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Government Perceptions of Competitiveness and Development of the Corn Processing Industry in Regional Economic Development

Sri Ulfa Sentosa[1], Ariusni[2] and Alpon Satrianto[3]

[1,2,3] Faculty of Economics, Universitas Negeri Padang
Corresponding Author : alponsatrianto@fe.unp.ac.id

ABSTRACT: The agricultural sector has an important role in regional and national economic development, this will only be realized if sustainable agriculture is created. This means that the agricultural sector needs to be developed from various aspects including marketing and the processing industry. Agricultural development is closely related to the role of government in the form of government policies, or budget allocations for the agricultural sector, and others. This study has objectives, namely; 1). analyze the competitiveness of the corn processing industry in regional economic development from the perspective of government perceptions 2). analyze the government's perception of the priority types of corn processing industry that will be developed. The population in this study were the leaders of government agencies; at the Department of Trade, Industry and Cooperatives, Food Crops Agriculture Service, Animal Husbandry and Economic Affairs Office, West Sumatra Province. Sampling was purposive, the number of samples was 27 leaders. Data were collected using a questionnaire. Competitiveness data based on Porter Diamond were analyzed using the average, to determine industrial development priorities used A.nalytic Hierarchy Process (AHP).The results of the study found that; 1) competitiveness of the corn processing industry; a). from the condition factor with an average value of 3.57 (high scale), b). demand condition factor equal to3.11 (medium scale), c).Related industry factors of 3.42 (medium scale) and, d). Industry competition factor with an average value of 3.89 (high scale), then the average value of the total competitiveness of 3.50 (high scale). 2). based on the AHP, the three main priorities for industrial development are: (1) the corn seed industry, (2). creative industry from corn, (3) animal feed industry and corn flour industry.

KEYWORDS:*Government, Competitiveness, Agroindustry, Regional Economic, AHP*

I.   INTRODUCTION

Agriculture has a very strategic role in the Indonesian economy, namely: food security, increased competitiveness, employment opportunities and poverty reduction (Ministry of Agriculture, 2020).One of the commodities included in the food security group is corn. The government policy in developing maize farming is carried out through the establishment of production centers throughout Indonesia, the goal is to self-sufficiency in animal feed needs. The impact of this policy is that maize production has increased significantly (The Department of Food Crops Agriculture, West Sumatra Province,2016; Suartana, et al, 2016, and Aldillah, 2017). The increase in production every year continues due to the government trying to expand the area for planting corn so that corn production is in a surplus condition (Aldillah, 2017, BPS, 2018, Ministry of Agriculture, 2019). The surplus in maize production is also caused by the potential of available land and suitable climatic conditions (Bantacut et al., 2015).

The above conditions have an impact on the welfare of farmer households, because excess supply causes hThe selling price at the producer level is lower and the income generated from the corn crop is lower. This will also affect the motivation of farmer households to increase production and productivity. Farmers bear the losses as a result of price differences at the consumer and producer levels (Center for Agricultural Data and Information System of the Ministry of Agriculture 2016). Increased production without being followed by the processing industry will harm the agricultural sector (Saragih, 2001: 1-5). Increasing prices at the farm level can be done by increasing the demand for raw materials by the corn industry (Ogle, 2009). Thus the development of the processing industry is very important in order to improve the welfare of the community, especially farmer households.

Non-farm business development can improve household welfare in rural areas (Shehu and Sidique, 2013). Farmers' productivity can be increased through the implementation of structural transformation in rural areas with linkage effects and growth multipliers (IFAD, 2016).Agricultural growth stimulates non-farm economic growth in rural areas through a number of key linkages (Haggblade et al., 2010). Agricultural production has forward linkages when output from agriculture is used as input from industry, this will become an engine of growth (IFAD, 2016).One of the sustainable development agendas is sustainable agriculture (Food Agriculture Organization) (FAO, 2017).

Several studies have found the importance of developing processed corn products (Gabriel et al, 2014: Wahmuda and Puspitasari, 2015; Aldillah, 2017). The research above is a descriptive research; using core component analysis, namely VRISA (value, rare, inemitability, substitutability, and appropiability) SWOT analysis, and carrying out the design process. The above research was conducted on farmers and entrepreneurs, but no one has specifically examined it from the government's perceptions. In industrial development, it takes many roles such as; farmers, entrepreneurs, and the government.Suryaningrat (2014) has found that the competent authorities pay little attention to the implementation of the processing industry program and the limited government budget allocations for the food processing industry.The government plays an important role in development of agricultural product processing industries (Aldillah, 2017; Owoo and Quayefio, 2017). All of the above conditions indicate the need to know the government's perception of the development of the agricultural production processing industry.

II. LITERATURE REVIEW

Economic Development through Industrial Development

Economic development can be done through balanced development, namely a balance between industry and agriculture (Lewis in Jhingan, 2012). Apart from that, it can also be done through unbalanced development, namely investment carried out in the strategic economic sector, resulting in new investment opportunities for further economic development (Hirschman, in Jhingan, 2012: 192). Hirschman (1958) argued backward and forward linkages between firms. Polarization development can be beneficial for regional growth and for the surrounding areas (hinterland) through the trickling down effect. Forward linkages include; processing, distribution, and marketing. Backward linkage includes input supplies, components, factory equipment (Teka, 2012).

Campbell, et.al. (2013) stated that firm is one of the main actors responsible for economic growth and development. Industrial development is the driving force of structural change which is the key in the process of economic development (Bolaky, 2011: 6). Downey and Erickson (1988) and Saragih (2001: 2) emphasize the importance of agribusiness development, namely industrial, agricultural and service development at the same time. Machfoedz (2015) economic growth will be guaranteed with agro-base industries because it is based on significant added value from natural resources and human capital. Bantacut et al (2015) orientation to increase maize production should not only be for self-sufficiency in animal feed but also for strengthening the economy, industry and food self-sufficiency.Mrowczynska-Kaminska, B. Bajan (2019) found that the role of agricultural production has decreased to GDP, while the role of agribusiness is increasing, especially the food industry. Cook and Chaddad (2000) Development economists believe that agro-industrialization is driven by private companies. affect the nature, form, and level of agro-industrialization which will have an impact on producers and consumer welfare.

Industrial Development Methods

The industrial development method can be done using Porter's Diamond analysis or what is called the Diamond of National Advantageconsists of: 1) Factor conditions, 2) demand conditions, 3) related and supporting industries, 4) Firm strategy, structure and rivalry, which is a system. The effect of one attribute affects the other (Porter, 1990). Oz (2002) found that the diamond framework is suitable or suitable for developing country conditions. Porter's Diamond Model is an effective model used to analyze the competitiveness of domestic industries (Zhao et al., 2009). Therefore, until now the diamond model is still widely used in industrial competitiveness analysis.

Porter (1998) developed industrial cluster theory. Industrial clusters are geographic concentrations of companies that are interconnected with supply, specialist producers, service units and branch associations. Then Saragih (2001: 32) and the Ministry of Industry (2009) suggest that the development of the agro-industry is carried out in clusters. Putri, et.al. (2015) the cluster approach is considered appropriate as a business planning strategy model. Agro-industry stakeholders, government institutions, local government, research and development agencies, educational institutions, institutions that encourage innovation, business, local community organizations. The above opinion shows that industrial development is best done through cluster development of industries. Chung (2016) found large differences in the competitiveness of cluster logistics between countries. Policy makers with several recommended strategies as the basis for a logistics cluster study using Porter's diamond model.

The role of the Government in the development of agriculture and processing industry

Norton (2004) argues that agricultural policy is a government policy in the fiscal sector; such as irrigation, crop storage and marketing, providing farmer credit, funding agricultural research, extension and seeding, buying and selling agricultural output to maintain a surplus of producers and consumers. This opinion indicates that the role of government in agricultural development is very important because agriculture requires a relatively large cost.Daugbjerg and Swinbank (2012) argued thatpolicies in the agricultural sector are related to several policies such as; food safety, energy source, environment. new policies that are interrelated with agricultural policies so that agricultural policies are inter-institutional policies that contribute to the analysis of public sector policies. Thus, policies in the agricultural sector will also be related to policies in the non-agricultural sector.

Todaro and Smith (2012) state that the agricultural-based economic development strategy: (1) Accelerating output growth through technological, institutional changes, increasing commodity prices to encourage increased productivity of farmers, (2) Increasing domestic demand for agricultural products (3) increasing non-agricultural activities, and labor-intensive activities that are directly and indirectly related to the farming community. In Indonesia,The development of the agricultural sector is directed at increasing economic resilience and food security by implementing a number of policies, including encouragingstructural transformation through the revitalization of the processing industry and the transformation of the agricultural sector as a driving force for a balanced and comprehensive transformation of development or what is called Agriculture for Development (Ministry of Agriculture of the Republic of Indonesia, 2020).

Based on the direction of agricultural development in Indonesia, it is clear that the government has a role in the development of agriculture and the agricultural product processing industry. The role of government in industrial development di Indonesia is regulated in law No. 3 of 2014 article 72 paragraph 1a the government and or local governments undertake the development and empowerment of small and medium industries to create competitive medium industries. Article 2 to realize the small and medium industries is carried out through; a). Policy formulation, b). institutional strengthening; and c). Providing facilities.

Law Number 3 of 2014 Chapter VI Article 15 states that the development of industrial resources includes: human resource development, natural resources, technology utilization, development and utilization of innovative creativity, and provision of sources of financing.Henson and Cranfield (2009) suggest that the public sector has a major role in shaping the conditions for agro-industry development at competitive costs. Berchin, et al, (2019) stated that domestic and international consumers as stakeholders demand a more sustainable agro-industry, so that government support is needed for family farming, encouraging agroecological practices, and reducing risks due to climate change.

Porter (1998) argues for the role of command in industrial development in terms of controls such as licensing requirements and limitations regarding access to raw materials, such as air and water pollution standards and safety and efficacy of regulatory products. Aldillah (2017)The main priority in the development of corn agribusiness in the future requires support through increasing the effectiveness and quality of government performance, as well as the development of distribution facilities and infrastructure.

Methodology

The population in the study were all leaders of government agencies at the Department of Trade, Industry and Cooperatives, the Office of Food Crop Agriculture, the Department of Animal Husbandry, and the regional economic sector, districts and cities of maize production centers and non-corn production centers in West Sumatra, Indonesia. The total area is 19. The sampling area used is cluster sampling method with primary sampling units of 30% x19 areas = 6 regions (districts and cities). Taking this area also considers a location close to the availability of raw materials and a location close to consumers. Sampling for the head of government agencies in each department in the field was carried out purposively. The number of samples is 27 people. The data in this study consisted of primary and secondary data.

Data analysis: 1).competitiveness is measured using a Likert scale of 5 categories, from very low to very high. Data were analyzed using average and total respondents' achievements.2). PThe priority for the development of the corn processing industry uses the Analytic Hierarchy Process (AHP). AHP isproblem solving framework. to develop priorities in each hierarchy requires simple pairwise comparison assessments (Saaty, 1984)

Table 1
Scale of Relative Importance

Intensity of Importance	Definition Explanation
1	Equal Importance
3	Moderate importance of one over another
5	Essential or strong importance
7	Demonstrated importance

9	Absolute importance
2,4,6,8	Intermediate values between the two adjacent judgment
Reciprocals of above non-zero numbers	If an activity has one of the above numbers assigned to it when compared with a second activity, then the second activity has the reciprocal value when compared with the first

Source: Saaty (1984)

According to Saaty (1984) that pairwise comparisons in the scoring matrix are considered quite consistent if the corresponding consistency ratio (CR) is less than 10%. The consistency index (CI) is calculated using the formula:

$$CI = \frac{\lambda \max - n}{n-1}$$ .... (1)

$$CR = \frac{CI}{RI}$$ .... (2)

Random Index values are as shown in Table 2

Table 2
Random Index (RI)

n	2	3	4	5	6	7	8
RI	0.00	0.58	0.90	1.12	1.24	1.32	1.41

Source: Saaty (1984)

Result and Discussion
Government perceptions of industrial competitiveness and development priorities for corn based industries

This section presents the results of research on the competitiveness of the corn-based processing industry based on government perceptions. The data in Table 3 is the average value of the government's perception of the competitiveness of the corn-based industry in regional economic development. From table 3, it can be seen that the average competitiveness value based on the Diamond of National Advantage for industrial development made from corn is 3.50 (relatively high) with a total of 70.00 (quite good category) of Respondents' achievements. This data indicates that the corn-based industry has a fairly good competitiveness.

Among the four diamond factors, the condition factor, Related or supporting industry factors and industrial competition factors have an average competitiveness value of respectively; 3.57,3.42 and 3.89 or relatively higher, with the total value of the respondents' achievement respectively;71.44, 68.33 and 77.85 or are in quite good condition. However, the demand condition factor has an average value of 3.11 (medium scale) withTotal Respondents' Achievements 62.20 (poor category). This indicates that this demand condition factor needs to be improved.

Table 3
Government Perception of the Competitiveness of the Development of the Corn Industry in Regional Economic Development

No.	Factor	Average	Total achievements Respondents (%)
	Condition factor	3.57	71.44
1	Human Resources	3.36	67.20
2	Capital resources,	4.00	80.00
3	Natural resources and the environment	3.00	60.00
4	Technology,	4.50	90.00
5	Infrastructure	3.00	60.00
	Demand Conditions	3.11	62.20
6	Number of Consumers	3.10	62.00
7	Consumer tastes	3.00	60.00
8	Differences in consumer demographics	3.15	63.00
9	Income	3.19	62.00

	Industry related or supporting factors	3.42	68.33
10	Existence of raw material suppliers (upstream industry)	3.10	62.00
11.	Wholesale of commodity corn industry	3.15	63.00
12.	Commodity retail for the corn industry	4.00	80.00
	Industry Competition Factors	3.89	77.85
13	Real level of competition	3.50	70.00
14.	Market entry barriers	4.79	95.80
15.	The existence of local competitors	4.00	80.00
16.	Competition Strategy	3.07	61.40
	Average	3.50	70.00

Source: Primary Data

From Table 3 it can be seen that the technology and capital resource factors have competitiveness with the average value being in the very high and high groups with the total respondents' achievements in the very good and good categories. Meanwhile, the factors of human resources, natural and environmental resources, and infrastructure have an average score in the middle-scale group. This shows the need for government policies in the development of these last three factors in order to have high competitiveness, considering that the 5 resource factors will have an impact on the competitiveness of industrial development made from corn at the regional level, as found by Esen and Uyar (2012) that source based factors are elements that directly impact regional competitiveness.

Demand conditions, which consist of: number of consumers, consumer tastes, differences in consumer demographics and income have average competitiveness values based on government perceptions, all of them are in the middle group. This data shows that there is a need for efforts to develop consumer demand for processed products from the corn industry, namely through increasing marketing capabilities (Kotler and Keller, 2012). The more the population increases, the more potential consumers will be. The population growth rate of West Sumatra Province for the period 2010-2020 was 1.29% (BPS West Sumatra, 2020).The importance of industrial development made from corn is not only caused by an increase in per capita income of the population, but also because of public awareness of health maintenance (Suarni, 2013).

One of the industrial factors that are related or as a support, namely rAccording to the government's perception, commodity corn industry has an average value in the high-scale group and the total value of the respondents is in the good category, while the other 2 factors, namely raw material suppliers and wholesalers, have an average value of being in the medium-scale group. The industrial factor related to the corn processing industry needs to be increased competitiveness so that backward and forward linkages are realized (UNIDO: 2011, Teka, 2012). In terms of the agro industry, Downey and Erickson (1988) and Saragih, (2001: 2) emphasize the importance of agribusiness development. Industrial and agricultural development as well as services at the same time (Saragih, 2001).

The government's perception of barriers to market entry from corn-based industries has an average value in the very high scale group, while 2 other factors, namely the level of real competition and the presence of local competitors, have an average value in the high-scale group. The results of this study indicate that the corn-based industry to be developed has a relatively high threat (Threaths). This is in accordance with the opinion of Porter (1998) that an industry will face threats originating from: 1) new entrants, 2) substitution industries and services, 3). bargaining power of suppliers (suppliers), 4). bargaining power of buyers, and 5). Competition among industries. These five threats will be the competitive strengths of an industry.

Government Perceptions of the Priority for the Development of the Corn Processing Industry in regional economic development

The types of corn processing industries that are planned to be developed are as follows:1) Corn Oil Industry (COI), 2). Corn Sugar Industry (CSI), 3). Food Industry from Corn (FIfC), 4). Animal Feed Industry (AFI), 5). Seed Industry (SI), 6). Corn Flour Industry (CFI), and 7). Creative Industry (CI). To determine the development priority based on the scale of importance, the Analytic Hierarchy Process (AHP) is used.

The stages of the analysis carried out include the analysis of the normalization criteria matrix in Table 4, based on this analysis, priorities for the development of the maize processing industry in regional economic development can be determined. The priority results can only be used in making decisions if the ratio consistency analysis has been carried out.

Table 4
Normalization Criteria Matrix

	COI	CSI	FIfC	AFI	SI	CFI	CI	amount	Priority
COI	0.327	0.055	0.048	0.009	0.015	0.023	0.033	0.510	0.072
CSI	0.137	0.132	0.169	0.009	0.149	0.071	0.071	0.738	0.105
FIfC	0.134	0.189	0.118	0.007	0.096	0.001	0.134	0.742	0.106
AFI	0.049	0.021	0.015	0.061	0.299	0.323	0.368	1,136	0.162
SI	0.088	0.337	0.198	0.317	0.057	0.262	0.213	1,472	0.210
CFI	0.108	0.132	0.224	0.276	0.211	0.071	0.109	1,131	0.162
CI	0.154	0.132	0.224	0.317	0.173	0.111	0.071	1,182	0.169

In Table 5, the results of the addition matrix for each row are presented, where the sum of these results will be used in calculating the consistency ratio (CR).

Table 5
Matrix for The Addition of Each Row

	COI	CSI	FIfC	AFI	SI	CFI	CI	amount
COI	0.072	0.044	0.043	0.024	0.056	0.053	0.075	0.367
CSI	0.030	0.105	0.151	0.987	0.535	0.162	0.169	2,139
FIfC	0.029	0.150	0.106	0.021	0.351	0.306	0.359	1,322
AFI	0.011	0.017	0.014	0.162	1,089	0.732	0.877	2,903
SI	0.019	0.268	0.177	0.840	0.210	0.594	0.507	2,615
CFI	0.023	0.105	0.302	0.732	0.770	0.162	0.262	2,356
CI	0.034	0.105	0.302	0.840	0.63	0.251	0.169	2,331

Table 6 contains the results of the total calculation which is the sum of the sum of the matrix results from each row with the results of the priority matrix, which will then be used to produce an estimate of the maximum eigenvalue, denoted by λ max. Then the CI = value is calculated $(\lambda$ max - n) / (n - 1).

Table 6
Consistency Ratio Calculation

No	Type of Industry	The result of the Sum of rows matrix	Priority matrix results	Result
1.	Corn Oil Industry (COI)	0.367	0.072	0.439
2.	Corn Sugar Industry (CSI)	2,139	0.105	2,244
3.	Food Industry from Corn (FIfC)	1,322	0.106	1,428
4.	Animal Feed Industry (AFI)	2,903	0.162	3,065
5.	Seed Industry (SI)	2,615	0.210	2,825
6	Corn Flour Industry (CFI),	2,356	0.162	2,518
7.	Creative Industry (CI).	2,331	0.169	2,500
			Total	15,019

λmax = 15,019 / 7 = 2.15

CI = . (λmax - n) / (n - 1) = (2.15 -7) / 6 = -0,808

After the CI value is obtained, the next step is to calculate the consistency ratio (CR) = CI / RI = -0.808 / 1.32 = -0.612 <0.10 (consistent results). Based on Table 5, the development of the maize industry is compiled based on priority as shown in Table 6

Table 7 : Priority for Industrial Development Made from Corn

No.	Type of Industry	Priority matrix results	Development Priorities
1.	Corn Oil Industry (COI)	0.072	6
3.	Corn Sugar Industry (CSI)	0.105	5
3.	Food Industry from Corn (FIfC)	0.106	4

4.	Animal Feed Industry (AFI)	0.162	3
5.	Seed Industry (SI)	0.210	1
6	Corn Flour Industry (CFI),	0.162	3
7.	Creative Industry (CI).	0.169	2

Source; AHP processed products

Based on the processed data in Table 7, the priority for industrial development made from corn is as follows: 1). Seed Industry (SI), 2). Creative Industry (CI), 3). Animal Feed Industry (AFI), and Corn Flour Industry (CFI), 4). Food Industry from Corn (FIfC), 5) Corn Sugar Industry (CSI), and 6) Corn Oil Industry (COI).

Seed Industry (SI) occupies the first priority, this shows that for the futureThe government will develop various types of corn seeds, which are suitable for household consumption, industry and poultry farming. In the long term, the development of this seed industry will have an impact on changes in government policy in maize farming at the regional and national levels. The policy implemented by the government today is self-sufficiency in maize for animal feed using hybrid seeds. The development of the seed industry as the first priority will also have an impact on household consumption because corn seeds are developed according to consumer needs.

Creative Industry (CI) occupying priority 2 is related to culinary, namely processed food products that are unique to regional culture and handicraft products that use raw materials derived from corn.Wahmuda and Puspitasari, (2015) found that the results of handicraft products using corn cobs have a great opportunity for the creative industry. Creative products using corn cobs have their own characteristics by maintaining the texture of corn cobs. creative industrial products have a product competitiveness level

Food Industry from Corn (FIfC) and Corn Flour Industry (CFI) are in priority 3. The results of this study indicate that hybrid corn farming for animal feed is a development priority in order to reduce imports. This means that the development of maize production centers at the regional level is still relevant to be carried out in the context of self-sufficiency in maize for animal feed, while non-production centers can be used as maize farming areas for household and industrial needs. Corn flour industry (CFI) is also in priority 3 based on the government's perception to be developed in regional development. The results of this study indicate that maize processing for corn flour is also very important.Bantacut et al., (2015)discovered the use of corn for cornmeal and snacks.

The development of the Food Industry from Corn (FIfC), Corn Sugar Industry (CSI) and Corn Oil Industry (COI) is in positions 4,5 and 6. This is likely because the above industries require more advanced technology so that the three types This industry will be in the medium and large scale industry groups. However based on uLaw number 3 of 2014 concerning industry that the government encourages industrial development throughout Indonesia. This shows that the government plays a role in industrial development in Indonesia.

III. CONCLUSION

The Government's perception of the competitiveness of the corn industry development in regional economic development for the 4 diamond factors has an average value of 3.50 (relatively high). Of the four diamond factors, the factor with the highest value was the industrial competition factor of 3.89 (high scale). These findings indicate that the threat (Threaths) in the development of the corn processing industry is high. Apart from that, the condition factor (human resources, capital, nature, technology and infrastructure) also has an average value of 3.57 (relatively high), which indicates that the strength (Strength) in the development of the maize processing industry is high. However the following 2 factors; Related industry factors and demand condition factors have an average value that is on a relatively low scale, namely 3.42 and 3.11 respectively or are in the medium category. These two factors are opportunities in the development of the corn processing industry.

The government's perception of the priority for the development of the corn processing industry is as follows: 1). Seed Industry (SI), 2). Creative Industry (CI), 3). Animal Feed Industry (AFI), and Corn Flour Industry (CFI), 4). Food Industry from Corn (FIfC), 5) Corn Sugar Industry (CSI), and 6) Corn Oil Industry (COI). The results of this study indicate that the government's view in developing corn agriculture has changed from developing special maize for animal feed to developing corn farming in accordance with the needs of community consumption, industry, and animal feed.

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