



Key Succes Factors for Organic Farming Development

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Key Words

*Analytic Hierarchy Process;
Weight;
Criteria;
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Abstract

The aim of this research is to determine the weight from determinant factors in developing organic farming in Garut District, West Java, Indonesia. Determinant factor in the research are determined based on judgment from the respondent. Determinant factors in developing farming are classified by some aspects such as technology, social and politic, economic and environment. The weight of each factor is counted by using weight method based on Analytic Hierarchy Process (AHP) Model. The result of synthesis shows that respondents prefer organic farming method than conventional method. However, to implement organic farming extensively needs program or policy support from stakeholders on sub-criteria who tend to make organic farming better. The programs including orientation on quantity improvement in organic farming yield, provision of equipments, and raw materials, farmer's performance, financial support, provision of market, and decreasing organic farming business risk.

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1 Introduction

One of approaches to maintain food security by implementing organic farming. Organic farming according to CCOF (2002) in Dung (2005) is defined as “methods of growing and processing foods that rely on the earth’s natural resources.” Pest and weeds are managed by using eat-friendly means such as beneficial insect and mechanical controls. Organic farmers work to build natural nutrients in soil which help fertilize plant without relying on synthetic fertilizer.

Ching (2002) describes a sustainable farm must produce adequate high quality yields, be profitable, protect the environment, conserve resources and be socially responsible in the long term. Specifically, the indicators used were soil quality, horticultural performance, orchard profitability, environmental quality and energy efficiency.

Organic farming largely excludes synthetic inputs-pesticide, herbicides and fertilizers and focuses instead on biological process such as composting and other measures to maintain soil fertility, natural pest control and

diversifying crops and livestock. Organic agriculture gives priority to long-term ecological health, which concentrate on short-term productivity gains.

Generally, organic farming has more advantages than conventional method developed in the research site. However, in the implementation, it needs studying of determinant aspects in developing organic farming so that the decision maker in agriculture can see its role in developing organic farming.

2 Methodology

A review on the various methods and procedures for weighing the factors on organic farming development assistance program currently suggested in the literature reveals considerable difference in a number of points. Then, determination on determinant factors involved in the model determined based on judgment from the respondent. In the research, the participants/ the respondents are employees of Bappeda (Regional Developing Planning Agency) and Agriculture Department in Garut District. The appointment of the participant based on consideration that introduction level and their expertise towards the grading system of farming method.

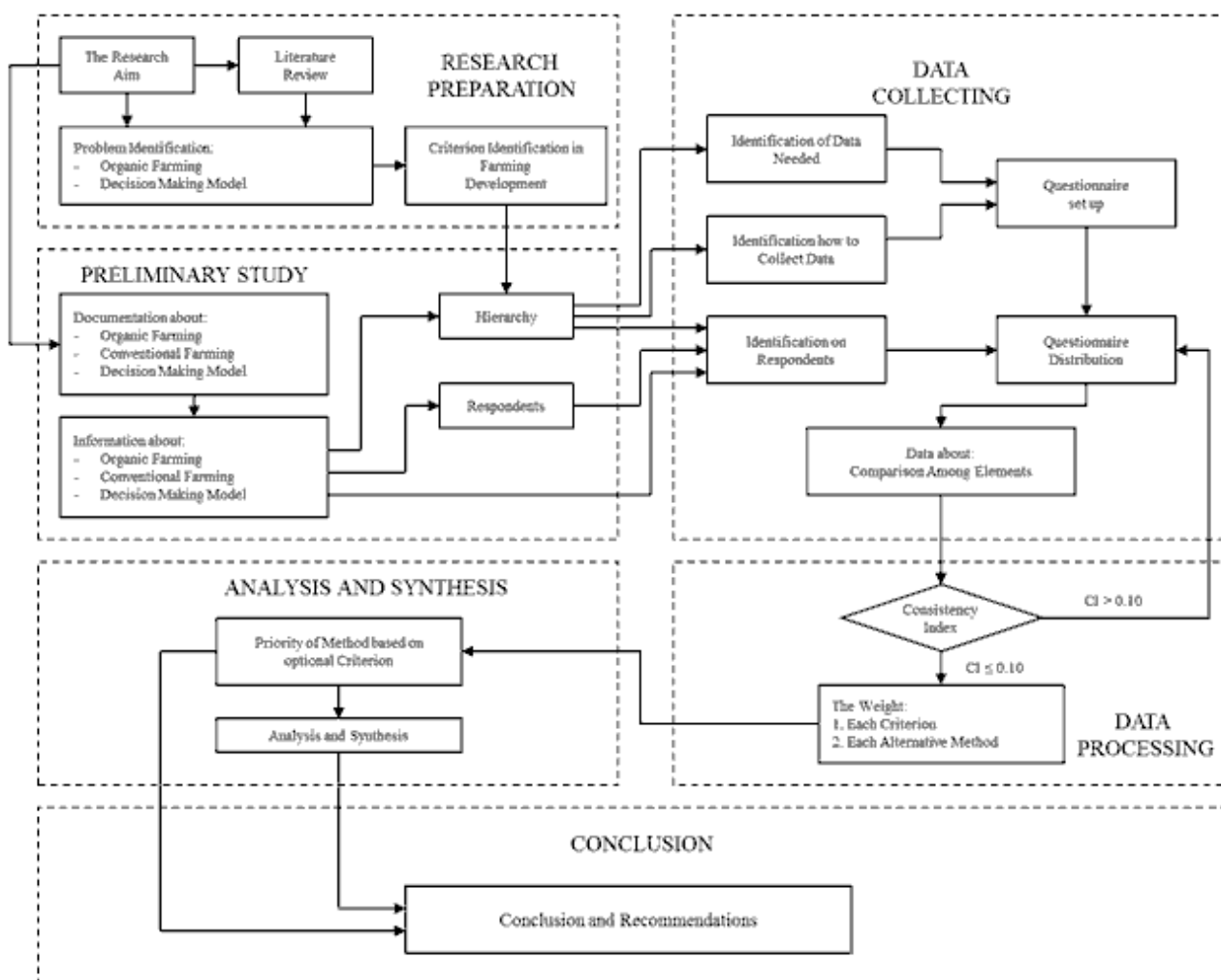


Figure 1. Research Methodology

Problem system begins from basic idea of development of multi-criteria decision making, especially AHP developed by Saaty (1986; 1989; 2004). The analysis then linked with decision maker's problem in determining the organic farming development. It is shown in Figure 1.

AHP model application is the task of assigning weight to various criteria and the construction of pairwise comparison matrices. It starts as the top level of the hierarchy, and proceeds to the other level until the lowest level of the tree is reached. The calculations are made by using commercially available micro computer software package EXPERT CHOICE (EC).

3 Result and Discussion

Introduction to the Environment of the Problem

One of the aims of this research is to measure the weight of each aspect needs to be considered in selecting farming model development, especially for organic farming and conventional methods. Determination of criteria is determined by four criteria; that is aspect of technology, social and politic, economic, and environment.

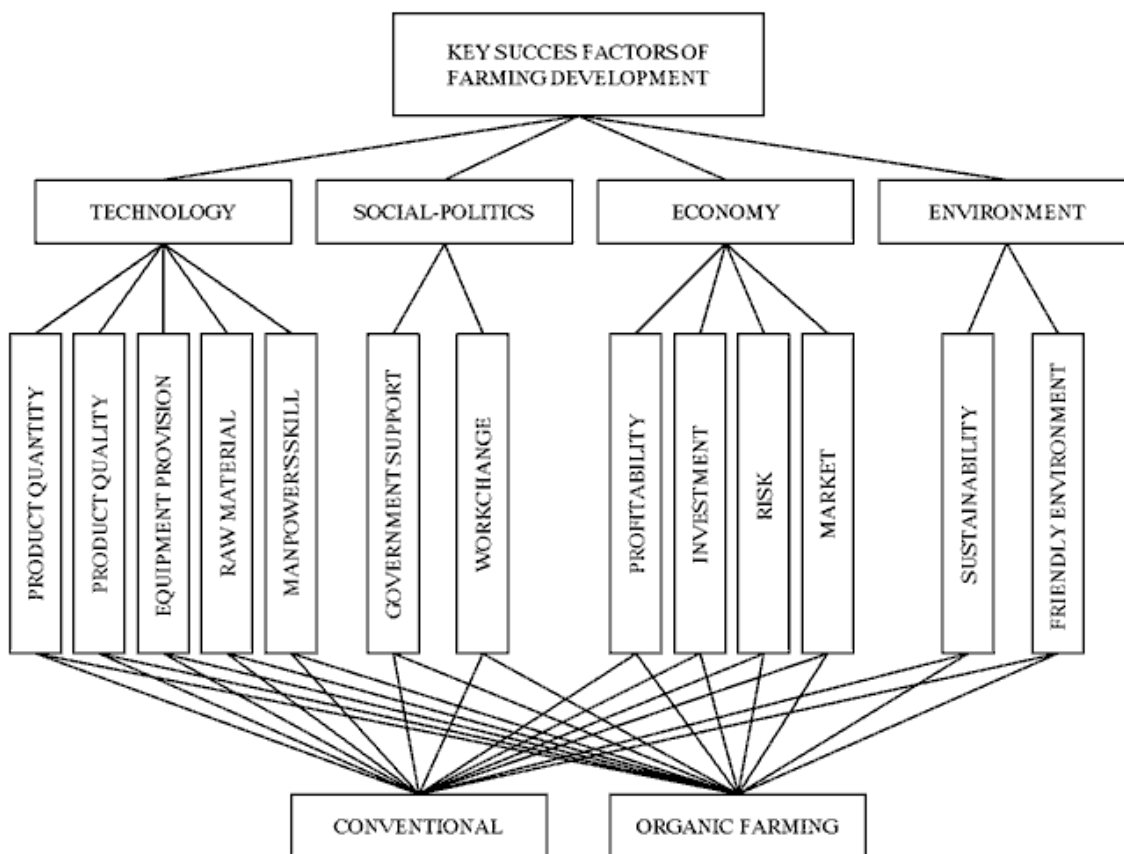


Figure 2. Hierarchy Structure in Deciding the Selection of Farming Method

Classification of the above criteria is made based on influential suggestion or thought on criteria toward the decision for selection of farming method in research location. Based on library review and field observation, the group can be developed and detailed more into sub hierarchy groups.

Analysis and Synthesis

Synthesis process is meant to get priority of synthesis and likelihood total due to the objective of priority determination for farming method. In this process, aggregation is made for the relative demand from design hierarchy.

Objectives of Selecting Farming Method

Selecting the farming method will consider technological, social and political, economical, and environmental aspect from those methods. Selected commodity will be declared as farming methods preferred, and appropriate assistance program will be taken for its development.

Table 1. Weight of Criteria and Alternative

Factor		Sub factor		Alternative	
				Conventional	Organic Farming
Technology	0,145	Product Quantity	0,036	0,019	0,017
		Product Quality	0,036	0,011	0,025
		Equipment Provision	0,018	0,010	0,008
		Raw Material	0,036	0,021	0,014
		Manpower's Skill	0,019	0,010	0,009
Likelihood				0,072	0,073
Social-Politics	0,138	Government Support	0,075	0,038	0,038
		Work change	0,063	0,037	0,025
Likelihood				0,075	0,063
Economy	0,454	Profitability	0,170	0,091	0,079
		Investment	0,083	0,047	0,036
		Risk	0,041	0,011	0,031
		Market	0,161	0,119	0,042
Likelihood				0,268	0,187
Environment	0,263	Sustainability	0,125	0,014	0,111
		Friendly Environment	0,138	0,011	0,126
Likelihood				0,025	0,237
TOTAL LIKEHOOD				0,428	0,572

Table 1 shows determinant factors which become the key aspects or criteria in selecting farming method preferred by the respondents. In fact that conventional method is used extensively by the farmers in Garut District. However, the results of synthesis and research show that the researched respondents prefer organic farming method.

Based on the research result, the most important aspect in selecting farming method is economic. It is based on the fact that consideration in economic is the main aspect; furthermore, it is followed by environmental, technology, and finally social and political aspect.

Criteria Analysis

1. Technology

One of strategic issues in the farming development is technology. Analysis towards this aspect is a measurement how far a farming method can affect product quality and quantity, equipment availability, raw material provision, and the level of the farmers' skill. In the technological aspect is identified some

important factors in implementing organic farming followed by quality and quantity aspect, raw material provision, manpower's skill, and equipment availability.

a. Product Quantity

Product quantity measured in this research is productivity level from each method. The use of inorganic fertilizer and pesticide based on field observation has yield higher product quantity by conventional farming method than that of organic farming method. Sahai (2005) identifies if the comparison is made in a short-term, the organic farming has lower productivity (5 to 20 percent) than that of conventional method. But if the comparison is applied in longer term, organic farming will produce higher product. It is based on the improvement of soil quality in organic farming, which will improve more followed by the time travel, improve plant productivity.

b. Product Quality

Product quality stated in this research is not product esthetic but product-consumption feasibility. Based on analysis result, I find out that respondent prefer organic farming method products. It is parallel with what mention in Brandt and Kidmose (2003) who the use of organic methods can benefit the nutritional value of food in several ways. The organic production system is believed to influence the nutritional quality of foods. As a result of maturity of organic plant products tend to have a higher content of dry matter and vitamin C, and a lower concentration of nitrate. It has been documented in several studies although a number of exceptions have also been found (Woese et al, 1997). Some of the exceptions may be as a result of not comparing with the same variety. In other cases, mature growth termination in the organic production system. When comparing the same wheat variety in the two production system, the protein content of the organic wheat is reduced (Hauglund et al, 1998 in Molgaard, 2004).

c. Equipment Provision

Equipment provision is defined as "access ability of ownership and equipment borrow used for each method". Based on analysis result and finding in the research object site, the supporting equipment for convention model are easier than that of organic farming. To implement organic farming more extensively, it need stakeholders' involvement to provide equipment for organic farming method.

d. Raw Material

The provision of raw materials is an important component in implementing a farming method. Based on research result, for organic farming, the farmers' are faced with difficulty in finding or obtaining organic fertilizer, but for conventional method various kinds of raw material fertilizers and pesticides are available sufficiently in the market.

e. Manpower's Skill

Habitual aspect is one of manpower's' skill formatting. The farmers' habit nowadays is applying conventional method besides they often hold training un the utility of inorganic fertilizers and pesticides. Meanwhile for organic farming method, which is being redeveloped, needs to change the work patterns which need training and education to improve the farmers' skills in implementing organic farming.

2. Social and Politic

One of aspect which becomes attention in the research is social and politic. Analysis made to see the effect of a farming method linked with government's support and the work pattern change. The result of the research shows that government's support is more important than work change.

a. Government Support

Government support is an important aspect in implementing a farming program. In this case, the government has given attention for organic farming, but the support has not been realized in the form of policy which gives significant effect. The support for organic farming has just realized in the form of intensification in research based on implementation in organic farming research.

b. Work Change

One of social aspect used in this study is a work change aspect. Based on analysis result, the farmers usually apply conventional method that it needs work cultural change to implement organic farming. It is parallel with mention in Santosa and Ramdhani (2005), in order to implement organic farming, the farmers are supposed to be educated and trained so that they able to analyze and make decision on their land and are able to study and practice plant cultivation emphasizing on local potential management.

3. Economic

On of strategic issues in the farming development is economic. Analysis towards this aspect is a measurement how far a farming method in giving economic value for the farmers. Through this aspect is identified some important factors in the implementation of organic farming followed by profitability, marketing, investment and risk aspect.

a. Profitability

Calculation result shows that respondent, from profitability side, think that conventional method is more profitable than that of organic farming. Based on research about the implementation of organic farming shows that in the first part of implementation of organic farming result that that harvest yields are less than the capital the farmer must bear or pay compared with the conventional method. The cost component which must be added are the purchase of organic fertilizer and manpower addition. For example, on rice organic farming, the need for fertilizer for every hectare of land is 7-10 tones/ha. The provision of organic fertilizer are more difficult because they are not available in market. But in the long term, the farmers can make organic fertilizers themselves by utilizing the rest of plant from their harvest yield.

b. Investment

Respondent seem to respond that investment they must pay for organic farming is cheaper than that of conventional method. It is based on their knowledge that organic faming needs not cost to buy fertilizer and pesticide.

c. Risk

From the side of risk, respondent think that conventional method is more risky than that of organic farming. It is realized based on experience of the farmers that conventional method has a high risk toward harvest failure because it depends on an organic fertilizer and pesticides. If the pests are adapted to artificial pesticides and fertilizers, it will increase the trouble to the plants automatically and foil the harvest.

d. Market

Respondent seem to think that the market product from the conventional method is better than that of organic farming. It is because the product yield by conventional method tends to be better from the sides of shape an appearance.

4. Environment

Environment aspect is important to be considered. Environment al issue in the farming is promoted in various fields, to think that the use of chemical matters in farming is bad. The criteria used in this aspect are sustainability and friendly environment. The respondent think that friendly environment is more important than sustainability.

a. Sustainability

Respondents see from the sustainability side that organic farming method is better than that of conventional method. Ching (2002) describes the uses of chemical matter such as an organic fertilizer

and pesticides in conventional method make soil condition bad. The use of organic fertilizer in organic farming will improve the soil condition to be better. The good soil condition will guarantee sustainability of farming and environment.

b. Friendly Environment

Respondent see that organic farming method is more friendly towards environment than conventional method. Organic farming is natural farming process without involving artificial fertilizers and pesticides. Pesticides is thought as pollution which endangers environment that it needs to be avoided. In organic farming, pesticides is replaces natural enemies from the pest will be blustered.

4 Conclusion

Organic farming guarantees food security through sustainable farming by improving the soil quality. Based on respondents' perception, the organic farming has advantage in various aspect such as product quality, low risk, and environment criteria, especially in the sustainability and friendly environment.

In general, based on likelihood evaluation, organic farming is chosen as priority in the development program. However, to further implementation, it needs stakeholders' support for development of organic farming through the program of orientation on quality improvement in organic farming yield, provision of equipment, and raw materials, farmers' performance, financial support, provisions of market, and decreasing organic farming business risk.

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