A policy scenario modeling of poverty alleviation program in Indonesia: An application of Promethee method

INTRODUCTION

Poverty is a complicated problem which has not been resolved satisfactorily in Indonesia. Although the economy has grown and developed over the last few years with various policy measures on poverty reduction, apparently, these have not yet produced significant results. Poverty reduction targets set by the government have almost never been reached. Poverty remains a social problem that is difficult to overcome; the most persistent as stated by Blanden and Gibbons (2006).

As shown in Figure 1, even though the number of poor people had decreased over the past 10 years, it has only been at an average rate of 0.56% per year. Therefore, it is far below the national target set out by the government which is around 10 – 16% per year; precisely 28.59 million people (or 11.22% of total Indonesian population) according to data in 2015. This is an increase of almost 1 million when compared with 2014 (CBS, 2015).

Therefore, more serious attention is needed, especially from government budget perspective. It seems paradoxical. As shown in Figure 2, in this period the cumulative government budget for poverty reduction has grown by 40%. Ironically, poverty had only decreased by 3.37%. It can be said that the budget to alleviate poverty is expensive, inefficient and ineffective.

Poverty does not only describe of inability and helplessness of the individual in meeting their basic needs, but also a complex process with many dimensions. Poverty can be temporary, but if left unchecked can become persistent, acute and trap the next generation. Dasgupta (2007) said that poverty was a muddy spiral track that when a person or a family get into the lane, it will be difficult to get out as it even tends towards falling.
this multidimensional problem, efforts such as sustainable anti-poverty programs are needed through which poor people can be independently stay out of the muddy track.

In fact, in Indonesia poverty reduction is not only carried out by the government but also by various organizations such as a Zakat institution and business units through their Corporate Social Responsibility (CSR) programs. These institutions with various programs have been active in efforts to eradicate poverty. This is in agreement with the idea offered by Joseph Stiglitz which requires the contribution of the entire citizens to resolve this multidimensional issue (Sell and Spence, 2001).

As a state with Muslim majority, Indonesia has a huge potential for zakat utilization. Beside to alleviate poverty, zakat can also reduce social inequality in a rather better way. Zakat is a mechanism through which a portion of wealth of rich Moslem people is allocated to the poor. Zakat has its own mechanism in determining those who need sustenance. Even though the receivers of zakat have improved livelihoods, the obligation of Muslims to give zakat will never stop (Bremer, 2013). The potential of zakat in Indonesia has reached Rp 217 billion per year (IMZ, 2012).

CSR is a commitment by a business to contribute to the economic development, especially at the community level. Even though there are various types of programs, CSR could be transformed into CCRR (Corporate Community Resource Responsibility) as a means of harmonization between companies and citizens. Furthermore, it can also be developed as CER (Community Economic Responsibility), whereby the community plays a greater role in economic development in the future (Fauzi, 2012). Based on this concept, CSR could be a model to promote the growth of citizen’s social economic sustainability for communities.

Unfortunately, synergy and integration do not exist. Several researches even state that there have been overlapping programs, sectoral ego and program delivery are unequally distributed. These have created an ambiguity and often caused structural and horizontal conflicts among citizens (Dolles, 2010; Haryono, 2010; Muktasam and Nurjannah, 2011; Sumarta, 2013; Rusli, 2013; Center of Social Studies of Southeast Asia-Gadjah Mada University, 2014).

As the party most responsible for handling the problem of poverty, the government should develop a comprehensive policy scenario to optimize the role of all
THEORITICAL BACKGROUND

Poverty is a complex subject. Besides being wide-related, some aspects are also influenced by the diversity of perspectives in the understanding of poverty itself. Poverty can be conceptualized strictly in economic terms as inadequate income or can be conceptualized as social exclusion by taking into account various factors such as personal, social, economic, cultural and political. Some definitions focus on "absolute poverty", defined as a lack of resources to meet the physical needs for survival. Others focus on "relative poverty", defined as a lack of resources to achieve a standard of living that allows people to play a role, participate in relationships, and live a life that is considered normative of the community to which they belong (Loewen, 2009). Haughton and Shahidur (2012) define poverty as "the lack of well-being", especially in relation to ownership of goods, so that the poor defined as those who do not have sufficient income or consumption can be made to live above the minimum threshold prosperous category.

According to the Report of the United Nation Commission on Human Rights, poverty can be conceptualized in three ways (Sarshar, 2010). First, poverty is a situation where a scarcity of essential facilities in individuals is caused by inadequate incomes. According perpekisif, poverty are those living below the minimum income level. The World Bank defines extreme poverty as living on less than US $ 1 per day and moderate poverty as less than $ 2 per day. Second, poverty is based on a failure to meet basic needs or fundamentals, or deprived of these needs. Basic human needs not only include food, clothing and shelter, but also health and education. Third, poverty is the lack of opportunity. Poverty in this concept is characterized by chronic deficiencies in economic, social and political participation, alienation of individuals as social beings, inhibition of individual access to the benefits of economic and social development and the limited development of culture. This concept of poverty is third in line with the definition of poverty that was popularized by the UNDP (1996) which is the absence of any opportunity, accompanied by low nutrient levels, hunger, illiteracy, lack of education, physical and mental illness, emotional and social instability, unhappiness, sadness and hopelessness about the future.

METHODOLOGY

This study used a multi criteria analysis (MCA) by means of Promethee (Preference Ranking Organization Method of Enrichment Evaluation) method developed by by Jean Pierre Brans and Bertrand Marsechal (Brans et al., 1986). It is based on an outranking method and most suited when there are a finite number of alternatives to be assessed. The Promethee is adopted for the purpose of this study because of its simplicity and its ability to aid decision making when facing a multidimensional decision context in terms of poverty alleviation programs. This method provides direct interpretation of parameters and a sensitivity analysis of the results (Al-Rashdan et al., 1999; Goumas and Lygerou, 2000).

In order to perform alternative ranking by the PROMETHEE method, it is necessary to define preference function $P (a,b)$ for alternatives $a$ and $b$ after defining the criteria. Alternatives $a$ and $b$ are evaluated according to the criteria functions i.e.

$$P_j(a,b) = f_j(a) - f_j(b)$$

Where $f_j$ is the criteria for alternative $(a)$ and alternative $(b)$.

Promethee considers two thresholds to establish the best preference i.e. indifferent and preference threshold. Indifference threshold is the largest deviation which is considered as negligible by the decision maker. The preference threshold, on the other hand, is the smallest deviation which is considered as sufficient to generate a full preference. Assuming that the deviation of these preferences is between 0 (no preference) to 1 (highly preferred), the preference setting is then defined as follows:

$$P_j(a,b) = f_j(a) - f_j(b)$$

$$\begin{cases} 
\pi(a,b) = 0 \\
0 \leq \pi(a,b) \leq 1 \\
0 \leq \pi(b,a) \leq 1 \\
0 \leq \pi(a,b) + \pi(b,a) \leq 1 
\end{cases}$$

Where $\pi(a,b)$ is expressing to which degree alternative
Table 1. Attributes of input, process, and output for Promethee analysis

<table>
<thead>
<tr>
<th>Input dimension</th>
<th>Process Dimension</th>
<th>Output dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attribute</td>
<td>Max/Min</td>
<td>Proses</td>
</tr>
<tr>
<td>Funding availability</td>
<td>Max</td>
<td>Planning</td>
</tr>
<tr>
<td>Data accuracy</td>
<td>Max</td>
<td>Implementation</td>
</tr>
<tr>
<td>Compatibility of the program with recipient needs</td>
<td>Max</td>
<td>Monitoring and Evaluation</td>
</tr>
</tbody>
</table>

 została preferowana nad kolejną alternatywą b, a \( \pi(b, a) \) jest przeciwnie.

W Promethee, preferencje są zazwyczaj przedstawiane w sześciu typach kryteriów: Usual Criteria (U), Quasi Criteria (Q), Linier-Preference Criteria (LP), Level Criteria (L), Linear Preference with Indifference (LI) and Gaussian. Promethee jest outranking method of MCA, the outranking is carried out through the calculation of preference indices as follows:

\[
\pi(a, b) = \frac{1}{k} \sum_{h=1}^{k} P_h(a, b)
\]

gdzie \( P(a, b) \) to preferencja między alternatywami a i b, jak wcześniej określono. Po wyznaczeniu preferencji, Promethee wyznacza następnie preferencję (\( \phi^+ \)) i flow (\( \phi^- \)), a następnie różnicę między nimi, nazywając ją net flow according to the following formula:

\[
\phi^+(a, b) = \sum_{x \in K} \pi(a, x)
\]

\[
\phi^-(a, b) = \sum_{x \in K} \pi(x, a)
\]

\[
\text{Net flow} = \phi^+ - \phi^-(a)
\]

W celu przeprowadzenia analizy Promethee, ten study wykorzystał cztery różne programy oszczędności i wskaźniki związane z nimi, w tym wskaźniki związane z wpływami, procesami, oraz funkcjami. Na podstawie danych podanych w tabeli, przedstawiono wiersze oraz ich odpowiednie wymiary.

### Data collection

Badania zostały przeprowadzone w Bogor, Tangerang i Jakartie. Celem badan było obserwowanie procesów oszczędności i wskaźników związanych z nimi. W ramach badania, wykorzystano system próbna i metodę sondażu. Wielkość próby wynosi 24. Data collection was done through in-depth group discussions using world cafe method. World cafe is an interactive dialog participation method set in small groups format in order to manage poverty reduction criteria evaluation which link to input, process and output aspects. A facilitator guided the 24 participants. They had to sit at the cafe desk. Participants then moves from one desk to another (as many as three round) and in this way, will enable for cross discussion and further elaboration. In order to fulfill the decision matrix, a focus group discussion was held to evaluate the poverty program according those criteria.

The evaluation was carried out using five the points scale provided by Promethee software, i.e., very good (5), good (4), average (3), bad (2) and very bad (1). Figure 3 presents Promethee representation of the study.

### RESULTS AND DISCUSSION

Figure 4 presents results of Promethee for partial (left) and complete ranking (right) among poverty alleviation programs. The leftmost bar shows the ranking of the program according to Phi+. It shows that Hybrid is on top followed by zakat, CSR and government programs. The middle bar of Figure 5 shows the ranking of the program according to Phi-. It shows similar pattern as showed in Phi+. The right most bar of Figure 5 shows complete ranking among four programs which shows the final ranking of the programs. Accordingly, the hybrid is still on top, followed by zakat, CSR and government programs. From this ranking, we can conclude that the hybrid model of poverty alleviation is preferred to all other programs and has the highest Phi score (0.6574). Zakat program is preferred to CSR with a Phi score of 0.3796, and the lowest preference is the government initiated programs.

These findings are in line with those of Elsner (2004) and German (2010) who found that the hybrid model is the best alternative when one is confronted with many actors involved in solving complex problems. The reason is that hybrid model allows pools resources when the problem is becoming complex. The arrangement in the hybrid model also creates mutual interdependence among actors which arises from the need for mutual beneficial partnership, so that the possibilities of solving conflicts is much higher (Menard and Shirley, 2005). Williamson (1991), however,
argue that when risks are becoming greater and each individual investment have become specific, it is logical to share the burden and risks (Meynard and Shirley, 2005). This is the basic premise behind the hybrid model.

Figure 5 presents the what so called “Promethee Rainbow” which shows a disaggregated view of complete ranking from left (hybrid) to right (government program). The stacked slices indicate the attributes of the policy alternative on the net flow. As can be seen from Figure 6, the hybrid model shows no negative slices as all attributes contribute positively to its net flow score. The stack of slices in the hybrid model show no weakness with respect to other programs. The larger stack (indicated by the larger red bar) indicates that implementation of the poverty program is the most important feature of the hybrid model and its phi score is positive. On the other extreme is
government led programs which shows mostly negative score on phi and almost all stacks show the weakness of the program.

Figure 6 depicts GAIA plane which describes the descriptive component of Promethee ranking. The GAIA presents five criteria (planning, target, money, institution, and availability of funding) represented by lines and four poverty programs being evaluated represented by squares. As can be seen from Figure 6, the hybrid model and zakat are close to each other while CSR and government program are quite different because they are far away from the axis. In terms of criteria, money and funding availability are close to each other. This means that based on data availability, good poverty programs is indicated by good monitoring and evaluation which should also result in good and efficient management of available funding. This also indicates that it is possible to find poverty alleviation programs that are well funded and the funding, efficiently managed. Similarly, planning and institutional aspects are close to each other, which indicates that in order to have good poverty programs it is important to consider planning and institutional aspects. It is also possible to have poverty programs that are both good in planning and institutional aspects.

Promethee analysis allows us to investigate the relative position of actions (i.e., poverty programs being evaluated)
and their respected criteria. Figure 7 presents the relative position of poverty alleviation programs projected on the criteria of “sustainability of the program” as a shadow axis (represented by blue line). As can be seen, the hybrid model is right on the axis followed by government led programs. This means that in terms of sustainability of the program for poverty alleviation, the hybrid model is the best. The government led programs of poverty alleviation also indicates better performance in this case and might be due to better control of the program by the formal institutions.

As we have seen from the results, the hybrid model of poverty alleviation which integrate the best management practices among several programs is the most preferable scheme of poverty alleviation mechanism. There are several reasons to support this argument. One of the reasons why hybrid model shows strong positive contribution is that the possibility of pooled resources and interdependencies among institutions so that it encourages better performance. In addition, the hybrid model allows implementation of combined best practices from other programs so it yields the best combination. This line of argument is supported by Elsner (2004) who states that the hybrid model is an appropriate tool for addressing complex issues through increased coordination, cooperation, interdependency relationship, as well as facilitating collective learning among stakeholders.

Secondly, poverty alleviation programs in the form of the hybrid model would compensate the weakness of management scheme by government or private institutions. Williamson (1991) argued that government institutions tend to be hierarchic while private institution tend to be spontaneous which hamper coordination and cooperation. This gap is bridged by the hybrid model, whereby the classical approach of government institutions characterized by intentional, regulated, and less flexible style of management, can be synergized with more spontaneous and flexibility of private institutions style (Lovan et al., 2004).

Hybrid management model have proved to be effective in managing complex arrangement such as those in Africa in which the traditional communal system of governance is combined with formal institution (Goodfellow, 2013). Similarly, Dragos (2012) shows that the hybrid arrangement model of the Red Cross in Romania and Germany has to accommodate the interest of various institutions and stakeholders through utilization of interconnection network among institutions. Other effectiveness of the hybrid model are also shown by Gurlbrandsen (2011), German (2010), and Altman dan Cochrane (2003). Gurlbrandsen (2011) in his study on higher education showed that the hybrid model could overcome the complexity of managing science and non science component of higher education, as well as the interests of private and public institution when dealing with education. German (2010) in his study on managing natural resources, shows that using the hybrid style which involve multi institutions, proved to be more effective than single authority. Altman dan Cochrane (2003) shows that the hybrid model is the best alternative when managing local economics of Australian hinterland by combining the forces of market, private institution and government as well as the vital role of the Aboriginal community.

**Conclusion**

Various existing poverty alleviation programs offered by government, CSR and Zakat schemes all have their strengths and weaknesses. Nevertheless, based on a multi-criteria evaluation judging from input, process and output
components of the program, zakat scheme performed best followed by CSR and government alleviation programs. When the new hybrid program was introduced, this type of program, which encompasses the best of all inputs, process, and outputs representing future poverty alleviation program, it performed best followed by the existing program.

Hybrid model also performed best on all the criteria based on actual and projection scenarios. The model is quite robust when weighted factors for each criteria were changed and the outranking results which showed that the hybrid model ranked first among others, did not change when weighted factors were altered. This results indicates that given the complexity of poverty alleviation program, integrating the best criteria of inputs, process and outputs along with stakeholder involvement could offer the best alternative for fighting poverty in the country. This type of scheme is deemed suitable for Indonesia where poverty alleviation program involves many actors and multi-dimensional aspects.

Several lesson learned could be derived from this study for policy improvement related to poverty alleviation programs. First, since poverty is multidimensional, the criteria to assess the effectiveness of poverty alleviation programs should be a comprehensive one. It should not be only based on criteria of how much funding have been disbursed or how many poor people have been reduced, but other aspects such as data and finance (input component), management (process), quality services and the sustainability of the program (output components) should also be taken into account. That is, the upstream variables of the poverty alleviation programs are crucially important in fighting poverty. Second, as shown by the Promethee method, it is important to establish a reference type for evaluating poverty alleviation program so as to provide a threshold for poverty criteria that can be accepted by the provider, receiver and manager. Third, the proposal for the new hybrid model implies that it is important to establish new institutions that can integrate the strengths of all existing programs. It is also important that the government should initiate such an institution with strong political will and financial support.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of the paper.

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