ANALYSIS OF COMPETITIVE IMPROVEMENT OF SOYCULTURE INDUSTRY CLUSTERS IN SUPPORTING FOOD SECURITY IN GROBOGAN DISTRICT USING INDUSTRIAL CLUSTER APPROACH

Ryan Corinus Dato Matheos  
Heru Mulyono  
Master of Management, Trisakti University  
Associate Expert Engineer Center for Strategic Areas Technology and BPPT Innovation System  
E-mail: matheos.ryan@gmail.com

ABSTRACT

Grobogan District in the Province of Center Java, has a potential to produce commodity of horticulture, because of its geography and agroclimate condition that suitable for horticulture plants. The production of horticulture commodities in the Grobogan District can be increased further by doing intensive agriculture and improving farmers’ skill. Increasing the productivity and competitiveness of these commodities will support the increasing of import substitution of these commodities in order to save the national foreign exchange income. The objective of this paper is to formulate the strategies based on the industrial cluster and SWOT analysis to increase competitiveness of the horticulture industry sub sector in Grobogan District.

Keywords: Industrial Cluster; Competitiveness.
INTRODUCTION

Background
Efforts to achieve National Food Security are not only concentrated to meet the needs of basic food raw materials such as rice, but also need to also meet the needs of food commodities such as corn and soybeans to supplement domestic staple food. In order to strengthen the National Food Security, the entire potential of national food raw materials will continue to be empowered so that domestic production for import substitution (Mariam, 2016; Mariam & Ramli, 2017), especially the need for soybeans can be enlarged or increased.

Grobogan Regency which part of its territory consists of mountains and hills with agro-climate suitable for soybean plants is one of the centers of soybean crop producers for the regional level in Central Java and even at the national level, with a total land area of around 300 hectares. The level of productivity reaches 3.6 tons / Ha. Considering its potential can still be increased, it needs serious attention from the Grobogan Regency Government and related stakeholders to develop the productivity of the soybean sub-sector.

By increasing the competitiveness of soybean products as one of the agricultural sub-sectors, it is hoped that besides being able to support (national) food security, it can also support the development of the local economy in Grobogan Regency. The approach used in increasing the competitiveness of soy products uses the industrial cluster approach. After the roles or positions of each industry element are mapped, an analysis of internal factors (strengths, weaknesses) and external factors (opportunities and threats) is then analyzed using the SWOT analysis method (Ramli, 2010; Ramli, 2012a; Ramli & Sjahruddin, 2015). Then the next step is to develop an action plan strategy by paying attention to the priority scale of what activities will be carried out to strengthen and develop existing industrial elements (Ramli, 2012b; Ramli, 2013), in order to improve the competitiveness of the soybean cultivation industry cluster. But employee performance is significant to develop the successfull
organization or industry performance (Ramli, 2017b, Puteri & Ramli, 2017; Ramli & Maniagasi, 2018; Ramli & Yudhistira, 2018).

**LITERATURE REVIEW**

**Industrial Cluster Concepts**

Until now there is no standard definition regarding industrial clusters. The term "cluster" has a literal meaning as a collection, group, set, or combination of certain objects that have a similarity or on the basis of certain characteristics. Industrial cluster is a unity of various industrial elements that are integrated with each other (Ramli, 2017a). All elements in the industrial cluster have the same position, and each element has a complementary function (Ramli, 2016a; Ramli, 2016b). In an industrial cluster there are 6 (six) industrial elements, namely the core industry, supplier industry, related industries, users, supporting industries and supporting institutions / institutions.

**Generic Industrial Cluster Model**

The generic model of the industrial cluster is shown in Figure 1 below. **Figure 1:** Generic Industrial Cluster Model.
Industrial clusters in this paper are defined as specific industry groups that are linked by a network of the process of creating / increasing added value, both through business and non-business relationships.

Here are some definitions of industry clusters:

- Collections / business groups and related industries through a common product chain, dependence on similar workforce skills, or the use of similar or complementary technologies (OECD, 2000);
- Collection of business and industry groups related through a common product chain, dependence on similar workforce skills, or the use of similar or complementary technologies (OECD, 2000);
- Industrial groups with focal / core industries that are intensively interconnected and form partnerships, both with supporting industries and related industries (Deperindag, 2000);
- Michael Porter defines an industrial cluster as a group of companies and related institutions in certain fields that are geographically close and interrelated because of "commonalities and complementarity" (Porter, 1990).

An understanding of the elements of the industrial cluster analyzed in this study is:

1. **Core Industries**
   - Industries which are the focus of attention or thematic and are usually used as entry points for studies
   - Can be an industrial center
   - Advanced industry (characterized by innovation)

2. **Industrial Suppliers**
   - Industries that supply special products
   - Specialized suppliers (specialists) are supporting cluster progress

Supplied include:

- Main raw materials
- Additional ingredients
- Accessory
3. Buyers
- Can be a distributor or direct user.
- Buyers who are very ‘claimants’ are driving the progress of the cluster

The buyers consist of:
- Distributor
- Reseller
- Direct users

4. Supporting Industries
- Includes service and goods industries, including financing services (Banks, Venture Capital)

These supporting industries consist of:
- Financing (Banks, Venture Capital)
- Services (Transportation, Distribution Business, Business Consultants)
- Infrastructure (Roads, Telecommunications, Electricity)
- Equipment (Machinery, Tools)
- Packaging
- Business Development Services Provider (BDSP)

5. Related Industries
- Is an industry that uses the same infrastructure.
- It is an industry that uses resources from the same source (eg expert groups). The term 'related' here is different from what is used in everyday understanding. The related industry is not directly related to business. Related industries consist of:
  o Competitors
  o Complementary
  o Substitution

6. Supporting Institutions
- Government agencies, which take the form of policy makers or carry out public roles
- Professional associations that work for the benefit of members
- Non-Governmental Development Institutions that work in specialized fields that support.

**SWOT analysis**

SWOT analysis is an analysis that describes the position of a company in the business environment/industry. A company must know the environmental conditions in which the product or service will be sold. Therefore, a business (company) needs to know the strength position (Strength / S) and weakness (Weakness / W) of its internal environment and also know the opportunities (Opportunities / O) and threats (Threats / T) of its external environment, henceforth the company seeks to improve its competitiveness in order to survive and develop. A SWOT analysis of a company/business is carried out by looking at the following elements:

1. Strength or Strengths are factors that are entirely in the control of management/business owners, so that it gives a positive impact on the company.
2. Weakness or weaknesses are factors that are fully in control of the company, but the company has not managed to manage or control it so that it gives a negative influence on the company.
3. Opportunities or opportunities, are factors that are beyond the control of management, but their emergence can provide opportunities for success for the company if they can achieve it.
4. Threats or threats are factors that are beyond management's control, but if they arise they will potentially threaten the company's survival.

**RESEARCH METHODS**

**Data Type**

Data used:

1. Primary data by means of interviews and discussions involving soybean industry players and policy makers in the regions, so that the collaborative process in identifying and developing the competitiveness of industrial clusters can be achieved.
2. Secondary data from related institutions (BPS, Department of Agriculture, Food Crops and Trade Office).

Data Analysis
Competitiveness analysis of the soybean cultivation business, will be used using the industrial cluster approach in this study conducted with the SWOT analysis method.

RESULTS AND DISCUSSION

Condition of Grobogan Regency
Geographical Location
Judging from the Map of the Province of Central Java, Grobogan Regency is located between two Kendeng Mountains stretching from west to east, located in the east and bordering on:
- West side: Kab. Semarang and Kab. Demak
- East side: Kab. Blora
Geographically, the Grobogan Regency is located between 1100 32’BT - 1110 15’BT and 60 55’LS - 70 16’LS.

An Area
Administratively, Grobogan Regency consists of 19 (nineteen) subdistricts and 280 villages / villages with the capital located in Purwodadi. Based on the results of the Land Use Evaluation (EPT) of 1983 Grobogan Regency has an area of 1,975.86 Km² and is the second largest district in Central Java after Cilacap Regency. Distance from north to south ± 37 Km and distance from west to east ± 83 Km.

Administrative Region
Grobogan Regency in 2016 was divided into 19 Districts. The area consists of 280 villages / sub-districts, 1,451 hamlets, 1,756 RTs and 9,096 RTs. The highest number of villages is
owned by Godong Subdistrict, which is 28 villages, while the least is owned by Brati, Klambu and Tanggungharjo Subdistricts, as many as 9 villages. The number of village officials in Grobogan Regency is 3,150 people.

**Soy Cultivation**

Soybean varieties grown in Grobogan Regency are Soybean Grobogan varieties. Soybean Grobogan variety is one of the VUB (New Superior Varieties) Soybeans released in 2008. This variety comes from the purification of the local Malabar population from the Grobogan Regency, Central Java. Has a determinant growth type, with a plant height of 50 - 60 cm. The color of the seed coat is light yellow with brown pods, and the seed weight is about 18 g / 100 seeds. The cooking pod age is approximately 76 days with a potential yield of 3.40 tons per ha. The nature of the cooking pods is not easily broken and at harvest the leaves fall 95-100%. This variety adapts well to a number of quite different growing environmental conditions, in the rainy season and in well-irrigated areas.

Grobogan soybean varieties have several advantages, namely, shorter age, taller plants and larger pods.

Before planting, the seeds are mixed first with Marshal 25 ST or fipronil or plant holes given Furadan 3G. Land management can be done by hoeing or TOT (without land). To increase the growing power of farmers also use Rhizoplus. Plant spacing used is generally 30 X 25 cm or 30 x 20 cm planted by dibugal. Seed requirements are generally 40 kg per ha. Making drainage channels is very necessary so that if excess water can be immediately discharged. Phonska fertilization is done 7 DAPs at a dose of 200 kg / ha while urea is given if necessary at 28-30 HST at doses of 100 kg / ha. Leaf fertilizer can be given if needed. Pest control is carried out by the IPM (Integrated Pest Management) technique of Soybeans by identifying the type and calculation of pest population density, determining the level of pest damage and physical and mechanical biological control techniques before using chemical pesticides. Pests that appear are usually seed flies or aphids or leaf borers.

Harvesting is done when the leaves fall more than 95%, ie when the plants are +/- 76 days old. After the seeds are shed, the soybeans are dried with a moisture content of 12-14%. The average yield of dried soybeans obtained by farmers is 2 tons / ha.
Grobogan Regency Soybean Industry Cluster

The soybean industry cluster consists of the following elements: Supplier Industries, Related Industries, Core Industries, Buyers, Supporting Industries and Supporting Institutions.

In the initial stage, the writing team identified the soybean cultivation variety in Grobogan District. The results of identification of soybean varieties can be seen in Figure 2.

Next, the team carried out the process of mapping the Grobogan Regency soybean cultivation industry cluster with the following results:

1. Core Industries

In this analysis, soybean farming is a core industry. Namely the industry (cultivation business group) that is the focus to be increased competitiveness. Grobogan Regency soybean production reaches an average of 2-3.5 tons / ha using Grobogan varieties that have the best quality with protein content reaching 60%. Grobogan variety seeds have advantages namely, short-lived, high productivity, does not impede cropping patterns, and rich in protein content (Iriani and Handoyo, 2011).
2. Industrial Suppliers

Industry Suppliers of the soybean cultivation business include seed suppliers such as seed growers, farmer cooperatives and local soybean dealers of Grobogan varieties; fertilizer suppliers namely PT. Petrokimia Gresik, manure / compost (local), and drug suppliers namely PT. Ciba Geigy.

3. Buyers

Buyers of the soybean crop are seed growers, farmer cooperatives, dealers and final consumers. Grobogan soybean varieties consumers besides traders and local consumers also come from the surrounding area, for example from Boyolali Regency, Demak Regency, Blora Regency and Semarang Regency.

4. Supporting Industries

Supporting industries from the soybean cultivation industry include: Saprotan sellers in Purwodadi, BRI Bank, Bank Mandiri, BPR, Grobogan Regency Innovation Center, Local Goods Transport Services, TV, RRI, PLN, Telkom, Indosat and others. Farmers in general have obstacles in capital, both for working capital and business capital. Besides being able to be fulfilled with their own capital, farmers have formed partnerships with banks (including Bank BRI, Bank Mandiri and BPR) to develop their businesses but to date farmers are still careful to borrow funds from banks.

5. Related Industries

The related industries of the core soybean cultivation industry include (1) Corn Farmers; (2) Rice Farmers.

6. Supporting Institutions

Supporting Institutions for the soybean industry include, among others, several institutions, namely the Farmer Group, the Central Java Agricultural Technology Study Center, the Agricultural Research and Development Agency, the BPPT and the
Grobogan Regency Government through related agencies such as the Agriculture and Food Crops Office, the Food Security Agency, Bappekab, Electronic and Data Office, Department of Industry, Trade and Mining, Office of Cooperatives and Small Business and Market Office.

Related agencies have provided guidance and counseling to soybean farmers. For the promotion of related agencies, there have been various activities such as exhibitions and business meetings.

**SWOT analysis**

After mapping the soybean industry cluster model in Grobogan Regency, an analysis was then performed using the SWOT method. The things that are analyzed by the SWOT method are strengths (S) and weaknesses (Weakness / W) of the internal environment, and opportunities (Opportunities / O) and threats (Threats / T) of the external environment of the core industry of soybean cultivation in Grobogan Regency.

1. **Strengths owned by the core soybean cultivation industry, as follows:**
   
   1. Availability of land, although there is a reduction due to the transfer of functions to residential or commercial.
   2. Availability of labor, farmers in general have mastered cultivation technology, but still need to be improved so that productivity increases.
   3. Farmers are already familiar with / working with outside parties in an effort to increase the knowledge and mastery of cultivation technology and agribusiness management.
   4. Agro-climate conditions are quite supportive
   5. There is Grobogan Regency's Food Crops and Horticulture Service.
   6. Bank Financial Institutions (BRI) are willing to provide working capital loans as needed.

2. **Weakness which is owned by the soybean core industry, as follows:**
1. The price of seeds, fertilizers and medicines is relatively expensive, so the production costs are quite expensive.
2. Supply of seeds / superior seeds is still lacking and farmers often use uncertified local seeds with low productivity.
3. The risk of soybean cultivation is quite large, especially the presence of disease / pest attacks.
4. Postharvest handling, especially in the drying stage is inadequate.
5. Soybean price guarantee from the government has not gone well because at harvest time the price of imported soybeans is cheaper than local soybeans.
6. Farmers are not yet fully market oriented.
7. Farmer’s market access is relatively limited, so that the bargaining power of farmers is weak.

3. Opportunities owned by the core soybean cultivation industry, as follows:
2. The need for quality soybean products by the community increases with increasing population and income.
3. Soybean production capacity is still possible to be increased with the intensification of cultivation programs, with due regard to soil conservation.
4. With the construction of the Soybean House in Purwodadi with all its functions it is expected to be able to open market access, so that the demand for soybean products increases; and increasing the productivity and quality of soybean production. Furthermore, it can improve the bargaining position of farmers, so that it is expected to increase farmers’ income and welfare.

4. Threats (Threats) owned by the soybean core industry, as follows:
1. Threats of similar products to competitors from soybean production centers outside Grobogan Regency.
2. Threat of soy products originating from imports.
3. The threat of climate change / erratic eather
4. Threats of various types of diseases / pests that can not be overcome.

Based on the SWOT matrix, the Grobogan Regency soybean farming industry cluster SWOT strategy was developed as follows:

1. S-O Strategy
   - Intensify soybean cultivation, so that crop and land productivity increases.
   - Grobogan Regency Government, through related agencies (Agriculture and Horticultural Crops Service), needs to provide guidance and counseling to farmers about cultivation and post-harvest technology, to improve farmers’ skills and productivity.
   - Apply cropping patterns.
   - Synergizing with the Central Java Provincial Agricultural Research Institute and the Faculty of Agriculture UGM.
   - Grobogan Regency Government through related agencies needs to maintain functions and improve the quality of infrastructure such as irrigation channels, roads, markets and telecoms.

2. W-O Strategy
   - Grobogan Regency Government through related agencies needs to facilitate the ease of supplying production input so that prices can be reduced.
   - Increase farmers’ productivity.
   - The Food Crop Agriculture Office should continue to provide assistance and counseling to farmers so that their skills and productivity increase.
   - Grobogan Regency Government needs to continue to maintain, utilize and improve the function of the Soybean House to help market access to soybean derivative products.
   - By empowering farmer groups to provide practical agribusiness management training and mentoring in preparing farmers capital loan proposals to banks.
3. S-T Strategy

- Grobogan Regency Government with its related department and also involving Research and Development Institutions and Universities need to provide assistance and training to improve farmers' skills to achieve cost efficiency & improve product quality, so they can compete with competing products (domestic and foreign).
- The government needs to protect (local) Grobogan soybean varieties by charging high import tariffs.
- Farmers need to be provided with counseling and assistance processes so that they always apply the planting pattern and pay attention to agro-climate in planting.

4. W-T Strategy

- The Department of Agriculture for Food Crops and Horticulture, and Grobogan Regency's Food Security Agency and related stakeholders need to provide counseling and assistance to farmers regarding cultivation and post-harvest technology, so that it is expected to increase product productivity and quality.
- The government and the community together promote the love of local soy products.
- Intensifying agricultural land to increase the efficiency and productivity of farmers.

SWOT Matrix

**Table 1:** Soybean Cultivation Industry Cluster SWOT Matrix
<table>
<thead>
<tr>
<th>Internal Evaluation</th>
<th>External Evaluation</th>
<th>Opportunities Strategy (S-O)</th>
<th>Opportunities Strategy (W-O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Land availability</td>
<td>1. The price of production facilities (saprodi) is high.</td>
<td>1. Land availability</td>
<td>1. The price of production facilities (saprodi) is high.</td>
</tr>
<tr>
<td>2. Availability of labor</td>
<td>2. Farmer productivity is not yet optimum</td>
<td>2. Availability of labor</td>
<td>2. Farmer productivity is not yet optimum</td>
</tr>
<tr>
<td>4. The existence of Agricultural Research and Development institutions</td>
<td>4. Farmers’ education and skills are sufficient</td>
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<td>4. Farmers’ education and skills are sufficient</td>
</tr>
<tr>
<td>5. There is a production infrastructure, such as irrigation channels, roads, markets, telecoms etc.</td>
<td>5. Market and capital access is still limited.</td>
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<td>5. Market and capital access is still limited.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threats Strategy (S-T)</th>
<th>Threats Strategy (W-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Threats of similar soybean products from competitors, originating from production centers in Indonesia and from Brazil, etc.</td>
<td>1. Increase product productivity and quality through counseling and assistance to farmers.</td>
</tr>
<tr>
<td>2. Threats from climate change / erratic weather.</td>
<td>2. Promote the love of local vegetable and fruit products.</td>
</tr>
<tr>
<td>3. Threats from various types of diseases / pests that cannot be overcome.</td>
<td>3. Lowering production costs by increasing labor efficiency and productivity.</td>
</tr>
<tr>
<td>4. Plant cultivation land is increasingly reduced.</td>
<td>4. Intensifying agriculture</td>
</tr>
</tbody>
</table>

Source: 2018 analysis results

**CONCLUSION**

**Conclusion**
1. Soybean farmers' bargaining position with traders / agents; the bandar, and soybean seed breeder farmer groups still need to be improved by increasing the quality of soybean and increasing the capital of farmers so that the bargaining position of soybean farmers increases.

2. The quality of Grobogan soybean products in Grobogan Regency is higher than imported soybeans, with a higher selling price per kilogram.

3. Most farmers have high school education and below, so the knowledge of farmers about cultivation technology, grading and post-harvest management (agribusiness) still needs to be improved.

**Suggestion**

1. Grobogan Regency Government with its line of offices (Agricultural Food Crops and Horticulture, KUKM, Indag, Market) and related stakeholders (Ministry of Agriculture, BPPT etc.) need to provide technological support and agribusiness entrepreneurship (cultivation technology, grading of production, post-harvest management, and post-harvest management and business management) to soybean farmers through coaching, training, mentoring and comparative studies to other regions that have been successful, so that farmers are able to produce soybean products with the number one quality, so it is expected that Grobogan variety soybean products will continue to be superior products of Grobogan Regency and can compete in the market.

2. Grobogan Regency Government needs to be more intensive to oversee the use of agricultural land, so as not to switch functions so as to reduce the area of agricultural land and affect / change climate / weather which can further reduce agricultural productivity.

3. Grobogan Regency Government and its offices and related stakeholders need to continue to support the function of the Soybean House with various functions, including: Management Information System (SIM), among others: Price Information System, Market Access and Means for Promotion of Grobogan soy
products. Thus it is hoped that the functions of the Soybean House Management Information System are closer and easily accessible to farmers and soybean traders in Grobogan Regency, so that the bargaining position of farmers can be increased, which in turn can increase the income and welfare of farmers and the people of Grobogan Regency.

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