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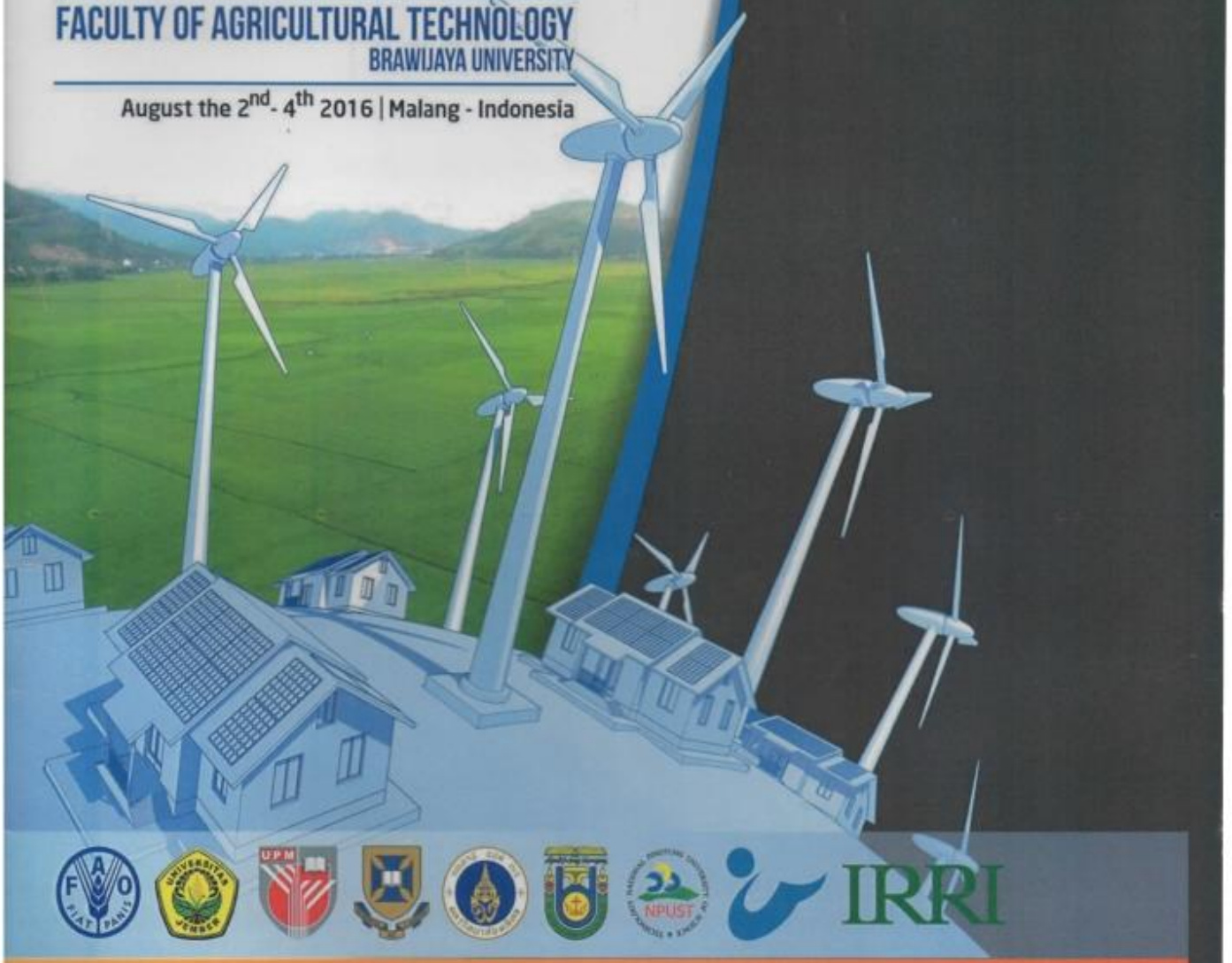

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Development strategy of *Borassus flabellifer* liquid sugar industry: case of Small and Medium Enterprises (SMEs) *Borassus flabellifer* liquid sugar, Tuban Regency

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ABSTRACT

Borassus flabellifer liquid sugar industry was one of the home scale industry that have good development opportunities in support of the local community economy. This potential was indicated by the increasing demand for domestic and overseas market for this kind of product. In order to survive and thrive in the competitive global market, this industry requires a strategy that can be used to open up market opportunities that exist. The aim of this study was to obtain strategies formulation that could be used to maximize the utilization of the potential in an effort to develop Small and Medium Enterprises (SMEs) *Borassus flabellifer* liquid sugar, Tuban Regency. This study used the SWOT method to formulate some alternative strategy for development based on the internal and external environment of the industry. The used of Analytical Network Process (ANP) method was to get priority alternative that can be applied based on an alternative strategy acquired. The SWOT analysis retrieved 9 development strategy alternatives can be applied. The weighting result of ANP method, obtained that the establishment of business partnerships with other parties was the best development strategies to be applied at the *Borassus flabellifer* liquid sugar industry.

Keywords: Analytical Network Process, Development Strategy, Palm sugar concentrate, Small and Medium Enterprises, SWOT Analysis

I. INTRODUCTION

Indonesia as an agricultural and archipelago country has a great opportunity in developing agro-industries. Agro-industry is a sector that has a key role in supporting the increasing number of local products sales, increase the amount of absorption and equal distribution of labor and can increase the local farmers income. Tuban as one of the areas which are in the north of Java Island has abundant natural resources, one of which is *Borassus flabellifer*. This plant is one of the crops that are widely spread in Tuban with a total production reaches ± 7.200 kg/ha/year and the production of the sap reaches ± 5 liters/tree/day (Tuban Central Bureau of Statistics, 2013).

Borassus flabellifer is one of palm tree family that grows in dry areas, especially around the coast. In general, the plant is used by the community, both parts of stems, leaves, fruit, and the sap. Basically, the sap is a sweet liquid that comes out of the flower bunches of palm with a yield of sugar content reaches 10-15%. By being aware of the potential, there are several home industries that utilize palm sap to be processed into liquid palm sugar. On development, industrial household liquid palm sugar industry is one sector that is considered more resilient to face of the free market competition in Indonesia (Boediono, 2009). To improve the competitiveness of the industry, it is necessary to combine the benefits of development to the local and global market opportunities that synergize with the era of regional autonomy and the free market.

Therefore, it needed some alternative strategies to develop Indonesia industrial household liquid palm sugar industry. The SWOT analysis was one method of analysis that can be used to formulate an alternative strategy based on internal and external conditions that exist in the environment industry. SWOT analysis will produce some alternative strategies are mutually coupled between the alternatives. The alternatives obtained need to be weighted to determine the importance level of each alternative. The Analytical Network Process (ANP) method was one of Multi Criteria Decision Making (MCDM) method which can be used to arrange the priority of the various alternatives. Thus, it will be retrieved the most appropriate alternative strategies are used in the Indonesia industrial household liquid palm sugar industry development.

II. MATERIALS AND METHODS

This study is a qualitative descriptive used two interrelated methods i.e. SWOT analysis used to determine the development strategy planning and the ANP method was used to determine the most appropriate alternative development strategy.

2.1 The SWOT Analysis

The SWOT analysis has several stages comprising: a) Internal and External Factor Evaluation (IFE – EFE) Matrix Analyses, b) Internal and External Matrix Analyses (IE), and the SWOT Matrix Analyses. Pairwise comparison technique used to collect the data used to determine the weights of internal and external factors. The weighting of each strategic factor was obtained by determining the total value of each strategic factor against the total number of strategic factors by using the equation 1. The equation is written as follows:

$$Ai = \frac{X_i}{\sum_{i=1}^{n} xi}$$

The value obtained from the IFE and EFE matrix incorporated into the matrix of the Internal-External to map the position of the company at this time. Total score weighting IFE is placed on the x-axis and total score weighting EFE on the y-axis in the matrix IE. The SWOT matrix was used to match the results obtained at IFE and EFE matrix. This matrix can produce four cells likely alternative strategies, namely Strengths-Opportunity, Weakness-Opportunity, Opportunity-Threats, and Strengths-Threats strategies.

2.2 Analytical Network Process Method

To specify the priority in the development strategy of the Indonesia industrial household liquid palm sugar, then the strategy alternative was processed by ANP method. Data processing using the ANP was composed of several stages were illustrated in Fig 1.

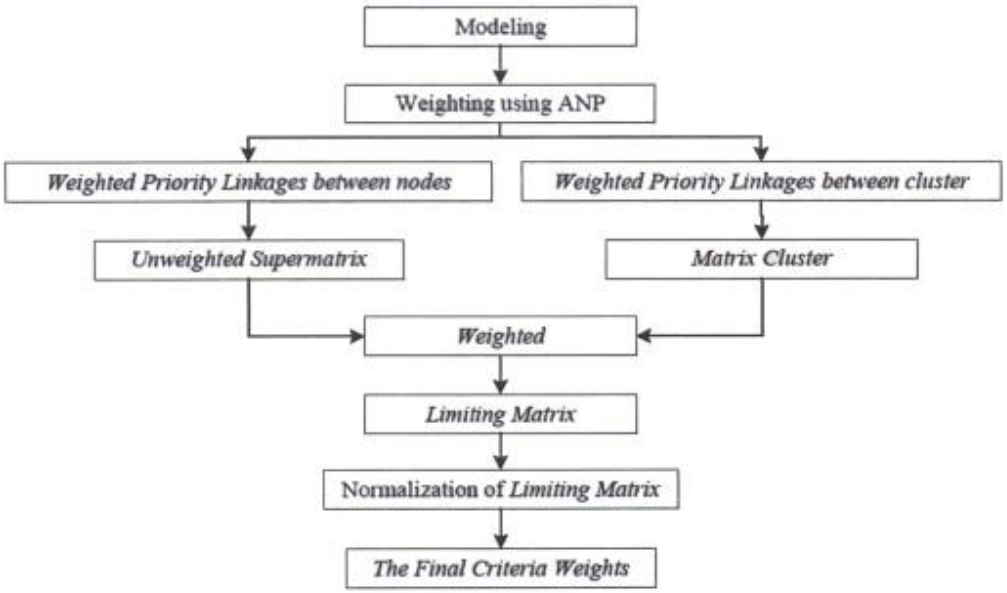

Figure 1. Flow Diagram of ANP Weighting Phase

III. RESULTS AND DISCUSSION

Based on the results of the internal factor identification that affect the development of industry, then be evaluated against those factors from both the existing strengths and weaknesses by using IFE Matrix. The evaluation obtained results of weighting, ranking and weighting values which can be seen in table 1. Besides that, based on the results of the external factor identification that affect the development of industry, then be evaluated against those factors from both the existing opportunity and threats by using EFE Matrix. The results of EFE calculation can be seen in table 2.

Table 1. Calculation result Matrix of IFE

Strategic Factor	Weight	Rating	Score
Strengths			
• Local labor force was quite possible	0.117	4	0.466
• The Land resources	0.118	3	0.354
• Availability of appropriate technology	0.108	3	0.325
• The potential of a lucrative investment	0.108	3	0.325
Weaknesses			
• The resource of extension officer	0.100	3	0.301
• The institutional support	0.099	3	0.296
• Market information	0.128	2	0.236
• The skill of craftsmen	0.105	2	0.210
• The availability of capital	0.136	1	0.126
Total	**1**		**2.641**

Source: Data processed, 2016

Table 2. Calculation result Matrix of EFE

Strategic Factor	Weight	Rating	Score
Opportunities			
• The market potential	0.130	4	0.521
• The availability of workforce	0.127	4	0.508
• Development of science and technology	0.116	3	0.347
• The local culture	0.104	3	0.312
• The support local authorities	0.111	2	0.221
Threats			
• Narrowing of the cropping land construction	0.112	3	0.337
• Plant pests	0.069	4	0.277
• Law and legislation	0.106	2	0.211
• Product price fluctuation	0.125	1	0.125
Total	**1**		**2.860**

Source: Data processed, 2016

Based on the results of matrix IFE and EFE calculation, obtained the proper strategies for the formulation of Indonesia industrial household liquid palm sugar industry development was the strategy of product development and market penetration strategies. This strategy was derived from the results of IFE and EFE matrix total mapping on the IE matrix. The strategy than evolved into a technical strategy by using SWOT analysis thus obtained nine alternative strategies. The alternative strategies can be seen in table 3.

Table 3. SWOT Matrix

IFE / EFE	Strengths • Local labor force was quite possible • The Land resources • Availability of appropriate technology • The potential of a lucrative investment	Waknesses • The resource of extension officer • The institutional support • Market information • The skill of craftsmen • The availability of capital
Opportunities • The market potential • The availability of workforce • Development of science and technology • The local culture • The support local authorities	S-O strategy • Performance optimization of the industry with the technology development (SO1) • The establishment of business partnerships with other parties (SO2) • The establishment of agro-industries information services centre (SO3)	W-O strategy • Develop and optimize business information service function (WO1) • Development of industrial financing institutions (WO2) • Procurement resource extension officers airy (WO3)
Threats • Narrowing of the cropping land construction • Plant pests • Law and legislation • Product price fluctuation	S-T strategy • The development of downstream industries (ST1) • Bonds of cooperation with the Industrial Development Agency (ST2)	W-T strategy • Providing integrated marketing Center for industrial products area (WT1)

Source: Data processed, 2016

After the establishment linkages between each alternative, then performed using the weighting ANP method to determine the priority value of each alternative strategy. Any alternative strategies have different priority weighting. The development strategy of industrial household liquid palm sugar industry chosen based on the values of the weights have been adjusted. The weighting results in Table 4, shows sequence of alternative strategies ranging from lowest to highest.

Table 4 shows that the strategy of forming partnership efforts with other parties gained the highest weights of 0.227. This strategy can improve the performance of the industrial household liquid palm sugar industry through a variety of aspects. By using this strategy, the liquid sugar craftsmen would obtain guides and support in conducting its industrial development both from the aspect of financing, technology development or improvement of production systems. The improvement of the quality of the product will improve the prospects of liquid palm sugar sugar products on the market so that it will facilitate the industry in taking chance factors.

Table 4. Weighting Result

No.	Strategic Alternative	Weight
1.	The establishment of business partnerships with other parties (SO2)	0.227
2.	The establishment of agro-industries information services center (SO3)	0.191
3.	Performance optimization of the industry with the technology development (SO1)	0.153
4.	Procurement resource extension officers airy (WO3)	0.148
5.	Providing integrated marketing Center for industrial products area (WT1)	0.092
6.	Develop and optimize business information service function (WO1)	0.078
7.	Development of industrial financing institutions (WO2)	0.062
8.	Bonds of cooperation with the Industrial Development Agency (ST2)	0.032
9.	The development of downstream industries (ST1)	0.017
	Total	**1**

Source: Data processed, 2016

The strategy can be executed with a concerted effort between the stakeholders, which is manifested in the form of partnership. Activities that can be done are by optimizing the central entrepreneurial function and local institutions to support efforts inventory of local plantations potential resources. The development of local industrial activity will facilitate the efforts to establish cooperation with the institutions of industrial development. Besides, the local government has a major role in ensuring the passage of the various strategic alternatives available to address the threats and vulnerabilities that are owned by industrial household liquid palm sugar. The formulations of rules and regulations that cover all aspects of small business development, institutional support and capital management business were one of the great efforts that can be done in ease and expedite the development of the local industrial household liquid palm sugar.

Another alternative strategy that can be applied in the development of industrial household liquid palm sugar is set up agro-service centers and the provision of information resources airy extension. Provision of agro-industry information service centers and the provision of extension field have the same function in providing a variety of information to the industrial household liquid palm sugar. Both of these strategies will be profitable for the perpetrators of industrial household liquid palm sugar because it can be a media in providing information needed by the craftsmen.

An extension field resource has a role to give direct information to the craftsmen accordance with the conditions that exist in the field. The agro-industry information service center is expected to provide information that is precise, accurate and up-to-date in accordance with the industrial household liquid palm sugar conditions. Various information can be provided through two mediums include liquid palm sugar production system improvements, freshness technology, market information and product pricing information. Thus the development efforts undertaken industrial household liquid palm sugar can be conceptualized and well manageable.

IV. CONCLUSIONS

1. Development of market penetration and product development strategy was an alternative strategy to be developed and applied in the development of the Indonesia industrial household liquid palm sugar.
2. The establishment of business partnerships with other parties was a priority strategy that can be applied in the development of the Indonesia industrial household liquid palm sugar.

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