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## **Strategy Management Analysis in Agrotechnopark (Case Limapuluh Kota District, West Sumatera Province, Indonesia)**

Veronice<sup>a\*</sup>, Fajri<sup>b</sup>, Darnetti<sup>c</sup>

*<sup>a,b,c</sup>Agriculture Polytechnic of Payakumbuh, Jl. Raya Negara KM. 7 Tj. Pati, Limapuluh Kota District, West Sumatera Province, Indonesia*

*<sup>a</sup>Email: veronice0708@gmail.com*

*<sup>b</sup>Email: fajri81syamsuddin@gmail.com*

*<sup>c</sup>Email: darnetti62@yahoo.com*

### **Abstract**

Agrotechnopark (ATP) is a science and technology area that was built to facilitate the acceleration of technology experts produced by government R & D institutions, universities and the private sector as well as an integrated agricultural pilot with a biological cycle (bio-cycle farming). The purpose of this research is to identify internal factors and external factors from ATP; and analyze and formulate alternative strategies using Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis. This research was carried out in the area of ATP in Guguak Sub District, Limapuluh Kota District, West Sumatra Province, Indonesia with implementation time from March to October 2018. Data obtained from this study are primary data and secondary data. Data analysis method used is quantitative descriptive analysis method based on the concept of strategic management which is then described descriptively based on internal and external analysis owned by ATP. There are two variables that will be measured in this study, including internal factors (IFE matrix / Internal Factor Evaluation) and external factors (EFE matrix / External Factor Evaluation). The combined IFE and EFE matrix are then formulated using a SWOT matrix.

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\* Corresponding author.

The result of this research is based on the identification of internal factors and external factors of ATP with an EFI value of 2.82 and EFE value 3.16; There is an alternative ATP strategy based on SWOT analysis is to do post-cocoa harvesting and livestock farming by involving farmer groups in the area, applying for product distribution licenses from the integration of farmers and ATP to the central government, involving farmers in the ATP area in operational activities at ATP, Overall socialization to all farmers in the area based on the results of the training that has been carried out. There are ongoing human resource training and development carried out by the central government. Socialization of training activities for farmers is carried out a week before the training is conducted so that the schedule has been implemented optimally, ATP disseminates information about the existence of ATP to farmers by creating agricultural workshops on cocoa and animal husbandry, the central government adds to the recruitment of ATP administrators according to the required fields, ATP coordinates with farmer groups from the beginning until the end of the activity with clear rules and optimizing the existing infrastructure, To reduce the risk of conflict, ATP optimizes the socialization of information related to ATP.

**Keywords:** Agrotechnopark; SWOT; management strategy; innovation.

## **1. Introduction**

Agrotechnopark (Agricultural Technology Park/ATP) is a science and technology area that was built to facilitate the acceleration of technology experts produced by government R & D institutions, universities and the private sector as well as an integrated agricultural pilot with a biological cycle (bio-cyclo farming). The concept of integrated agriculture based on technology that integrates agricultural activities, livestock, fisheries, and processing of products in one production cycle (bio-cycle farming), is an agricultural production system that utilizes all components of harvest, including waste from agricultural products, for agriculture and non-agriculture in the form of bioenergy, so this system is a more profitable, environmentally friendly and non-waste farming system (zero waste agriculture).

The purpose of agrotechnopark development is Improving the application and transfer of technology from R & D results of the Ministry / LPNK of Research and Technology, private sector and universities to the community; Building an integrated agricultural pilot model that integrates: agriculture, livestock, and fisheries in one production cycle; and Improve the quality of human resources who are skilled and independent in the field of agrotechnology and agribusiness [1].

Research on agrotechnopark conducted in Palembang by [2] states that Agro Techno Park is an area to apply technology in the fields of agriculture, livestock, fisheries and postharvest processing that are reviewed by various National Research Institutions, private sector, State Universities and Private Universities for economic scale of each activity is determined. Aside from being a place of research and study, ATP is also used as a training center and transfer center in the wider community. Further development of ATP is also nuanced to support the Government's program in strengthening food security.

ATP construction must be implemented by providing and implementing the following matters; 1). Infrastructure development, development of facilities and technology selection; 2). Technology development, trial and

network preparation (market, funding); 3). Implementation of pilot programs and training and cultivation of agriculture, both food crops, plantation crops, and livestock; 4). Development of strategic programs, and 5). Program and institutional expansion [3]. in line with what was delivered by the strategic program number 4, a strategy management is needed to increase farmers' added value through the presence of ATP. Strategy management is a systematic process that is carried out based on careful considerations and involves all the interests needed to realize organizational goals. Things that can be done such as the placement of effective and efficient resources so as to create competitive advantages and optimize the strength of the company [5]. The purpose of this research is to identify internal factors and external factors from ATP; and analyze and formulate alternative strategies using SWOT analysis.

## **2. Method**

### ***2.1. Time and Place Research***

This research was carried out in the area of Agrotechnopark in Guguak Sub District, Lima Puluh Kota District, West Sumatra Province, Indonesia with implementation time from March to October 2018.

### ***2.2. Data Collection and Analysis Methods***

Data obtained from this study are primary data collected by distributing questionnaires to respondents, interviews with key informants, and conducting Forum Group Discussion (FGD) with several farmer groups; and secondary data obtained from ATP documentation, literature (books, journals, and other scientific works) that are relevant to the research topic. Data analysis method used is quantitative descriptive analysis method based on the concept of strategic management which is then described descriptively based on internal and external analysis owned by ATP.

### ***2.3. Variable Measurement Concept***

There are two variables that measured in this research, including internal factors (IFE matrix / Internal Factor Evaluation) and external factors (EFE matrix / External Factor Evaluation). Internal factors describe strengths and weaknesses, external factors describe opportunities and threats. The combined IFE and EFE matrix are then formulated using a SWOT matrix to produce several strategies. This strategy is a recommendation to the ATP to develop in the future.

## **3. Result and Discussion**

### ***3.1. Identification of Internal Factors of ATP***

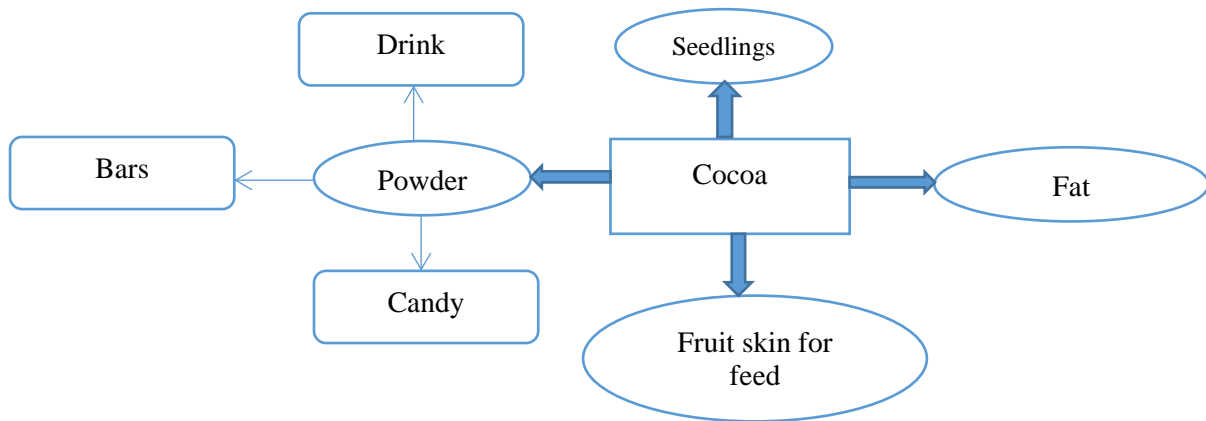
The internal environment is the level of the environment that exists in the organization and to some extent can be controlled and generally has special implications in managing the organization [5]. Identification of the internal environment is divided into strength factors and weakness factors consisting of management, production/operations, marketing, human resources, research, and development.

#### **A. Management**

The results of the FGD and research survey revealed that the ATP socialization to the surrounding community and farmers in the region had not been effective. This was also supported by the results of interviews/questionnaires, where some farmers did not know at all the information about ATP

#### B. Production/Operation

Integrated management of cocoa can be seen in the following figure:



**Figure 1:** Management of integrated cocoa technology innovations in ATP [2]

#### C. Human Resources

The human resources that manages the ATP is carried out by representatives of the Sukarami BPTP/(Balai Pengkajian Teknologi Pertanian) as well as from farmer contacts around the ATP. Looking at the background of the natural resources in Sukarami, the implementers at ATP experienced a match.

#### D. Research and Development

The training and development carried out by ATP has a positive influence on ATP's future operations. ATP training and development activities that have been carried out in 2016 are:

### 3.2. Identification of ATP External Factors

The relationship between ATP and farmers around the area such as cocoa farmers, cattle farmers, and duck farmers is good. The parameters used are the profit sharing on duck or cattle farming systems. In addition, cocoa farmers have the opportunity to supply raw materials for ATP.

However, based on the results of the FGD and field surveys that have been conducted, problems were found in the cultivation of cocoa by farmers. Farmers have difficulty coping with squirrel pests that eat cocoa beans, the presence of rotten fruit, and *Helopeltis*. Based on the results of interviews/questionnaires to farmers, it is also known that farmers do not maintain cocoa (such as pruning and fertilizing), while this is important for the growth of cocoa beans.

**Table 1:** TTP training and development activities in 2016

No.	Type of training	Participants
1.	Cocoa Cultivation Training	Farmer (30 people) and Extension Worker (1 people)
2.	Cocoa Cocoa Pruning Training	Petani (25 people) and Extension Worker (1 people)
3.	Cocoa Processing Training	Farmer (30 people), Extension Worker (3 people), Dinas (1 people)
4.	Cultivation Training and Corn seed	Farmer (30 people), Extension Worker and student (3 people) SMK (7 people)
5.	Maintenance training duck	Breeder (21 people), Extension Worker (1 people)
6.	Manufacturing training cattle feed	Breeder (16 people), Extension Worker (1 people)
7.	Orange Cultivation Training	Farmer
8.	Cacao and Disease Control Training Main Cocoa	breeder farmer (30 people) and Extension Worker
9.	Hybrid Corn Seed Breeder Training	breeder farmer (30 people) and Extension Worker

### 3.3. Formulation of Strategic Alternatives on ATP

#### A. EFI Matrix

EFI matrix describe the strength and weakness from ATP.

Strength consist of:

1. Infrastructure (facilities and infrastructure) in ATP are the complete.
2. Training on cocoa, cattle cultivation, duck cultivation, corn cultivation, and citrus cultivation has been carried out.
3. Having an human resources an agricultural education background.
4. Products from cocoa have been carried out with technological innovation.

Weakness consist of:

1. ATP socialization to farmers in the ATP area has not been effective.
2. The number of human resources owned by ATP is still minimal.
3. Training activities have not been carried out optimally based on a predetermines schedule.

#### B. EFE Matrix

EFE matrix describe the opportunities and threats from ATP. Opportunities consist of:

1. ATP is supported by many farmer groups in the area.

2. Support from the central government is strong because it is in line with the program “Information Center for Community Innovation and Empowerment Development”.
- 3.
4. The prospect of post-harvest cocoa and livestock cultivation is very potential to be developed and influence the improvement of the community's economy.

Threats consist of:

1. There are rules in the ATP collaboration /synergy activities with surrounding farmers who may at one time cause conflict if not properly communicated.

**Table 2:** Key internal factors of ATP

No	Key Internal Factors	Weight	Rating	Weight × Rating
	<b>Strength</b>			
1	Infrastructure (facilities and infrastructure) in the complete ATP	0.24	4	0.96
2	Training on cocoa, cattle cultivation, duck cultivation, corn cultivation and citrus cultivation has been carried out.	0.18	3	0.54
3	Having an HR with an agricultural education background.	0.12	2	0.24
4	Products from cocoa have been carried out with technological innovation.	0.12	2	0.24
	<b>Weaknesses</b>			
1	ATP socialization to farmers in the ATP area has not been effective.	0.06	1	0.06
2	The number of human resources owned by ATP is still minimal.	0.12	2	0.24
3	Training activities have not been carried out optimally based on a predetermined schedule.	0.18	3	0.54
	<b>Total</b>	<b>1.02</b>	<b>17</b>	<b>2.82</b>

**Table 3:** Key external factors of ATP

No	Key External Factors	Weight	Rating	Weight × Rating
	<b>Opportunities</b>			
1	ATP is supported by many farmer groups in the area.	0.25	3	0.75
2	Support from the central government is strong because it is in line with the program "Information Center for Community Innovation and Empowerment Development".	0.33	4	1.32
3	The prospect of post-harvest cocoa and livestock cultivation is very potential to be developed and influence the improvement of the community's economy.	0.25	3	0.75
	<b>Threats</b>			
1	There are rules in the ATP collaboration / synergy activities with surrounding farmers who may at times cause conflict if they are not properly communicated	0.17	2	0.34
	<b>Total</b>	<b>1</b>	<b>12</b>	<b>3.16</b>

C. IE Matrix

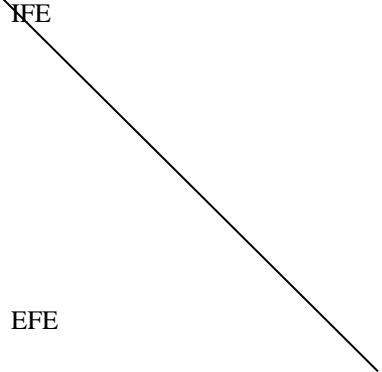
IE matrix analysis is used to see the current position of ATP. And to get a more detailed ATP business strategy.

**Total Value EFI (2.82)**

**Table 4: IE Matrix of ATP**

I Growth and Develop	II Growth and Develop	III Defense and Maintanance
IV Growth and Develop	V Defense and Maintanance	VI Divestment

**Table 5: SWOT matrix of ATP**

IFE  EFE	<b>Strenghts (S)</b> 1. Infrastructure (facilities and infrastructure) in the complete ATP. 2. Training on cocoa, cattle cultivation, duck cultivation, corn cultivation and citrus cultivation has been carried out. 3. Having an HR with an agricultural education background. 4. Products from cocoa have been developed with technological innovations.	<b>Weakness (W)</b> 1. ATP socialization to farmers in the ATP area has not been effective. 2. The number of human resources owned by ATP is still minimal. 3. Training activities have not been carried out optimally based on a predetermined schedule.
<b>Opportunities (O)</b> 1. ATP is supported by many farmer groups in the area. 2. Support from the central government is strong because it is in line with the program "Information Center for Community Innovation and Empowerment Development". 3. The prospect of post-harvest cocoa and livestock cultivation is very potential to be developed and influence the improvement of the community's economy.	<b>SO strategy</b> 1. Do post-harvest cocoa and farm cultivation by involving farmer groups in the region (S4, O1, O3). 2. Submit marketing permits for products from the integration of farmers and ATP to the central government (S4, O2). 3. Include farmers in the ATP area in operational activities on ATP (S1, O1). 4. Overall socialization to all farmers in the area based on the results of the training that has been carried out (S2, O1, O3). 5. Continuous human resource training and development carried out by the central government (S3, O2).	<b>WO strategy</b> 1. Socialization of training activities for farmers is conducted a week before the training is conducted so that the schedule that has been set is implemented optimally (W3, O1, O2). 2. ATP disseminates information on the existence of ATP to farmers by making agricultural workshops on cocoa and livestock (W1, O3). 3. The central government increases the recruitment of ATP administrators according to the required fields (O2, W2).
<b>Threats (T)</b> 1. There are rules in the ATP collaboration / synergy activities with surrounding farmers who may at one time cause conflict if not properly communicated	<b>ST Strategy</b> 1. ATP coordinates with farmer groups from the beginning of the activity to the end of the activity with clear rules and optimizes existing infrastructure (S1, S2, S3, S4, T1)	<b>WT Strategy</b> 1. To reduce the risk of conflict, ATP optimizes the socialization of information related to ATP (W1, W2, W3, T1).

Based on the IE matrix above, ATP is in cell II. Suitable strategies are applied namely intensive strategies (market penetration, market development, and product development) and integrative strategies (backward integration, forward integration, and horizontal integration).

#### D. SWOT Matrix

The SWOT matrix clearly describes the external opportunities and threats faced by the institution that adjust to the strengths and weaknesses of the institution.

Based on the matrix analysis referred to from EFE and EFI, an alternative strategy is produced as follows.

#### 4. Conclusion

The conclusion of this research is:

1. Based on the identification of internal factors and external factors of ATP with an EFI value of 2.82 and EFE value 3.16.
2. There is an alternative ATP strategy based on SWOT analysis is to do post-cocoa harvesting and livestock farming by involving farmer groups in the area, applying for product distribution licenses from the integration of farmers and ATP to the central government, involving farmers in the ATP area in operational activities at ATP, Overall socialization to all farmers in the area based on the results of the training that has been carried out.

There are ongoing human resource training and development carried out by the central government. Socialization of training activities for farmers is carried out a week before the training is conducted so that the schedule has been implemented optimally.

ATP disseminates information about the existence of ATP to farmers by creating agricultural workshops on cocoa and animal husbandry, the central government adds to the recruitment of ATP administrators according to the required fields, ATP coordinates with farmer groups from the beginning until the end of the activity with clear rules and optimizing the existing infrastructure, To reduce the risk of conflict, ATP optimizes the socialization of information related to ATP.

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