

THE APPLICATION OF SOFT SYSTEM METHODOLOGY FOR AGRO BUSINESS MICRO FINANCING POLICY

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ABSTRACT

Policy analysis and design was conducted to develop conceptual model for agro business micro financing particularly in the organic farming. This interdisciplinary research used soft system methodology (Checkland, 1972) to identify key policy variables and create knowledge-based decision support system. Dealing with micro financing complexity, this study applied Total System Intervention (TSI) approach (Jackson, 2000).

Complementarism was introduced to combine several system techniques with expert knowledge acquisition as well as extensive field observation. Strategic Assumptions Surfacing and Testing (SAST) produced strategic assumptions to implement public policy for organic farming intensification. Analytic Hierarchy Process (AHP) was used to set up priority of feasible microfinance practices and institution (MFI) related to agriculture constraints. Focus group discussion was conducted both in local and national level to formulate policy alternatives.

Conceptual model was established with key assumption is rural financing availability with various sources of fund in accordance with poverty alleviation efforts. The EFEP model was introduced both with financial and non financial support from government.

The policy implication recommended local MFI capacity building, organic fertilizer production and trade management support. Through public policy analysis, this study recommends coordination body of MFI in national level to increase agro business productivity.

Expert judgment through knowledge elicitation was found meaningful in the validation and verification processes of the conceptual model.

Keywords: Soft System Methodology, Micro Finance, Policy Research, SAST, AHP, Expert Survey.

INTRODUCTION

Agriculture is the backbone of Indonesia development program; but some of government intervention and support policy were not successful. Policy set-up is usually sectoral and depends on statistical inferences only. There are lack of creativity for problem solving and strategic planning. Hence, it has to be alternative approaches to create a sound and effective public policy for agriculture which is messy in nature.

Jackson (2006) stated the Critical System Thinking could provide practical guidance about how to use system theories, methodologies and methods together in an intervention. Christis (2005) mentioned that messy problem can best be handled by

Soft System Methodology for Agro business Micro financing Policy

Soft System Methodology (SSM), where goals and value are stated in so-called root definition of the system.

The idea of agriculture system as socio-technical system was introduced through this research. Preliminary survey found that the system elements are organization, technology, legal, physical and nature resources, where human actors play an important role. Kroes et. al. (2006) proposed that for purpose of explaining and understanding the function of socio-technical system as for the purpose of designing such system, ways to model the relations between the different elements of the system, notably the hardware component and the human agents in their various roles, have to be found.

The framework of system thinking for the research on specific agriculture development policy is expressed in the figure 1.

The research background started with integration of the national economic strategy to the Millennium Development Goals (MDG). This economic growth target must balance with efforts to reduce poverty (*pro poor*) and increase job opportunities (*pro-job*) and guarantee sustainable environment (*pro environment*).

In agriculture field these efforts might be through environment oriented farm development such as organic farming. A needs analysis of stakeholders is part of the first stage in the system approach. The initial recognition survey and FGD (*focus group discussion*) analyzed needs for agriculture development with system thinking. Actual problems of agriculture are revealed from what was unclear to what is clear and structured through SSM application.

RESEARCH METHODOLOGY

Expert surveys are the realization of critical self reflection in the Critical Thinking System. In the process of knowledge acquisition, the quality assurance is the source of information related to the respondent background. The main method used to elicitate knowledge from an expert was through Focus Group Discussion (FGD) and in depth interview. Other sources of knowledge were obtained through field observation and through literatures study.

The research methods used to obtain best solution was CPI (comparative performance index). This technique formulate composite index used to determine the rating of various alternatives based on criteria and weighing factors.

The CPI technique in this research was used for performance comparison of **Organic Farming (OF)** and **Micro Finance Institution (MFI)**. The criteria for CPI evaluation of OF is analysis of business feasibility, which are land productivity, net profit, B/C ratio, BEP volume and production price. Whereas MFI ranking was calculated from the LDR, NPL, CAR, ROE, and ROA.

Soft System Methodology for Agro business Micro financing Policy

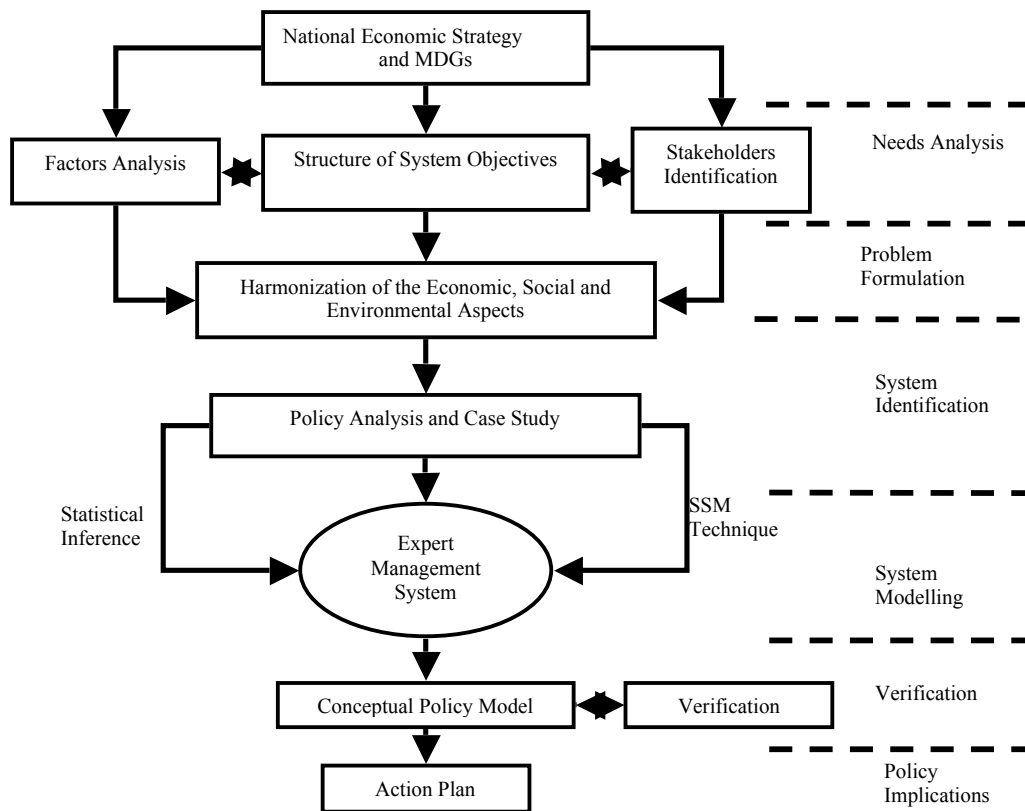


Figure 1. Research Framework

Strategic Assumption Surfacing and Testing (SAST)

This method used to formulate assumptions for creating policy alternatives (Mason and Midriff, 1981). SAST was found to be very useful in formulating critical assumptions related to policies, plans or strategies.

The steps taken to formulate key assumptions are:

- 1). The stage of forming groups, involving participants who are interested and relevant perception of the MFI/OF policy questions consisting of policy experts, MFI/OF experts, and bioenvironmental experts.
- 2). At the phase of surfacing assumptions, participants make analysis of the decision making behavior for different policy makers.
Further, the levels of importance and certainty level of the analysis in the form of alternative assumptions are evaluated using the rating technique by experts.
- 3). Next step is discussing strategic cases to test reliability of proposed assumptions.
- 4). The phase of synthesis, to achieve compromises on the key assumptions to formulate new strategy which is better than previous one.

Analytical Hierarchy Process (AHP)

The AHP is intended to organize information and various knowledge to choose the most preferred alternative. This method has ability to solve complex

Soft System Methodology for Agro business Micro financing Policy

qualitative problems by using quasi quantitative algorithm. This method has certain advantages because its ability to simplify ill-structured system while achieving priority for any complex problem (Saaty, 1983).

POLICY ANALYSIS

Approaches

In analyzing agribusiness policy, Environment Management System (EMS) approach for formulating continuous cycle of agriculture planning activities was implemented. This research begins from analysis of situational problems (*input*) and estimation of future prospect (output). The Input is microfinance performance, access to funding for OF, application of suitable technology, and quality of human resources. The Output is enlargement job opportunities reducing amount of poverty, easier access to investment for OF, improving performance for OF and MFI, and increasing agriculture practices that are environmentally sound.

The complexity of policies design is factorial linkages of three dimensional aspects, namely the economic, social and ecological aspects (environment). These three aspects have been studied in line with complexity of the agriculture for all public policy guidelines. In real-world problem, these three aspects must be comprehensively managed so that they are in complementary with each other (TSI approach).

The economic aspects are linked to the growth of agribusiness in observe region, which the existence of OF production activities, MFI business services, loan scheme for OF from MFI, infrastructure for OF producers, and the network of marketing for OF products.

The social aspects were observed from institutionalization for community participation and prosperity impact to the community themselves. The social institution involves are farmers group, producer of organic fertilizers, farmer and, community and extension agency in OF cultivation procedures.

The ecological aspects was evaluated in the impact of intensification through the burning of forests, farmer rehabilitation activities to bring fertile land back from chemical usage, and the existence of local organic waste utilize for organic fertilizers.

The link between the factors of economic aspects and social aspects was integrated in MFI capacity building, in the form of banks and, non- bank MFI such as cooperatives, independent investors and money lenders. Linkage between social aspects and environmental aspect is expressed from the existence of community empowerment through process of public awareness as common effort to develop OF. Whereas the link between environmental aspects and the economic aspects in OF activities is on balancing farmers welfare and profits earned from enterprises as well as MFI support. This can be effective because it could be implemented to make decisions from choices for action that are more directed toward the sources of the problems.

Basic Assumptions of Integrated Policy Development

Basic assumptions of the development policies obtained from FGD results conducted with (1) OF and MFI practitioners; (2) related agencies from regional government; and (3) experts from universities. After identifying the policy development factors from FGD, experts judgment to determine alternative

Soft System Methodology for Agro business Micro financing Policy

assumptions to be used in designing policy models. The syntheses of the assumptions discussed are drawn in a quadrant map of SAST techniques (Mason and Mitroff, 1981).

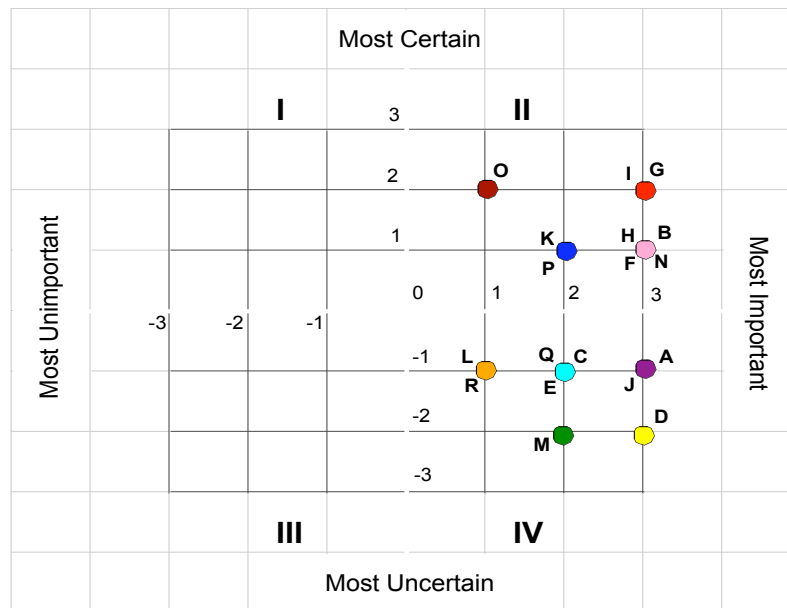


Figure 2. Map of Assumptions.

The linkage and positions of various assumptions on quadrant II was grouped to identify the following most strategic assumptions:

- 1). Organic waste could be processed into organic fertilizer and its availability from the local area (synthesis G and I).
- 2). Regional governments would cooperate with buyers in marketing organic products linked with farmer efforts to utilize fertilizers made from local bio-materials (synthesis B, F, H and N).
- 3). No deforestation to build up new farm land (synthesis K and P).
- 4). Consumers increase their awareness of health through consuming organic food (synthesis O).

The assumptions at quadrant IV have high degree of importance but contain uncertainties which results of their synthesis are as follows:

- 1). *None fixed asset* collateral, for production loan and assurance to maintain appropriate farm-gate price (synthesis A and J).
- 2). Quality standards for OF products, MFI are considered as best source of capital for the *on farm* sector and regional governments make available the production infrastructures (synthesis C, E and Q).
- 3). The availability of loan funds to purchase farm products so that OF product prices are compatible with market prices (synthesis D).
- 4). The farmer has sufficient information about OF methods (synthesis M).
- 5). The presence of MFI such as Micro banking, Rural Banking, Saving and Loan Cooperative and Pawn-Shop acceptable by the farmer (synthesis L and R).

The assumptions obtained from SAST are the necessary condition for designing policy models.

STRATEGY DEVELOPMENT

The determination of policy strategies was on FGD results and interviews with various experts. Furthermore, the stakeholders was further analyzed while priority elements was explored using the Analytical Hierarchy Process (AHP) method. Experts respondents are selected according to their knowledge and expertise on, (1) micro enterprises, (2) organic and inorganic farming, (3) environment issue, (4) MFI and banking, and (5) regional policy administration.

Agribusiness

The conceptual targets of the agrobusiness system are OF development strategies linked to the environment issues. The results of AHP based on the level of the strategic factors are shown in figure 3.

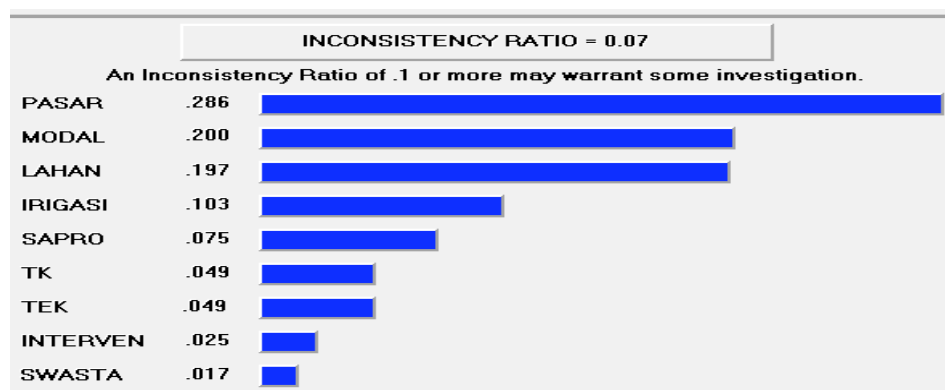


Figure 3. Comparison of priority levels of strategic factors that affect OF.

Priority of the influencing factors are: (1) access to markets and distribution (PASAR); (2) access to capital (MODAL); (3) the availability of land (LAHAN); (4) the availability of irrigation (IRIGASI); (5) the availability of the production inputs (SAPRO); (6) labor (TK); (7) green technology (TEK); (8) government intervention (INTERVEN); and (9) the role of the private sector (SWASTA).

The results of comparison of levels of importance between stakeholders namely (1) financial institutions (LK); (2) government (GOV); (3) farmers (PETANI); (4) suppliers of the means of production (PSAPRO); (5) merchants and the market (PEDAGANG); (6) innovators of green technology (PTEK); and (7) consumers (KONSUMEN).

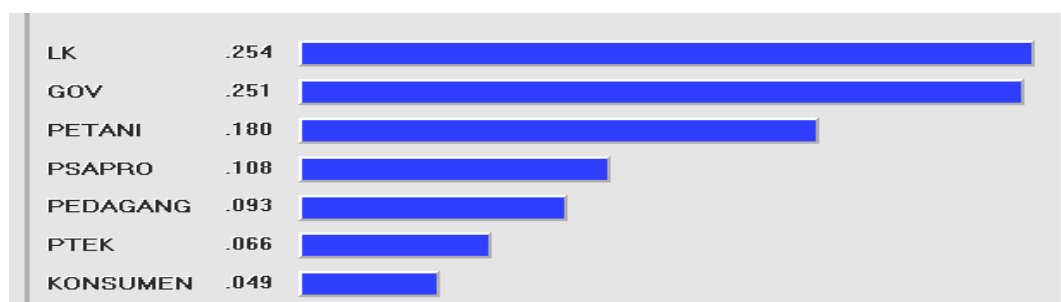


Figure 4. Comparison of levels of importance from the stakeholders.

Soft System Methodology for Agro business Micro financing Policy

Comparison of levels of importance from the point of view of system objective, the following results were found: (1) increased farmers' income (PPP); (2) improvement of job opportunities (LUAS); (3) increasing consumer health (SEHAT); and (4) improved green farming (RAMAH).

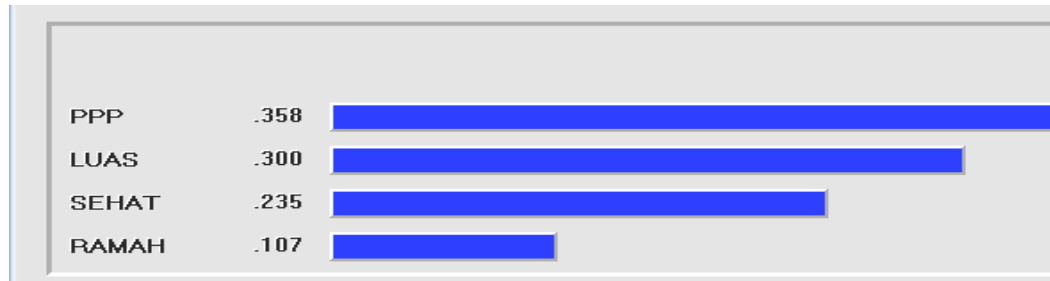


Figure 12. A comparison of importance levels seen from the point of view of system objective

An evaluation of the entire hierarchy showing an overall inconsistency index value of 0.06 alternative strategies can be found for the development of micro farm enterprises, namely (1) government policies (BP); (2) special bodies that serve micro enterprises (BADAN); (3) community outreach UMPO (SOSIAL); (4) development OF quantities (JUMPO); (5) partnerships with traders (MITRA); and (6) easy and affordable farm enterprise credit (KUM).

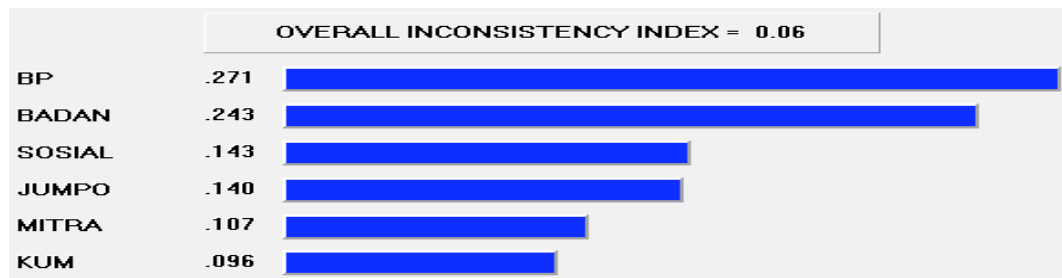


Figure 5. Calculations of alternative UMPO development strategies linked to the environment.

Farm Enterprise Financing

The target of the problems to be solved is how to MFI for financing agricultural enterprises.

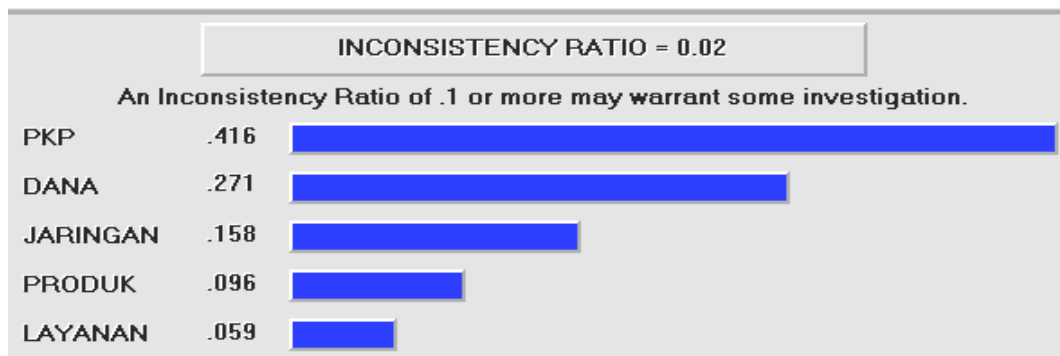


Figure 6. Results of a comparison of levels of MFI development strategic factors for financing agricultural enterprises.

Soft System Methodology for Agro business Micro financing Policy

From the point of view of levels of importance related to stakeholders is: (1) government (GOV); (2) legislative bodies (DPR); (3) MFI management (MANAJEME); (3) customers (NASABAH); and (5) MFI employees (STAF).

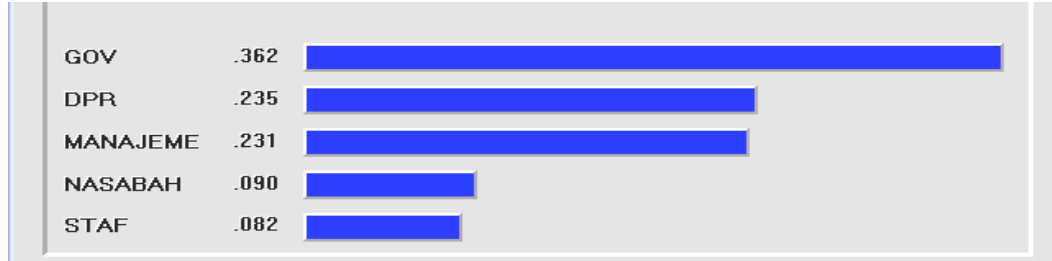


Figure 7. A comparison of importance levels of the stakeholders

The priority levels of importance on the system objective are as follows: (1) improvement and the amount of MFI financing to OF; (2) legal aspect; (3) increasing MFI amounts and networks; (4) improving MFI Human Resource knowledge; and (5) improving MFI profits.

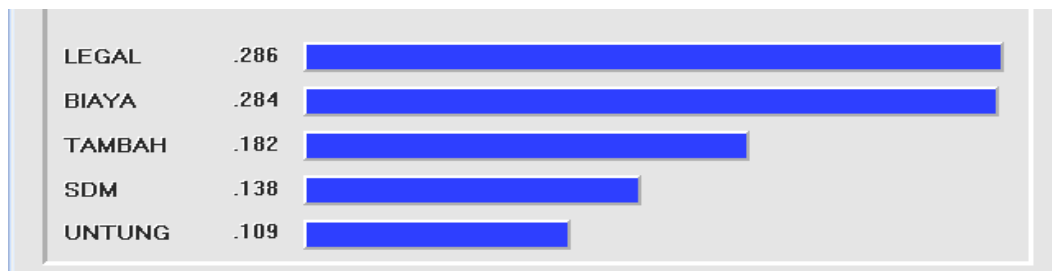


Figure 8. A comparison the importance based on goals that influence MFI development strategies for agricultural enterprise financing.

Based on the experts survey, alternative strategies was found, namely (1) central agency to coordinate MFI (BADAN); (2) linkage to banking (LINKAGE); (3) policies for MFI legal status (BIJAK); (4) MFI capacity building (KHUSUS); and (5) the availabilities of government budget (KEKUATAN).

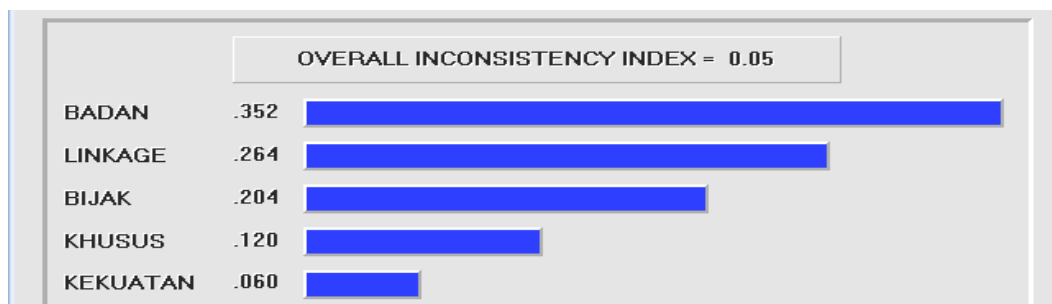


Figure 9. MFI development alternative strategies for financing agricultural enterprises.

Soft System Methodology for Agro business Micro financing Policy

Regional Policy

Factors that support related regional policy are, (1) business feasibility (LAYAK); (2) access to markets (PASAR); (3) access to capital (MODAL); (4) labor availability (TK); and (5) appropriate technology (TEK).

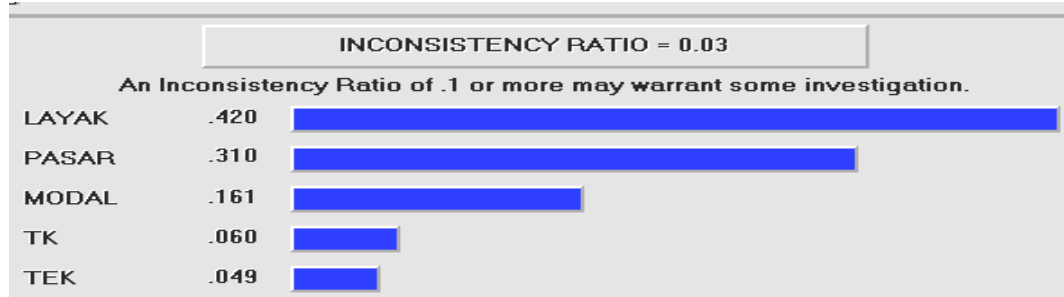


Figure 10. A comparison of the levels of factors

The role of stakeholders are: (1) farmers (PETANI); (2) government (GOV); (3) semi-formal MFI (BBBK) (4) Saving and loan loop (LKBB); and (5) micro-banks (LKMB).

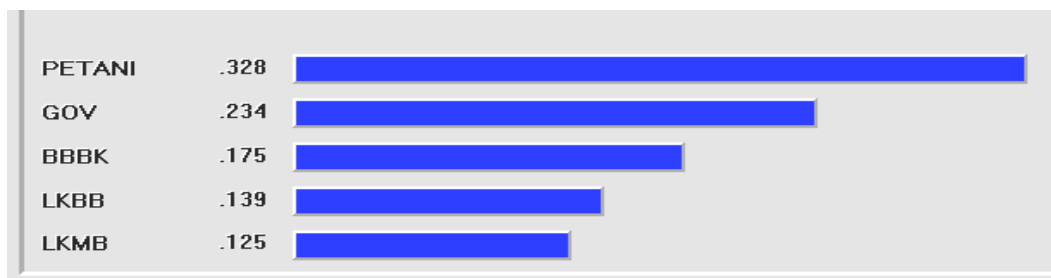


Figure 11. A comparison of importance levels based on stakeholders

The objective of government support for policy development strategies are (1) expand farming that is more environmental oriented; (2) reduce financing by middlemen/forward buyers; and (3) strengthening MFI services.

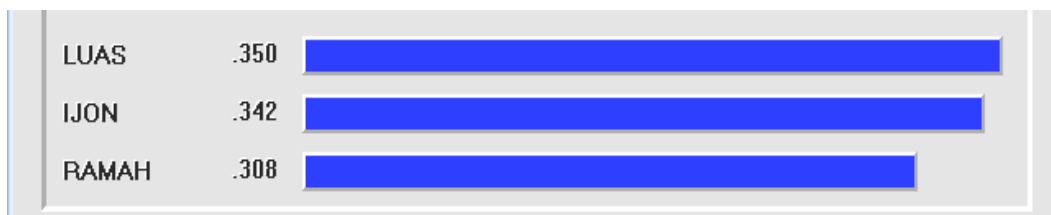
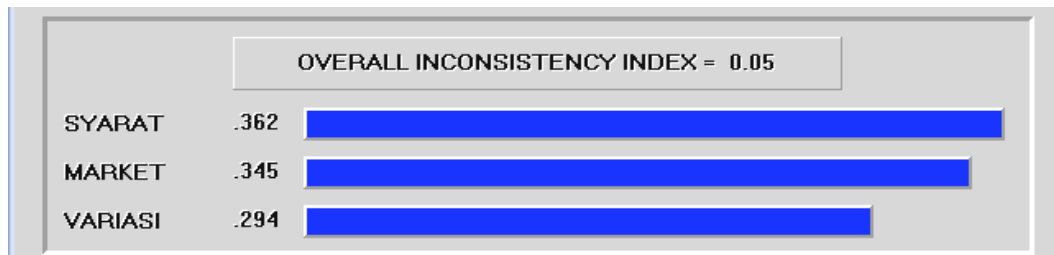


Figure 12. A comparison based on levels of importance of objective

Soft System Methodology for Agro business Micro financing Policy

The regional policy strategy for agrobusiness should focused on (1) simplification of procedure for financing OF (SYARAT); (2) consolidated marketing/community outreach of farm products (MARKET); and (3) variation of MFI products in accordance with organic farm commodity characteristics



(VARIASI).

Figure 13. A comparison of UMPO development alternative strategies supported by MFI

THE PUBLIC POLICY MODEL

The conceptual model of public policy proposed was design on the base of *total system intervention* (TSI), which is *critical system thinking* (CST) the *soft system methodology* (SSM). According to Jackson (2000), the elements of the system of total intervention are: 1) they complement each other; 2) social and emancipation awareness; as well as 3) a commitment to human well-being. As scientific foundation for the development of a conceptual model in this study is the concept of LEISA (*Low External Inputs for Sustainable Farming*) integrated into the interests of local agribusiness.

The model of organic farm development policies supported by MFI is constructed from several complementary system methods with extensive study on legal aspect and public administration.

The SAST method produced key assumptions that are preconditions for designing policy model. AHP methods produce strategy priorities that must be carried out in order to reach the objective of solving complex problems, whereas the CPI method compare performance levels among components in the research, between the OF business pattern as well as between various types of MFI.

The model of development policies supported by MFI is also developed with awareness of solving social problems including democracy, poverty, human rights, unemployment and emancipation. The OF development policy model supported by MFI is inseparable from the nation's mission of raising the level of social welfare.

Environment-friendly Farm Enterprise Policies (EFEP)

Natural resource-based business activities such as businesses in the farm sector are very dependant on the natural carrying capacity of the environment. For around the last four decades, farm enterprises in Indonesia have been oriented into inorganic farm system that decrease support capacity of the land. One of the efforts aimed at transferring the negative consequences of inorganic farms was organic farm enterprises.

Soft System Methodology for Agro business Micro financing Policy

According to the surveys and FGD respondents, the most important role of Organic Farm is its significant contribution to public health due to decreasing consumption of processed food uses chemicals fertilizer and pesticides. It is beneficial for the environment since besides preventing land degradation, it also brought back elements of nutrient elements that were lost due to intensive farm practices.

The development of this Organic Farming has good prospects and opportunities in line with increasing global awareness of healthy, safe and nutritious food. Many of the production infrastructures required for organic farm enterprises were available in the rural area, such as manure, straw and organic household garbage.

The FGD and expert surveys in the area of OF show that slow development, including organic rice in Indonesia, because of complex factors, including: (1) the lack of government support policies ; (2) less knowledge about OF; (3) lack of cooperation among stakeholders; (4) problems of land ownership; (5) access to markets; (6) low local community purchasing power; and 6) difficulties of obtaining loan for OF.

In the framework of OF development and support for the government program “*Go Organic 2010*” strategic policies namely EFEP must be adopted by the central government, provincial governments and regency/municipal governments. Those EFEP policies are grouped into two sub-system, i.e., financial support policies (see figure 15) and non-financial support policies for OF. In each sub-system of policies there are policies that are regulating in nature and there are those that facilitating practices.

Non-financial Support Policies

Non-financial policies are EFEP policies outside of financial support that determine OF development. These policies involve four aspects, namely: organic fertilizer and pesticide production, community outreach programs and adaptation of technology, agribusiness (marketing) and certification.

a. Extension Services

The government has to support agriculture extension workers and related institutions because the existing technology dissemination is ineffective for organic farmers. The functions of these services are to assist organic farmers in implementing various new technologies in the field of OF through local farm groups.

b. Organic Fertilizer and Pesticide Production

Organic fertilizer and pesticide production institutions are very important in the framework of supporting OF cultivation enterprises. These policies are needed to answer the need for organic fertilizers and pesticides that is sufficiently great for PO, and to anticipate the occurrence of fertilizer shortages.

The OF should not depend on organic fertilizer big-factory, Regional governments should carry on policies of managing organic waste from households and its surrounding area for organic fertilizer raw materials. These policies can enlarge jobs by collection of organic garbage to produce organic fertilizer (compost), minimizing OF production costs and preventing environmental pollution.

Soft System Methodology for Agro business Micro financing Policy

c. Agrobusiness Institution

Efforts of establish agribusiness trading company is needed in the framework of providing certainty for the purchase of OF products at reasonable price for organic farm micro entrepreneurs, and at the same time as a form of loan guarantee by creditor institutions so as to be willing to fund OF. To support the function of purchasing OF product, government should build *warehouse system* to store OF products, and maintain the quality of organic commodity until they are ready to be sold. These agribusiness institutions in form of State-owned Enterprise or just reactivating the role of the Local Logistic Agency which exist in the provinces.

d. Organic Product Certification

Certification institution no official institutions appointed by the government to evaluate and certify OF products at present time. The existence of this institution in the future will be very important as quality assurance in the production process and in marketing products since it is linked to consumer preferences.

Financial Support Policies

One of the obstacles faced by OF in developing enterprises is the difficulty of accessing financial institutions to obtain capital assistance. In the framework of strengthening OF capital structures, a credit/financing scheme has been designed and called the Organic Farm Enterprise Micro Credit (KUMPO). This financial EFEP model is verified in the field through FGD II to evaluate whether the model can be applied at the local and national levels.

National policies for micro financing are very much needed to overcome the limitations of micro financing through the creation legal aspect that allows existing MFI to expand their services and to fill in the gap between supply and demand for micro financing services especially in rural areas. These policies and strategies for their implementation should be refer on the best international practices and on lessons that was learned from micro banking experiences in Indonesia.

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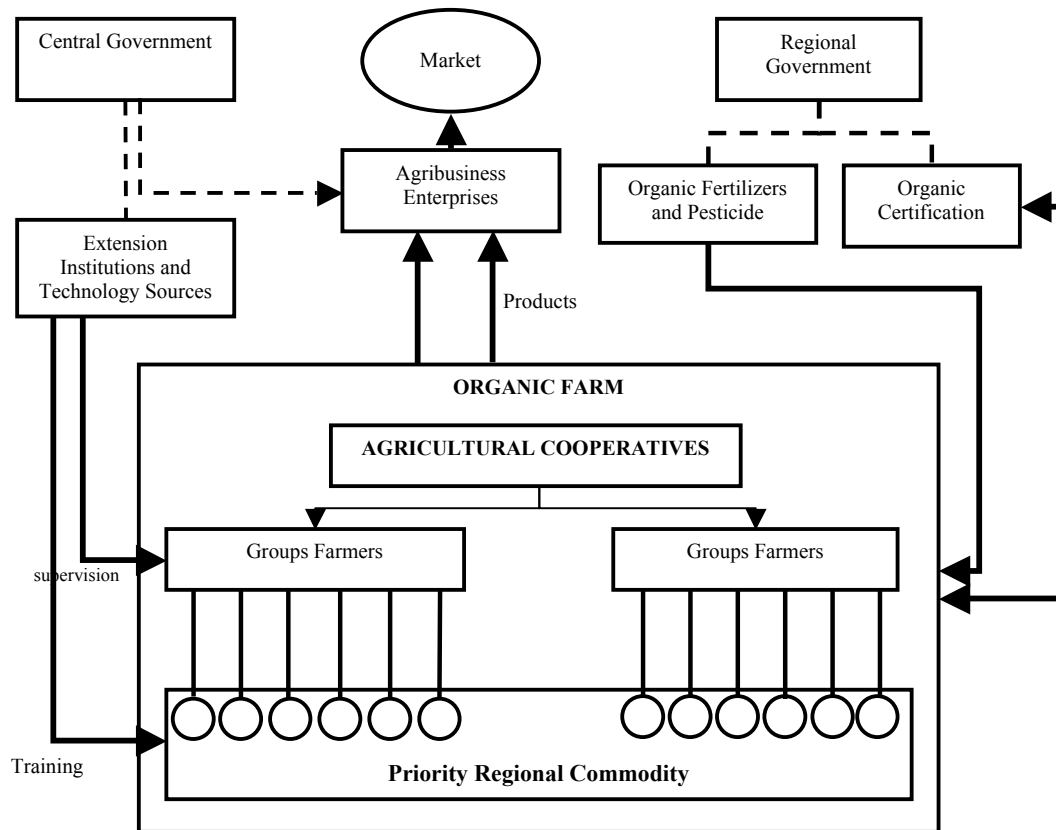


Figure 14. Model of non-financial support on EFEP

The establishment of micro financing coordination institutions is needed to increase effectiveness of government support in strengthening region MFI through human resource, and enterprise capacity building.

The government of Indonesia should immediately improve more appropriate legal frame that is directed toward meeting the needs of micro entrepreneurs to have continued financial access. This requires MFI regulation at the village level to manage community savings in certain quantities. The regulations intended must recognize three types of MFI, namely:

- 1). micro financing units of commercial banks,
- 2). cooperatives with savings and loan units and
- 3). Semi-formal MFI.

The creation of favorable environment for microfinance mechanism for sustainable farm system could be done, by providing clear legal status to non-formal MFI through the setting of MFI law.

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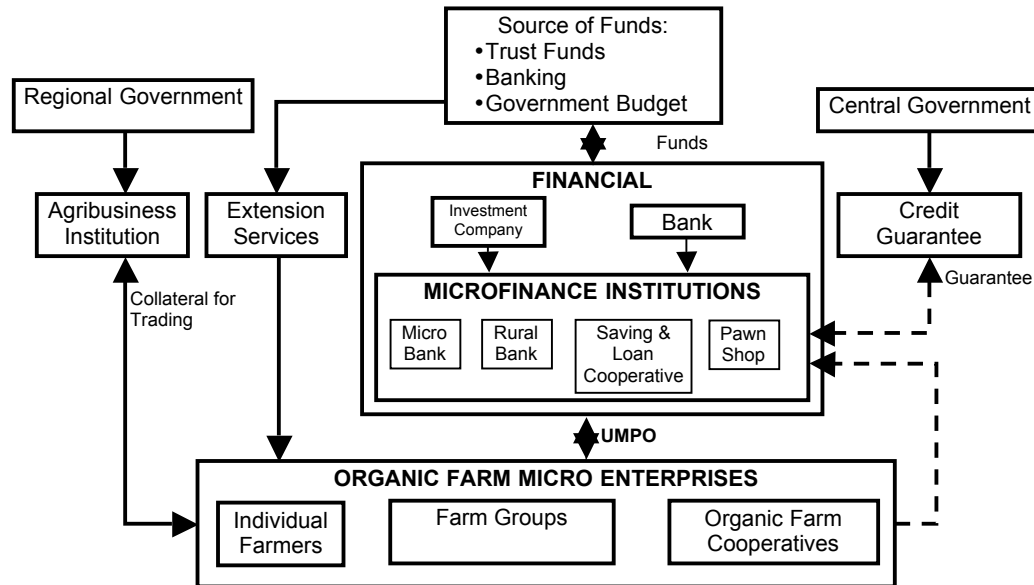


Figure 15. Model of Finance Support on EFEP

MODEL VERIFICATION

Verification of the EFEP model which supported by MFI function was made from theoretical point of view to the process of formulating policies and comparative studies of the policy assumptions by applying an equivalent policy. Theoretically the model of EFEP empowerment supported by MFI is in accordance with the policy process in the concept of *Critical System Praxis* (CSP) which better cross-discipline understanding, so as to produce a pattern of continuous steps for a more systematic policy. The techniques of validation of the conceptual model produced use the technique of *face validity*, namely the technique of face-to-face validation with experts in their areas through dialogues and FGD. The validity of the model is determined by:

- 1) The theory and assumptions that underlie the concept of the model are "TRUE".
- 2) The structure, logic and reasons are "REASONABLE" for supporting the intentions of that concept.

The results of verification, the ability of EFEP to meet the 5-C criteria (*Character, Condition of economic, Capacity to Repay, Capital, and Collateral*) should use as preconditions by MFI in providing loan. The criteria of *Capacity to repay* are most sensitive. In addition, criteria of *Collateral* due to lack of *fixed asset* should be replaced because rural bank are not yet compatible to Bank Indonesia regulation.

The results of validation are in line to the need for support for OF to get financing from MFI. With credit guarantees from the government, support marketing from the government, agents and product certification should be including in EFEP.

The EFEP model achieved good responses and optimism from OF respondents. All of OF respondents support the role of Regional Governments in

Soft System Methodology for Agro business Micro financing Policy

the formation of agribusiness institutions to purchase OF products and at the same time act as OF credit guarantor the role of Regional Governments in reactivating community outreach institutions and the adaptation of technology to community outreach OF and to provide community outreach and partnering.

POLICY IMPLICATION

The implications of the EFEP policy is action plan recommendation for the government and legislative institutions especially in the matters of:

1. Formulating policies for improving organic food production for food sufficiency and safety. Besides protecting the environment, operationalization of EFEP is also for meeting mission of food security and safety for common people under the mandate of Food Law Number 7, 1996.
2. The formation of agribusiness institutions in the form Regional marketing agency or increasing the role of the Local Logistic Agency could improve trade efficiency. These agribusiness institutions might provide loan collateral for trading of organic farm products, as well as perform limited price control of organic products.
3. The ratification of the enactment of laws regarding MFI, so as to allow banks and other non-bank financial institutions to have rational business relations with non-formal MFI and to allow those MFI to manage community savings locally.
4. The comprehensive regulation of Revolving Funds in the sectoral departments to support the accelerated development of OF and MFI. Support can be in the form of government investment in loan guarantee institutions for MFI credit scheme to organic farm micro enterprises.
5. Formulating an organic fertilizer policy to support organic food production and at the same time directing inorganic fertilizer plants to be oriented more toward exports.

CONCLUSION REMARKS

This research found that Soft System Methodology application is useful to improve policy design on agriculture which naturally complex and messy problem. TSI approach which is creativity, choice and implementation (Wilby, 1996), could increase quality of policy development through combining of various research methodologies including empirical evidence. Technique such as SAST, AHP and CPI were effective as long as the expert survey, choice of the experts and knowledge acquisition procedures was done correctly.

Participation of various stakeholders, especially policy makers, is very critical in line with policy analysis and further recommendation. Case study and field observation add more information to support the decision making process. The study itself referring to the regional sustainable development (Frentes, 2006), could define EFEP model and its in application.

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