.2   Analytical Hierarchy Process (AHP)

Analytical Hierarchy Process method is one of the models for decision making that can help the framework of human thinking. This method was first developed by Thomas L. Saaty in the 70s. The rationale for the Analytical Hierarchy Process method is the numerical scoring process to rank each decision alternative based on how it should be matched against the decision-making criteria.

Analytical Hierarchy Process is one method to help set a priority of various options using various criteria. Because of its multicriteria, Analytical Hieararchy Process is widely used in the preparation of priorities. For example, to prepare research priorities, parties
management research institutes often use
several criteria such as research impact, cost, human resource capability, and execution time [3].

2.2.1   Advantages of AHP Method
The advantages of the AHP model compared to other decision-making models lie in its ability to solve multiobjectives with multicriteria problems. Most existing models use single objectives with multicriteri. The Linear Programming model, for example, uses a goal with a banyka constraint (criteria). The advantages of the AHP model is more due to its high flexibility especially in hierarchy making. This flexible nature makes the AHP model able to capture multiple goals and multiple criteria at once in a model or a hierarchy.

2.2.3 Disadvantages of AHP Method
In addition to the advantages it has, the AHP model also has several disadvantages. The dependence of this model on inputs in the form of an expert's perception will make the end result of this model meaningless when the expert gives wrong judgment. Most people ask whether the perception of an expert can represent the interests of the people or not.

This doubt is due in part to the fact that everyone has a different perception with others. Therefore, for
this AHP model can be accepted by the public, it is necessary to give criteria and strict limits of an expert and convince the public to assume that the perception of the expert can represent the opinion of the community or at least some of the community.

2.2.3 Steps to Use the AHP Method
According to (Kusrini, 2007: 135) basically the steps in the AHP method include:
1. Define the problem and determine
desired solution.
2. Determining the priority of the elements
3. Synthesis

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a. Divide each value of the column by the corresponding column total to obtain the normalization of the matrix.

b. Sums up the values of each row and divides it by the number of elements to get the average value.

3. METODHOLOGY

3.1 Data Collecting

Methods of data collection by type of data, data collected in the study [5] are as follows:

1. Primer Data

Primary data is data taken directly from the object of research or is data originating from the original or first source. Primary data collection technique is done through observation technique by collecting information information directly to the research location to observe how the determination and distribution of PKH conducted by the local government district Pesawaran by way of observation and recording by direct review and interviews by conducting structured interviews by providing a list of questions to interview the District Social Welfare Officer (PKH Assistant) on how the PKH distribution has been implemented so far. The resulting data is information in the form of opinions from those parties.

2. Secondary Data

Secondary data is data that is not obtained directly from the object of research, but data derived from sources that have been collected by other parties. The technique of collecting secondary data was done by studying documentation and literature study.

3.2 Design Model

In solving the problem in AHP there are several procedures [1] to do:

1) Prepare Hierarchy

Preparation of the hierarchy is to determine the objectives that are the overall target system at the top level. The next level consists of criteria for assessing or considering alternatives and determining those alternatives. Each criterion can have subcriteria below and each criterion can have an intensity value of each.
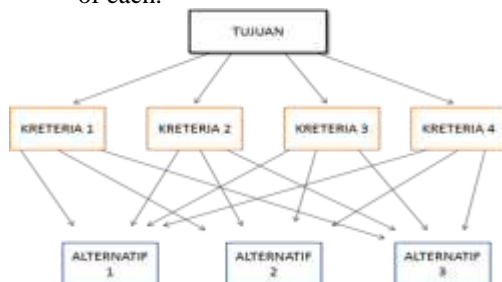
Picture 1. AHP Method Hierarchy

1) Criteria and Alternative Assessment

Criteria and alternatives are done by pairwise comparisons. For various issues, a scale of 1 to 9 is the best scale for expressing opinions. The value and definition of qualitative opinion from the comparison scale Can be measured using the analysis table as shown in the table below

Table1. Comparison scale in pairs

Tingkat Kepentingan	Definisi	Keterangan
1	Sama Pentingnya	Kedua elemen mempunyai pengaruh yang sama.
3	Agak lebih penting yang satu atas lainnya	Pengalaman dan penilaian sangat memihak satu elemen dibandingkan dengan pasangannya.
5	cukup penting	Pengalaman dan keputusan menunjukkan kesukaan atas satu aktifitas lebih dari yang lain
7	Sangat penting	Pengalaman dan keputusan menunjukkan kesukaan yang kuat atas satu aktifitas lebih dari yang lain
9	Mutlak lebih penting	Satu elemen mutlak lebih disukai dibandingkan dengan pasangannya, pada tingkat keyakinan tertinggi.
2,4,6,8	Nilai tengah diantara dua nilai berdekatan	Bila kompromi dibutuhkan

1) Set priorities

Criteria and alternatives are done by pairwise comparisons. For various issues, a scale of 1 to 9 is the best scale for expressing opinions. The value and definition of qualitative opinion from the comparison scale of Saaty can be measured using the analysis table as shown by the Table below

2) Calculating Logical Consistency

Consistency has two meanings. Firstly, similar objects can be grouped according to uniformity and relevance. Second, it concerns the level of relationship between objects based on certain criteria.

1.2.1 Criterion

It is often questioned by individuals (families, households or groups) who are eligible for pkh.badan and statistical assistance to collect data on the number of households using variables or indicators respectively as criteria of acceptance of pkh funds. In accordance with the decision of the Indonesian republic's social ministry is as follows:

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C1: Pregnant women
C2: Toddlers
C3: School-aged children 7-18
C4: House floor area <¬ 50 m2
Residents.
C5: the type of building tingal tingal widest place is bamboo / tassel / wood with low quality.
C6: the work of the head of the family is not fixed.
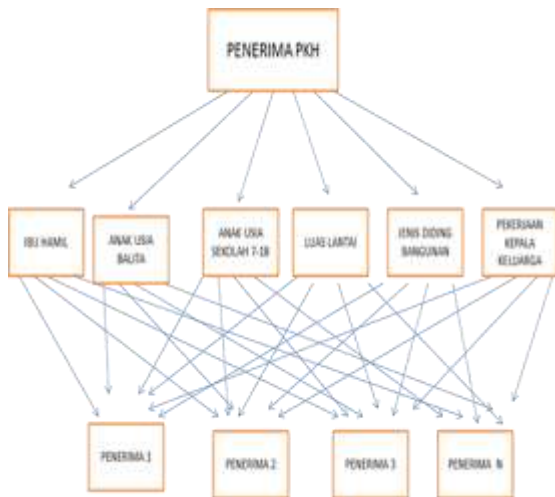
Picture 2. Criteria

3.2.2 Weighting
Specifies the weighting type weighting table

No	Gap	Weight Score	Information
I	0	5	No difference (Competence as required)
2	1	4.5	Competence Individual excess 1 level
3	-1	4	Individual Competence at least 1 level
4	2	3.5	Competence Individual excess 2 levels
5	-2	3	Individual Competence lacks 2 levels
6	3	2.5	Competence Individual excess 3 levels / level

3.3.3 Data Analysis
In making decision support system for determining PKH aid recipient in Bangun rejo village needed internal data type and private data.

1. Internal Data
Internal data is data already in the organization. In this study the internal data is the data of poor people in the village of rejo wake.

2. Private Data
Private data is data of opinion from user.Dalam this research private data is data criteria that have been set that will be used in solving problem.

2. System Analysis and Implentation
1.1 System Analysis
Decision support system that is made is make decisions which is the type of decision support that provides decision menungu legitiminasi of the management to implement.This application uses a top down approach that is the cirri of the design structure. This application involves the ability to view internal data and external data in the form of assessment criteria so the decision can discuss the various criteria and alternatives. AHP complex problems can be in groups, then set to be herarchic, the system work only set the input to complete to do but not make pilhan.aplikasi has control over all so membua decision to rule out computer recommsation when the process directly.

1.2 Decomposition
1. PKH Data
Data is used to display PKH data and value criteria to be tested.

2. The first step of the assessment criteria

Scoring Table

Recipient	U	TT	P
Expectant Mother	2	3	3
Children aged under five	4	3	3
School-aged children 1-18 years old	4	2	3
floor area of the house <50 m^2	3	4	2
type of residential building wall	2	4	4
the work of the head of the family is not fixed	4	3	4
Scoring	3	3	4

Notes:
u = age
TT = residence
P = job

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3. the second step is the weighting of PKH value

Weighted PKH Table

Recipient	U	TT	P
Expectant Mother	4	5	4.5
Children aged under five	4.5	5	4.5
School-aged children 1-18 years old	4.5	4	4.5
floor area of the house <50 m^2	5	4.5	3
type of residential building wall	4	4.5	5
the work of the head of the family is not fixed	4.5	5	5

4 . The third step is to determine the value of NCF and NCP on PKH

Table NCF and NCP

Recipient	NCF	NCP
Expectant Mother	4.5	4.5
Children aged under five	4.8	4.5
School-aged children 1-18 years old	4.3	4.5
floor area of the house <50 m^2	4.8	3
type of residential building wall	4.3	5
the work of the head of the family is not fixed	4.8	5

Note:
NCF=(U+TT)/2
NCP = P

5. Calculation of the total value of each aspect

Total calculation table

Recipient	N
Expectant Mother	4.5
Children aged under five	4.7
School-aged children 1-18 years old	4.4
floor area of the house <50 m^2	3.9
type of residential building	4.7

wall	
the work of the head of the family is not fixed	4.9

6. From the above test the shrill and the weight of the help pkh is the type of work the head of the family does not remain in the first rank.

NO	Recipient	Rank
1	Expectant Mother	4.9
2	Children aged under five	4.7
3	School-aged children 1-18 years old	4.7
4	floor area of the house <50 m^2	4.5
5	type of residential building wall	4.4
6	the work of the head of the family is not fixed	3.9

5. CONCLUSION AND SUGGESTION
5.1 Conclusion
Based on the results of design and implementation of decision support system PKH recipient with Analytical Hierarcy Process method, the authors draw the following conclusions:

1. By using analytical hierarchy process method, a decision support system can be built by comparing the input of assessment category and the weight of predetermined ratio.
2. This system may help decide the eligibility of a prospective recipient of PKH based on the rating category entered into the system
3. The output result of the decision whether or not the candidate receiving in receiving PKH, obtained from the comparison of the lamda value of the weight of the rating category with the weight value of the predetermined ratio.

5.2 Suggestions
Suggestions that can be submitted for the development and improvement of Decision Support System to determine the acceptance of PKH is for further research can be equipped with Geographic Information System (GIS) to know the pattern so that it can be mapped areas of decent or inappropriate residents receive PKH Assistance.

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