

A Decision-Making Model for Community-Based Food Industry to Support Poverty Alleviation in East Indonesia: Case Study of East Sumba Regency

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Abstract

Provinces in the eastern part of Indonesia still have the high percentage of residents living below the poverty line. However, some provinces are the producers of food commodities. The One Village One Product (OVOP) movement has been proven to be able to reduce the poverty level and can be implemented in East Indonesia, especially by developing the community-based food industry. The objective of the research is to develop a decision-making model to determine the best suitable community-based food industry to be developed optimally in East Indonesia using Analytic Hierarchy Process (AHP). We identify five criteria for the model from the literature and interviews with experts, namely resources, demand, supporting industries, strategy, and competitiveness, and supports from government and other parties. We apply the model to the case of East Sumba regency of the East Nusa Tenggara (NTT) province, to select from alternatives, namely cassava, banana, corn and peanut-based food industries. The results show that banana-based industry is chosen as the best-suitable community-based food industry, mainly due to the uniqueness of the banana-based product and high production of banana in the area.

Keywords

community-based, food industry, poverty alleviation, analytic hierarchy process, Indonesia.

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Introduction

Indonesia is considered as one of the countries with steady and fast economic growth. Based on the data from the Indonesian Statistics Body (BPS), the Indonesian economy has grown with an average of 5.42 percent in the period of 2001 to 2014 (BPS, 2016a). Even though

the economy has grown significantly, the country is still facing the problem of poverty alleviation. The number of residents living below the poverty line has reached 11.18 percent or 28.5 million people (BPS, 2016b). According to the data from BPS (2016c), the poverty severity

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index was slightly increased from 0.48 in 2013 to 0.51 in 2015, indicating that the average expense per capita deviated even farther from the poverty line. It also

implies that the gap between the rich and the poor has grown as indicated by the increasing trend of the GINI ratio (see Figure 1).

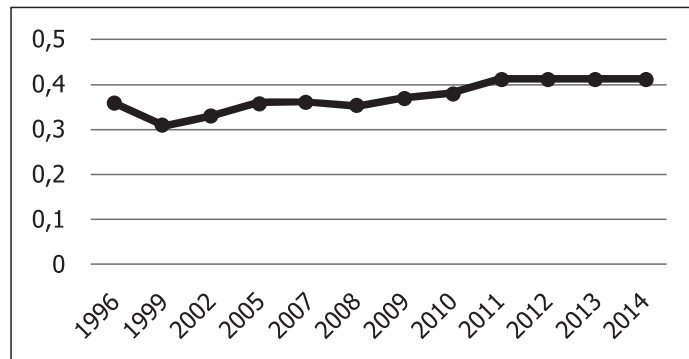


Figure 1. Gini Ratio of Indonesia (BPS, 2016d)

In order to accelerate the Indonesian economic development, the government has established the Masterplan for Acceleration and Expansion of Indonesia's Economic Development (MP3EI). The

MP3EI strategy is to divide Indonesia into 6 corridors, based on the resource-based approach which considers the resource potential of each corridor (see Table 1).

Table 1. Economic Corridors in MP3EI

Regions	Corridors
Sumatra	Center for production and processing of natural resources and the nation's energy reserves
Java	Driver for national industry and service provision
Kalimantan	Center for production and processing of national mining and energy reserves
Sulawesi	Center for production and processing of national agricultural, plantation, fishery, oil and gas, and mining
Bali-Nusa Tenggara	Gateway for tourism and national food support
Papua-Moluccas	Center for development of food, fisheries, energy, and national mining

Source: Indonesia-Investments (2013)

As can be seen in Table 1, the provinces in the eastern part of Indonesia, such as Nusa Tenggara Timur (NTT), Papua and Moluccas are considered to be the national food support corridor since those provinces are the regions with a high production rate of the food commodity. However, the provinces are also considered to be

those with a large number of residents living below the poverty line. According to BPS data, in the NTT province, for instance, the number has reached 22.58% in 2015 (BPS NTT, 2016), and in one of its regency, East Sumba, 28.5% of the residents (in 2013) are living below the poverty line (BPS Sumba Timur, 2016a,

2016b). A policy that can be implemented to reduce the poverty level in the area is the community-based enterprise based on the one village one product (OVOP) concept.

The OVOP is a movement that was originated in Oita prefecture, Japan in the 1970s with the aim of encouraging rural development through community-oriented activities by employing local resources and knowledge (Natsuda et al. 2012). One of the principles of OVOP movement is thought globally, act locally, which means creating globally acceptable products and/or services based on local resources (Shakya, 2011). The movement was later adopted in several Asian countries, such as Thailand, Philippines, and China. In the implementation, the movement which was originally meant to prevent rural depopulation has somewhat evolved into a direct state-involved policy, which has been proven to be able to reduce poverty in the area (Natsuda et al., 2012).

Provinces in the eastern part of Indonesia can adopt the OVOP movement as well to alleviate poverty in the region by engaging the people in the creation of unique products that represent their areas, and that are made using local resources. As previously mentioned, several provinces, in this region (such as NTT and Papua) are considered to be the producers of the food commodity. Therefore, the poverty alleviation program in the region will be optimal if it also engages the community to create unique food products using the local resources, that can be sold nationwide or even globally.

The determination of the kind of food industry that is suitable to be produced by the local community requires a decision-making model. Therefore, the objective of this research is to develop a decision-making model to determine the most suitable community-based food

industry to be developed optimally in East Indonesia to support poverty alleviation. The decision-making model is developed using Analytic Hierarchy Process (AHP) from Saaty (1980), and the model is applied to the case of East Sumba regency of the NTT province.

The remainder of the paper is as follows. Relevant studies are discussed is presented, followed by the explanation of research methodology is presented, discussions of decision-making model and the model application in East Sumba is presented, and conclusions and recommendations are presented.

Relevant Studies

The OVOP movement is based on three basic principles (Shakya, 2011), namely:

1. Think globally, act locally. The local residents are expected to create globally marketable products and/or services which represent local people's pride in material and cultural richness of their home villages/towns.
2. Self-reliance and creativity. The realization of local potential resources into valuable product/service at certain village/town depends on the initiative and effort of the local people.
3. Human resource development. The movement emphasizes on visionary local leadership with challenging and creative spirit, because the success of any OVOP product/service mainly depends on its quality, and the product/service is developed and improved by the local people themselves.

The OVOP movement was originally meant to revitalize the economy in rural Japan, and it was community-based with government playing a supporting role (Shakya, 2011). However, in other countries, the movement is adopted as government-involved policy for

poverty alleviation, and it is seen as a way to improve local communities' entrepreneurial skill by utilizing local resources and knowledge; creating value-adding activities through branding of local products; and building human resources in the local economy (Natsuda et al., 2012).

The OVOP movement has been adopted in several Asian countries besides Japan, such as Thailand, Malaysia, Philippines, People's Republic of China (PRC), and Indonesia (Igusa, 2006). The movement has been adopted in Thailand and European countries as a community-based enterprise (CBE) (Natsuda et al., 2012; Fink et al., 2013). CBE is an alternative model that is potential for the development of the impoverished community (Paredo and Chrisman, 2006). CBE is based on the understanding that collective and individual interests are fundamentally complementary, and by regarding communal values and the notion of the common good as important elements in venture creation.

Research concerning the impact of OVOP movement in various countries has been done in the past decade. For instance, Chidumu (2007) studies the impact of the movement on household income in Malawi and concludes that the movement results in higher household income. Rana (2008) studies the one town one product (OTOP) program in Mindanao, Philippines, and states that partnership between the national government, local government unit, and the private sector plays a crucial role to support the program as it cannot sustain itself. Kader et al. (2009) study the success factors for small rural entrepreneurs under the One District One Industry Program in Malaysia and imply the significant role of government in promoting the small business success. Kuswidiati (2009) discusses the implementation of OVOP in agro-tourism in

Pasuruan, Indonesia, while Natsuda et al. (2012) study about the OVOP program in Thailand as a rural development strategy. Both studies also emphasize the significant role of government in implementing the movement.

Research on CBE in Central Europe is conducted by Fink et al. (2013). The study is about how to create favorable conditions for small business in Central Europe, and it suggests that the municipality and the business should work with and for each other instead next to and against each other, it also suggests the need to create the region's image through focused communication of regional characteristics and the municipality's strength. More importantly, the study states the need to create regional products, i.e. high a quality product with the regional identity.

The government, as indicated in previous studies, plays an important role in creating policy that is conducive to the development of the industry, especially for small-scale industry. Igusa (2006), also states that a clear guidance from the local government through knowledge dissemination, such as marketing strategy, innovative thinking, and the education of community leaders, is required for the successful implementation of the policy. In addition, Stenning and Koichi (2008) emphasize the important role of knowledge and networking in community capacity development in the success of the OVOP movement in Oita.

Beside the conducive government policy and the community capacity, the sustainability of the movement is also determined by the competitiveness of the OVOP products. According to Porter (1990), the creation of competitive advantage depends on four factors, namely factor conditions (the condition of the factor of production), related and supporting industries, demand conditions,

firm strategy, structure and rivalry, and two external factors, which are government and chance.

Research Methodology

The objective of the research is to select the best the best-suitable community-based food industry to be developed optimally in East Sumba regency of the NTT province to alleviate poverty. The study uses a combination of qualitative and quantitative methods. Firstly, the literature review is carried out to identify criteria and sub-criteria to be included in the decision-making model. In-depth interviews (IDIs) are then conducted with two experts (representatives from the NTT province office in Jakarta and the ministry of industry and trade) to clarify the chosen criteria.

The decision-making model is then developed using AHP, Which is designed to cope with both rational and the intuitive to select the best from a number of alternatives evaluated with respect to several criteria (Saaty and Vargas, 2012). In AHP, the decision maker performs pairwise comparison judgments which are then used to develop overall priorities to rank the alternatives.

In order to determine the weights of all criteria and sub-criteria, and to gain insights concerning the community-based food industries in the East Sumba, IDIs are conducted with seven representatives from the central government, NTT government, East Sumba government and food business communities. The nine-scale pairwise comparisons are then performed by the informants to specifically determine the weights.

Secondary data for some of the indicators are then collected. Based on the analysis of secondary data and IDIs results, the scores for all criteria and sub-criteria are assigned. The score of each indicator is assigned a three-levels (one for poor, two

for fair, and three for good). Scores of all indicators in each sub-criterion are then averaged, and the average score is the respective sub-criterion score. Thereafter, the score of each criterion is calculated as the weighted sum of its sub-criteria scores. Lastly, the total score of the food industry is computed as the weighted sum of all criteria scores.

The Decision Making Model

The criteria to be used in the decision-making model are mainly adapted from previous OVOP or CBE studies in other countries and Porter's diamond model (Porter, 1990). The OVOP principles implicitly state that the successful implementation of OVOP requires the local resources that can be converted into high-quality products with regional identity that can be sold nationwide or even globally, and the capacity of the local human resources that conduct the process. Most OVOP/CBE studies (for instance, Rana (2008)) also state the important role of government and other parties (the private sectors and the community leaders) in the successful implementation of the movement. Furthermore, Igusa (2006) implicitly mentions knowledge, such as marketing strategy and innovative thinking are also required to ensure the sustainability of the movement.

Taking into account the aforementioned success criteria and four factors from Porter (1990), the decision-making model is developed as presented in Figure 2. The objective of the decision-making model is stated at the top. There are five first level criteria, namely resources, demand, supporting industries, strategy, and competitiveness, and supports from government and other parties. Selection of food industries to be included in the decision-making process is carried out based on the existing community-based industries in the area and the availability of the main raw material.

The criterion of resources consists of sub-criteria, namely human resources in the area, the existing infrastructure, the natural resources that are required for the respective food industry, and the capital for the business. The demand criterion consists of consumers' needs and wants for the respective food product and its market scope, growth, and trend. The existing supporting industries are also required to ensure the continuity of the food industry. This criterion comprises the supporting industry itself (such as packaging and tourism industries), the upstream supply channel (access to obtain raw materials), and the downstream distribution channel (access to end customers).

Business strategy and product competitiveness are also needed to be considered to ensure the success of the chosen food industry. The business strategy sub-criterion further consists of production, marketing, finance, and human resources management strategies. The production strategy, for instance, may have indicator such as production technology that should be simple enough to be adopted

by the people in both regencies. The product competitiveness sub-criterion may include the indicator such as product differentiation to represent the need for a unique product that bears the region's identity and is able to compete in the market.

Lastly, supports from governments and other parties are needed to optimally develop the food industry in the area. The government's support usually in terms of providing the education and training of the lower-income residents, providing initial capital for the community-based businesses, and creating a policy that is conducive to the industry. Supports from other parties, such as the leaders, religious organization, large businesses, and other non-governmental organizations (NGOs) are also needed for the success of the industry, because on the island of Sumba, and religious leaders, for example, play a significant role in the day-to-day life of the residents. The local culture and religions significantly dictate the residents' way of life. Descriptions of criteria and sub-criteria along with the indicators are presented in Table 2.

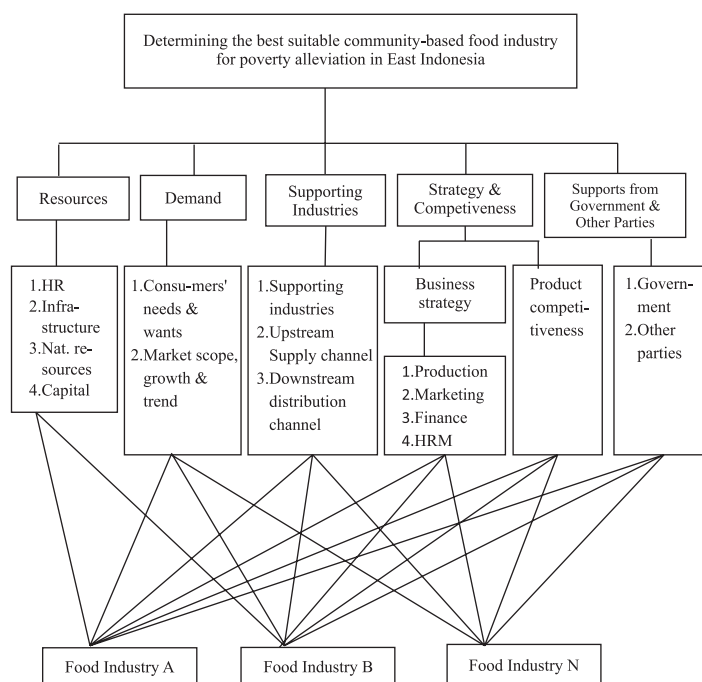


Figure 2. The Decision-Making Model

Table 2. Criteria, Sub-Criteria and Indicators

Criteria (Level 1)	Descriptions	Sub-Criteria (Level 2)	Sub-Criteria (Level 3)	Indicators	Type of Data
Resources	The conditions of local resources for the respective food industry, related to factors of production, such as skilled human resources, infrastructure, etc. that relevant to compete in the food market	Human resources		Number business entities in the respective industry	Secondary data
				Number of employees in the respective industry	Secondary data
				Literacy rate	Secondary data
				Percentage of residents graduated from elementary school	Secondary data
				Percentage of residents in productive age	Secondary data
		Infrastructure		Percentage of households with electricity	Secondary data
				Percentage of households with access to clean water	Secondary data
				Percentage of households with fixed-line phones	Secondary data
				Land transportation (road length in km)	Secondary data
				Sea transportation (ship visits per year)	Secondary data
				Air transportation (airplane visits per year)	Secondary data
		Natural resources		Production of main raw material in the respective industry	Secondary data
				Farming area/seashore (ha/km)	Secondary data
		Capital		Access to Individual capital	Judgmental
				Access to capital from cooperatives	Judgmental
				Others	Judgmental
Demand	Demand for the food products produced by the respective area	Consumers' needs and wants		Portion of expense for processed food (%)	Secondary data
				National market for processed food	Judgmental
		Market scope, growth and trend		Market growth	Secondary data
				Current market scope	Secondary data
Supporting industries	The existing of supporting industries	Supporting industries		Tourism industry (number of foreign and domestic tourists) in a year	Secondary data
				Packaging industry (number of business entities in packaging industries)	Secondary data
		Upstream supply channel		Number of farmers	Secondary data
		Downstream distribution channel		Access to suppliers	Judgmental
				Number of traditional markets	Secondary data
Strategy and competitiveness	Strategies in four aspects of business and product competitiveness	Business strategy	Production	Production technology	Judgmental
				Product certification/licensing	Judgmental
			Marketing	Distribution strategy	Judgmental
				Promotion strategy	Judgmental
			Finance	Financial management	Judgmental
			Human resources management	Training	Judgmental
				Human resources management and development	Judgmental
				Work system	Judgmental
		Product competitiveness		Differentiation	Judgmental
				Comparison to similar industry in other provinces	Judgmental
Supports from government and other parties	The supports from the government and other parties to develop the respective food industry in the area	Government supports		Policy for the respective industry	Secondary data
				Budget for the respective industry	Secondary data
				Programs the development of the respective industry	Secondary data
				Inter-institutions coordination	Secondary data
		Other parties' supports		Community leaders	Judgmental
				Religious organization	Judgmental
				Non-governmental organizations and large companies	Judgmental

The Case of East Sumba Regency

Description of East Sumba Regency

The regency of East Sumba is located at the eastern part of the island of Sumba and its capital is Waingapu. It has a population of 241,416 people in 2013 (BPS Sumba Timur, 2016c) and an area of 7,000.5 square kilometers comprises of the area in the main island and three small islands (Prai Salura, Mengkudu, and Nuha),

and it consists of 22 sub-districts (BPS Sumba Timur, 2016d). The majority of the labor force (62.91%) earn their living in the primary sectors, namely farming, plantation, forestry, hunting, and fishery (BPS Sumba Timur, 2016e). The GRDP of East Sumba in 2013 was around USD 69 million with the agriculture sector as the highest contributor (BPS Sumba Timur, 2016f).



Figure 3. The East Sumba Regency (BPS Sumba Timur, 2014)

About 40% of East Sumba is an area of steep hilly, especially in the southern part, where the hillsides are fertile land, while the northern regions form a rocky plateau and less fertile. East Sumba has two seasons, dry and rainy seasons. In general, the rainy season is in the months of January to April, while the other eight months are dry, and therefore East Sumba is a relatively dry region. The regency produces

crops and fruits, such as corn, cassava, peanut and beans and banana (see Table 3), and currently, there exist several household groups and micro and small and medium enterprises (MSMEs) in East Sumba, producing processed food, such as corn-based, banana-based, cassava-based, peanut-based and seaweed-based food products.

Table 3. Crops Production in East Sumba 2013

No.	Commodity	Production (Ton)
1.	Corn	34,446
2.	Soy bean	17
3.	Peanut	1,629
4.	Green bean	203
5.	Cassava	26,210
6.	Sweet potato	4,071
7.	Seaweed	0
8.	Banana	21,671

Source: BPS NTT (2016b)

Determination of Criteria and Sub-criteria Weights

As previously mentioned, the weights of all criteria and sub-criteria are determined by pair-wise comparisons performed by seven informants, namely two representatives from the local government (Division of Industry and Trade, and Division of Cooperatives and Small Businesses), three representatives from the food business, a representative from the NTT office in Jakarta, and a representative from the Ministry of Cooperative and Small Businesses. The resulting weights can be seen in Table 4.

The results show that resources criterion has the highest weight among other criteria. It implies that the informants think resources are very important in determining

the success of the community-based food industry in East Sumba regency, which is consistent with one of the principles of OVOP (creation of unique local products using local resources).

Concerning the resources criterion itself, human resources have the highest weight, indicating that the informants agree that the main problem in the regency is the human resources. This is also consistent with one OVOP principle (human resource development). According to the informant, most of the residents do not feel the need to increase the community income, because they can live by consuming whatever they can harvest from their land. The residents need a successful example to be motivated to engage themselves in a food processing business.

Table 4. Criteria Weights for East Sumba Regency

Level 1	Level 2	Level 3	Weights
Resources			0.331
Demand			0.086
Supporting industries			0.170
Strategy and competitiveness			0.204
Supports from government & other parties			0.209
Resources	Human resources		0.300
	Infrastructure		0.217
	Natural resources		0.259
	Capital		0.224
Demand	Consumers' needs and wants		0.735
	Market scope, growth and trend	0.265	
Supporting industries	Supporting industries		0.479
	Upstream supply channel		
	Downstream distribution channel	0.263	
		0.259	
Strategy and competitiveness	Business strategy		0.778
	Product competitiveness		0.222
Supports from government & other parties	Government' supports		0.626
	Other parties' supports		0.374
	Business strategy	Production	0.354
		Marketing	0.161
		Finance	0.235
		HR	0.250

Source: Data processed

For the demand criterion, consumers' needs and wants criterion has the highest weight, implying the need to always consider customer requirements for the success of the food industry. Considering the supporting industry criterion, the supporting industry itself has the highest weight, which means that the success of food industry also depends on the supporting industries, such as the suppliers of raw materials, packaging and tourism industries. For the strategy and competitiveness criterion, business strategy has the highest weight, implying that the success of the food industry in East Sumba requires strategic planning and implementation, especially the production and marketing strategies. The final products should be unique so that it can compete with other food products locally and nationwide, however, it should also be produced using a simple production technology that can be adopted by the community.

Lastly, government support is still required to develop community-based food industry in East Sumba regency (consistent with statements from previous OVOP/CBE research), especially in providing educations and training for the business owners, however, supports from and religious leaders and the private sectors are also needed especially in motivating the residents to increase the community incomes through engaging themselves in the food business, and in providing the additional access to capital and market.

Determination of the Best Suitable Community-Based Food Industry

The community-based food industry that currently exists in east Sumba are namely cassava-based (cassava chips), banana-based (banana chips and Manggulu, a kind of sweets), corn-based (fried corn kernel and corn stick), seaweed-based (crackers and snack), and peanut-based (Kacang

Sumba, fried peanuts with garlic flavor, and fried floured peanuts). The selection of food industries to be considered in the model is carried out based on the uniqueness of the product, the existing home-based industries in East Sumba, and the production of the main ingredient or raw material (see Table 3). We decide to select cassava-based, peanut-based, banana-based, and corn-based food industries to be considered in the decision-making process. The seaweed-based food industry is not included in the selection process because of zero production of the seaweed in the Regency (see Table 3).

Based on the analysis of secondary data and IDIs results, the scores of each community-based food industry are determined (see Table 5). The secondary data is obtained from published data from BPS Sumba Timur (2014), National Socio-Economic Survey 2009-2013 (Ministry of Agriculture, 2016), and Roy Morgan Indonesia (2013). For most of the indicators that characterize the local condition of East Sumba regency and NTT province or Indonesia, the score of the three industries is similar. Different scores are observed especially for indicators that are related to natural resources, demand, upstream supply channel, business strategy and competitiveness.

As can be seen in Table 5, the banana-based industry has the highest total score, followed by corn-based, cassava-based, and peanut-based industries. In the resource criterion, banana-based industry has the highest score mainly due to a high score in natural resource criterion that is caused by high production of banana and its planting area in the Regency.

In the demand criterion, the cassava-based industry has the highest score primarily because of higher consumption of processed cassava at the national level compared to the others. However, from the market scope and growth aspect, the

banana-based industry has a higher score because currently, banana-based products such as banana chips and Manggulu (local sweets purely made from banana and peanut) have already reached other areas in NTT province, such as Kupang (the capital city of NTT province).

In the supporting industries criterion, all industries have the same scores mainly due to the similar situation that is experienced by all food industries. For instance, all industries experience the same difficulty to procure packaging materials as there are no packaging material companies in the Sumba Island, so they usually buy the materials from the Java Island. Considering the upstream channels, the informants state that they can easily procure the raw material from the suppliers. However, access to the end customer (indicated by the number of traditional markets in the regency) is still limited.

Regarding the strategy and competitiveness criteria, the banana-based industry also has the highest score. For the business strategy criterion, the scores are the same for all food industries as they have the same condition in all business aspects. For instance, the technology that is used by the four industries is relatively simple and thus suitable for home industry. Similarly, from the aspect of distribution, all products have already been distributed to end customers through a souvenir and snack store in Waingapu, and for the case of Manggulu, the product has already been sold in Kupang (the capital city of NTT province) through a distributor agent. In the aspect of promotion strategy, the business owners in the four industries only use minimal promotion strategy (mainly the word-of-mouth, WOM) for their products, and as a result, the products are not popular for residents living outside of Sumba Island.

Table 5. Scores for Each Community-Based Food Industry

Criteria	Sub-criteria (Level 1)	Cassava	Banana	Corn	Peanut
Resources	Human	1.600	1.600	1.600	1.600
	Infrastructure	1.667	1.667	1.667	1.667
	Natural	1.500	2.500	2.500	1.000
	Capital	1.000	1.000	1.000	1.000
	Weighted scores	1.454	1.713	1.713	1.325
Demand	Consumers' needs & wants	2.500	1.500	1.500	2.000
	Market scope, growth & trend	1.000	1.500	1.000	1.000
	Weighted scores	2.103	1.500	1.368	1.735
Supporting Industries	Supporting industries	1.000	1.000	1.000	1.000
	Upstream supply channel	2.500	2.500	2.500	2.500
	Downstream distribution channel	1.000	1.000	1.000	1.000
	Weighted scores	1.395	1.395	1.395	1.395
Strategy and competitiveness	Business strategy	1.515	1.515	1.515	1.515
	Product competitiveness	1.000	3.000	1.000	1.000
	Weighted scores	1.401	1.845	1.401	1.401
Supports from government & other parties	Government's supports	1.250	1.250	1.250	1.250
	Other parties' supports	1.000	1.000	1.000	1.000
	Weighted scores	1.157	1.157	1.157	1.157
Overall weighted scores		1.427	1.551	1.449	1.376

Source: Data processed

In the product competitiveness sub-criterion, differentiation of banana-based product (Manggulu) is high due to the uniqueness of the product which cannot be found in other areas in Indonesia. Moreover, Manggulu only requires banana and peanut without any additional ingredients, thus it is simple and can be branded as a healthy snack.

Regarding the supports from government and other parties, all food industries have the same score as there is no specific policy for certain industry. The local government supports mainly in terms of providing training and equipment for the residents to stimulate the community-based food industry. However, the aforementioned programs are not regularly conducted due to limited budget availability. Lastly, based on the IDIs results, so far no NGOs nor large companies (the private sectors) have been involved in supporting all the community-based food industries.

Conclusions and Recommendations

The paper presents a decision-making model to determine the best-suitable community-based food industries to support poverty alleviation in East Indonesia. The developed model consists of criteria that are adopted from previous OVOP/CBE research and Porter's diamond model, namely resources, demand, supporting industries, strategy, and competitiveness, and supports the government and other parties. The weights of all criteria and sub-criteria are determined by using pairwise comparisons of the AHP, carried out by five informants in East Sumba which represent the local government and business communities, and two informants in Jakarta which represent the NTT province and central governments.

The results show that for the first level criteria, the informants think that resources

is the most important factor followed by supports from government and other parties, and strategy and competitiveness. The model is applied to a case of East Sumba regency, and analysis of secondary data and IDIs results show that banana-based industry is chosen as the best suitable community-based industry to be developed optimally in East Sumba. This is mainly due to its high score in natural resources and product competitiveness.

However, there are some aspects that still need to be addressed to actually develop banana-based food industry in East Sumba regency. In order to increase the motivation of the residents to be involved in CBE producing banana-based products, such as Manggulu, all the related divisions in the local government should coordinate among themselves to provide a better infrastructure for the CBE. They also need to work together with and religious leaders to conduct education and training regularly for the residents (including farmers and potential CBE members). The local government should also promote Manggulu intensively in the local, provincial or national events as the regency's unique product, and partner with the private sectors to provide access to market the products outside the Sumba Island and access to obtain capital for the CBE.

This research is an initial step toward poverty alleviation in East Indonesia. The decision-making model still needs to be refined, for easier application.

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