Artificial Data Management in Reaching Conditional Cash Transfer of Program Keluarga Harapan (PKH) Utilizing Simple Addictive Weighting

Aulia Nur Kaswi¹, Achmad Nurmandi², Dyah Mutiarin³, Muhammad Fath Azka⁴
¹Researcher of Jusuf Kalla School of Government, Indonesia
²Professor of Politic Islam Universitas Muhammadiyah Yogyakarta, Indonesia
³Senior Lecturer of Master of Government Affairs and Administration, Universitas Muhammadiyah Yogyakarta, Indonesia
⁴Hamad Bin Khalifa University, Qatar

E-mail: aulia.nur@umy.ac.id

Abstract. The main challenge in implementing a poverty reduction program is to identify precisely the targets that will benefit a program. Program Keluarga Harapan (PKH) is a social protection program from the central government through the provision of conditional cash transfers to Low-Income Households (RTSM) / Low-Income Families (CBOs), which are designated as Program Keluarga Harapan beneficiary families. Program Keluarga Harapan is the conditional cash transfer (CCT) program to reduce poverty by making welfare programs dependent upon the receivers' actions. The accuracy of choosing targets directly impacts the achievement of social protection programs' objectives in poverty alleviation. This research would like to dig up how Jogjakarta's government is accurate to reach the beneficial Program Keluarga Harapan recipient. In terms of Jogjakarta's government using the support system to classify the low-income family as the receiver of conditional cash transfers. Therefore, this research will explain which decision-making model used by the government of Jogjakarta managed by a computerized system, known that computerized data processing is expected to present information rapidly, precise, clear, and directed as the exact target for the program.

Keywords: Artificial Intelligent, Conditional Cash Transfer, Program Keluarga Harapan, Simple Addictive Weighting

1. Introduction

The purpose of this study is to find out how the artificial intelligent can provide data for against poverty program which is program keluarga harapan or known as family hope program. The parameters of poverty in Indonesia are still a general problem that needs to be resolved immediately by the local government and the central government. Since the measurement parameters still found lack unsynchronized between local and central government [1]. Measurement methods and study about poverty also need to determine poverty data. The poverty parameter will be related to poverty data, which will also produce poor policies/poverty alleviation programs [2]. Poverty is a concern of the local and national government. Poverty is included as the social problem [3].

As the government responsible to implement alleviation poverty and its people's welfare, the government has made efforts to overcome economic problems related to social welfare (Riyansuni, I., & Devitra, J., 2020). Under the policy of Social Affairs Ministry of the Republic of Indonesia, local governments must implement the Family of Hope Program. Family of Hope Program is a program of providing qualified social assistance to Low-Income Families, which is determined as a family beneficiary. Family of Hope Program opens access for needy families, especially for pregnant women and children, to utilize various health
service facilities (health facilities) and education service facilities (Purnia, D. S., Lena, L., & Ratningsih, R., 2019). Implementing the Family of Hope Program is such a social protection program, those are applied by the Conditional Cash Transfer (CCT) to reduce poverty through any kind of activity that the recipients’ agenda. Once the government proceeds to allocate funding to the recipients’ they have to meet specific criteria that mentioned in requirement of recipients (Suhartono, D., & Sari, T., 2019). Prospective recipients of the Family of Hope Program need to meet the criteria based on the regulation of the Minister of Social Republic of Indonesia number 1 of 2018 article 5, including the components of Health (pregnant women, nursing mothers, children aged 0 to 5 years 11 months), Education (elementary school, junior high school, and senior high school), and welfare (elderly and people with disabilities). The CCT program's idea is simple; cash transfers are provided for households that meet specific requirements (Roitman, S, 2016). In other words, for tenants to receive cash transfers, they must carry out certain activities (such as regular health exams for children or ensure that school-age children attend school). The aim is to make short-term income transfers contribute to long-term goals, protecting the Health and education of low-income children as a strategy for more sustainable poverty reduction.

This study case was located in Jogjakarta government, in its efforts to reduce poverty and gaps in the society. The government city proceeds the data collection under the system of Ministry of Social Affairs. The data collection process is updating periodically once every two years. According to the government's provision of criteria, explain that all families who have specific criteria as mentioned in the requirement need to register themselves to the system namely Integrated Social Welfare Data (DTKS), which will be validated in advance (Andani, M. D., & Hendriyani, Y., 2018). Existing data will be managed by an artificially made (computerized) system, with automated data processing expected to provide fast, precise, clear, and purposeful information. The government of Jogjakarta has the process of data collection through several stages. Based on these problems, in order to know how the government can manage the data through artificial intelligent and minimize the lack in the system. Due to maintaining the data of family hope program is using Simple Addictive Weighting method, the system can easily determine the recipients of family hope program since it is integrated with the big data between society and government.

2. Method Development

In the decision-making process for selecting new recipients, the method is using Simple Additive Weighting (SAW). The Fuzzy SAW method for decision support systems determines the feasibility of assisting the poor low-income, the family of hope program with the MADM (Multiple Attribute Decision Making) approaches. The Simple Additive Weighting (SAW) method is a weighted sum method. The Simple Additive Weighting (SAW) basic concept is to find the weighted sum of decision ratings for each alternative on all criteria. The Simple Additive Weighting (SAW) method requires the process of normalizing the decision matrix (X) to a scale that can be compared with all existing alternative ratings (Fauzan, R., Indrasary, Y., & Muthia, N., 2018). This study analyzed to determine the fuzzy upper limit of each poverty stratification. The high fuzzy limit values obtained are as follows: Not Poor (TM): 30; Almost Poor (HM): 45; Poor (M): 50; The Poor
(FM): 75. This fuzzy set is also a way to determine groups representing a particular condition or condition in an undefined variable. The poverty stratification variable is divided into four fuzzy sets, namely: Not Poor, Almost Poor, Poor, The Poor.

![Diagram of Poverty Stratification](Image)

**Figure 1. Poverty Stratification of Family of Hope Program**

3. Basic Theory

*Artificial Data Management*

In the last 60 years, Artificial Intelligent is going around citizens' lives, but its advent has led to applications that have had a profound effect on our lives. This focuses on the reproduction and alteration of human intelligence through artificial technology to create intelligent machines (M. Mohasses, 2019). Many types of former research argue that AI can think and act rationally, while others do not have the same view of its ability: to behave and think like humans (Russell & Norvig, 1995). AI has its roots in well-established fields such as science, mathematics, philosophy, psychology, linguistics, and computer science [4]. Dealing with a rapidly evolving world and being resilient to smart technologies can serve as facilitators of creativity, growth, productivity, and viability. AI will help free up government resources by introducing routine tasks automation resulting in increased transactions (Kankanhalli et al., 2019). The delivery of government services and also the accurate assessment of policy options outcomes. This paper further proposes a theoretical framework for understanding the application of Artificial Intelligent by data management in government sectors.

*Conditional Cash Transfer of Program Keluarga Harapan (PKH)*

Conditional Cash Transfer (CCT) programs have become a widely implemented policy in developing countries since 1990s. Cash transfers are described as an assistance in the form of cash to increase the household's real income. They are usually made to the vulnerable or those facing a possible risk of poverty reduction in the absence of sustainability. CCT is a more versatile safety net that allows individuals to buy products according to their needs or preferences. CCT systems are justified on the basis that demand-side incentives are necessary to overcome specific limitations and bottlenecks in the delivery of social services.

*Simple Addictive Weighting*

The SAW approach demands that the decision matrix (X) be standardized to a scale equal to all current alternative scores. The simple additive weighting method, known as SAW Method, is a weighted sub-method that can be used to determine each attribute's decision-
maker. A weighted sum requires all the multiplication results between the rating and the weight of each point. The SAW method functions for problem-solving and recognizes two attributes: the profit criteria and the cost criteria.

Findings and Discussion

The readiness for implementing the Program Keluarga Harapan (PKH) needs to be facilitated fully with the system to maximize the function of the program itself. The performance of the Program Keluarga Harapan (PKH) has yielded results. The Program Keluarga Harapan (PKH) is a program included in cluster 1 (one), namely a program that makes the poor prosperous by providing educational assistance for Low-Income, Households who have school-age children and providing health assistance for Low-Income, Households who are pregnant and have children under five. On the other hand, Low-Income Households also receive cash aid to support their daily expenses of Low-Income Households. The local government can easily allocate the fund support to the recipients since the system is integrated in one location under the Ministry of Social Affairs.

Decision Support systems are part of a computer-based information system used to support decision making in an organization or company. It can also be said to be a computer system that processes data into information to make decisions on specific semi-structured problems. When properly designed and implemented, the provision of direct cash assistance can complement and support the poor community. How does Jogjakarta city work on the system of family hope program and meets their criteria?

Some indicators to report the validation criterion of candidates is by their health wellness and education facilities. This study proved that health and education is main aspects to decrease the poverty effectively in the city level [5]. The health component in Family of Hope Program is developed to improve mothers' and children's health status in Indonesia, especially for disadvantaged groups or poor family. The health status of mothers and children in Indonesia is still not satisfactory. This is proven by the high maternal and child mortality rates. The low maternal health status will have an impact not only on the health of the mother but also directly on the health of the fetus/mother, especially in the first week of life [5]. The efforts to improve health of children must be integrated with efforts to improve maternal health. Through these health requirements, it is expected that the use of health services by Family of Hope Program will increase. Therefore, this program is very appropriate to improve the health status of Low-Income Family Households. The fulfillment of proper education for every community is immediate beneficiaries to improve human resources' ability. It has been stated earlier that population development has a dual function, the subject/actor's function, and the object/goal. In the figure 3 showed how do the government works in delivering the program to decrease poverty in Jogjakarta City.
Figure 2. Processing Data Design of Program Keluarga Harapan

Source: Data Primary, 2020

The amount of the cash transfer is meant to be approximately 15-20 per cent of the total consumption of poor households. Annual household disbursements range between Rp 600,000 and Rp 2.2 million per year. The sum is dependent on the number of children in the household and their ages. If a mother is pregnant and/or has children aged 0-6 years, she will earn Rp 1,000,000 per year or Rp 250,000 per quarter, regardless of the number of children under five. If the mother has two primary school children (6-12 years of age) and one secondary school child (13-15 years of age) and these children attend school, she will earn Rp 1,800,000 a quarter or 450,000 Rp per year. Each household continues to receive their allocation in quarterly tranches as long as they meet the health and education conditions, which were specified at the beginning of the program.

Figure 3. Calculation of Annual Cash Transfer

Source: Primary Data, 2020

The distribution of Family of Hope Program fund for eligible households within each area was systematic, not arbitrary, and the recipients were rationed on the basis of selection criteria, guidelines, guides, quotas and other details. From the variables measurable in the
survey find that we can see that the potential beneficiaries had different distributions of characteristics than the potential non-beneficiaries in the same areas.

Figure 4. Cash Condition Transfer Program Keluarga Harapan Kota Jogjakarta 2019

In the interest of maximizing the program, Jogjakarta city under hold of ministry of social affairs is not only focusing in allocating conditional cash transfers, but the Jogjakarta city has also created a KUBE that is known as Joint Business Group Program. Members of KUBE are poor family who are joined as the recipient of family hope program due to engage their behavior. KUBE consists of 10 family heads included in the data of Program Keluarga Harapan. Each group receives capital assistance for the needs of running various business programs as desired.

4. Conclusion

The system designed to assist the Social Services office of Jogjakarta City in determining whether low-income families are eligible or unfit to receive assistance from the Family Hope Program (PKH) is integrated with a managed information system the Ministry of Social Affairs of the Republic of Indonesia. The system design has produced features such as a calculation feature that uses the Fuzzy logic Simple Additive Weighting method, making it easier for the agency to determine the feasibility of low-income families in receiving PKH assistance. Then the Criteria feature, where this criterion part serves to add to the assessment criteria in determining low-income families' eligibility in receiving as an aid. Furthermore, in the Report feature, this report feature is the output of calculating low-income families' feasibility in receiving support. Because this system has been designed using the Fuzzy Logic Simple Additive Weighting method, it can be concluded that the application of this method has provided results that can be used to determine family eligibility. Deficient in getting help. These results will be used by the Social Services office of Jogjakarta City to assess low-income families' eligibility in obtaining PKH assistance

5. References

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