CONSTRAINT FACTORS OF FOOD COMPETITIVENESS
IN JAVA ISLAND: AHP APPROACH

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ABSTRACT

This study aims to analyze the constraining factors of food competitiveness on the Java island, Indonesia. The data used are primary data with samples of 245 sellers. The sampling method used is purposive sampling. The data analysis method used is Analytical Hierarchy Process (AHP). The process of data analysis begins with identifying and calculating the weight of the perception of all the constraining factors of food competitiveness. At this stage, fifteen factors with the highest and lowest weight are obtained. They, respectively, are fluctuated purchase price of local food and the lack of IT facilities for the buyer to obtain food information. The next stage is the prioritization of the constraining factors of food competitiveness. Based on AHP approach, there are eight factors constraining food competitiveness with the first and last priority, respectively are, the integration of the agricultural business upstream - downstream and food commodity prices.

Keywords: *Competitiveness, Food, AHP*

JEL classification: *A10, B40, C18*

1. INTRODUCTION

Indonesia is an agricultural country both in terms of supply and demand. From the supply side, Indonesia provides food for its own population. The Indonesian government has also enacted laws as the direction for national food management that is Law No. 18 of 2012 about Food. Meanwhile, on the demand, Indonesia is a country that has a population of over 250 millions as food consumers. Until now the problems of availability, needs, and competitiveness of food in Indonesia is still assessed for their relevant and appropriate solutions.

The study will analyze factors constraining food competitiveness in Java, Indonesia. Research on trading and competitiveness of food commodities have also been carried out by Berkum and Meijl (2000); Dlamini (2014); Halmai and Elekes (2002); Hassine, Robichaud and Decaluwé (2010); James (2004); Rasekhi and Shojaee (2012); Moise, et al. (2013); and Yousif (2015). Freshness of this study lies in the use of AHP in determining the competitiveness of food commodities. The relevance of this research to the existing empirical research lies in the emphasis on competitiveness particularly on food commodities. In addition, this study is expected to be a reference for policy makers to formulate a strategy to increase the competitiveness of the food in Indonesia. They can focus on the achievement of competitiveness of the food based on the priorities of the factors that have been investigated / generated by this study.

Based on the empirical and field search results, it indicates that there are several factors constraining the competitiveness of the food. This study uses eight factors that become the constraining competitiveness food priority, namely: Integration of Agricultural Sector Upstream-Downstream; Affordable and Accessible Food Commodities; Availability of Local Food Products; The Conversion of Agricultural Land and Animal Husbandry and Fisheries Business Area; Price Information of the Local Food that is incomplete; Traditional Market conditions compared to Modern Market; Quality of Local Food Commodities; and Food Commodities Prices.

Berkum and Meijl (2000) emphasize the role of technology in trading activity. Such technology can have an impact on the achievement in the trading of goods and services. It can also be expected on achieving business efficiency and transaction flexibility.

According Halmai and Elekes (2002) agricultural policy becomes determining factor for food trading. The policy can be focused on business efficiency and competitiveness (comparative advantage). Meanwhile, Hassine, Robichaud and Decaluwé (2010) explain that the productivity of the business can boost trade. That productivity also needs to be supported by the availability of adequate technology. Meanwhile, Katrakilidis and Mardas (2011) investigate that structural reform on agricultural policy can contribute on structural fund of agricultural sector. It can lead economies of scale on farmer business.

Rasekhi and Shojaee (2012) also emphasize the availability of land for the production of goods, services, and markets to support the achievement of trading transactions. Moise, et al. (2013) identifies that transportation, efficiency, and export cost become the driving factors of trading transactions. In addition, these factors are expected to create trading competitiveness.

Cahyadin and Nihayah (2014) formulate a model of food commodities trading system. The model consists of input, process and stage, output and outcome. There are four types of models that have been formulated, namely: (1) Primary commodities trading system model that is based on regional economic potential; (2) Primary commodities trading system model that is based on disaster risk; (3) Primary commodities trading system model that is based on modern market; and (4) Primary commodities trading system model that is based on imported products.

According to Dlamini (2014) there are several factors constraining the competitiveness including the lack of professional workforce, supply costs / inputs that are relatively expensive, incompetent public servants, public servants that are not effective, and the size of the local market. Meanwhile, the supporting factors are the quality of products, the availability of water resources for the industry, and the apropriate cost for unskilled labor. Meanwhile, Yousif (2015) concluded that the exchange rate becomes an important factor trading transactions

Table 1
GDP of Agricultural Sector and Food Export of Indonesia, 2011 - 2016

No.	Item	Year	2011	2012	2013	2014	2015	2016
1	GDP at Constan Price 2010	Billion IDR	7,287,635.30	7,727,083.40	8,156,497.80	8,564,866.60	8,982,511.30	9,433,034.40
	Agriculture	Billion IDR	993,857.30	1,039,440.70	1,083,141.80	1,129,052.70	1,171,578.70	1,209,687.20
		% to PDB	13.64	13.45	13.28	13.18	13.04	12.82
	Food	Billion IDR	935,126.30	980,568.70	1,023,913.00	1,069,479.20	1,110,821.30	1,149,978.30
		% to PDB	12.83	12.69	12.55	12.49	12.37	12.19
	Export	Billion IDR	1,914,267.94	1,945,063.70	2,026,113.68	2,047,887.10	2,004,416.35	1,969,635.44
		% to PDB	26.27	25.17	24.84	23.91	22.31	20.88
2	Food Export	000 USD	2,675,236.00	1,211,770.00	1,213,037.00	1,316,314.00	930,871*	Na

Source: BPS (processed)
Note: *Temporary data

Table 1 informs the development of GDP on agricultural sectors and food exports of Indonesia on 2011 – 2016. Some important information that can be concluded is that the value and percentage of PDB on farming and food sectors tend to increase on 2011 – 2014 and tend to decrease on 2015 – 2016. For example, GDP percentage on farming sector decreased from 13.64% (2011) to 12.82% (2016). Meanwhile, the decreasing of food GDP percentage started from 12.83% (2011) to 12.19% (2016). The decreasing is relevant to the decreasing of value on Indonesian food export, from 2.6 Billion USD (2011) to 1.3 billion USD (2014).

The conditions of GDP of agriculture and food exports have became the focus of this study. This means the development of both a downward trend needs to be studied further to determine the constraining factors. The approach used to determine the limiting factor is the Analytic Hierarchy Process (AHP), which has been developed by Saaty (2008).

2. RESEARCH METHOD

The data used in this research is the primary data. The data was obtained through a survey of 245 sellers in Java in 2016. The focus of the survey focused on the identification and prioritization of factors constraining the competitiveness of the food. The sampling method used was purposive sampling. Meanwhile, the method of data analysis is the Analytic Hierarchy Process (AHP). Conceptually, thinking framework in AHP approach refers to Saaty (2008).

Identification of the factors constraining the competitiveness of the food that has been identified consisting of five factors, namely: fluctuating local food price; No increase of investment in local food industries; the lack of neatness on place structuring in Traditional Markets, the lack of Interest and cleanness; the lack of integration for the upstream and downstream of agricultural business; Local Food commodities are not durable and are vulnerable to climate change; Conversion of agricultural land is likely to increase; Information on local food commodity prices in traditional markets is incomplete and unclear; Imported food commodities have attractive quality and packaging; The amount of costs to be incurred by traders and incorporated into the selling price of the component so that the price rise easily in food commodity (likely to be high); No significant increase in food production to keep up with domestic demand; Availability of local food commodities tend to be unsustainable according to the needs of individual buyers and industry; No increase in the mode of transportation of food to facilitate both domestic needs and export; Many modern market which sells imported food commodities; The absence of import tariffs against imported food commodities; and No IT facilities which help buyers to shop the local food commodities in the traditional market. Meanwhile, there are eight factors that will be tested with AHP approach, namely: Integration of Upstream-Downstream on agricultural business; accessible and affordable imported food comodity; Availability of Local Food Products; The Conversion of Agricultural Land and Animal Husbandry and Fisheries Business Area; Incomplete Local Food Price information; Traditional Market conditions compared to Modern Market; The Quality of Local Food Commodities; and Food Commodity Prices.

3. RESULTS AND DISCUSSION

3.1 Respondent Description

Respondents for this research are food commodities traders in Java. The number of respondents is 245 merchants. The gender, the number of male respondents are 57 people (23:27%) while the number of female respondents as many as 188 people (76.73%). Food commodities surveyed are Rice, Corn, Soybean, Chicken, Beef, Fish and Fruits.

3.2 Constraining Factors of Food Competitiveness

Identification of the factors constraining competitiveness of food commodities is based on empirical studies and field search. There are two categories of identification factors constraining the competitiveness of the food in question, namely: factors that become the main preferences of food commodity traders and inhibiting factors that become the main priority of the constraining of the competitiveness of food commodities. The identification results show that there are fifteen factors inhibiting competitiveness of food that become the merchant's preference. Meanwhile, there are eight factors inhibiting the competitiveness of the food that become a priority for traders.

Based on the survey and the calculation of respondents preferences on the factors inhibiting the competitiveness of food commodities, it is known that factor with the highest value is the purchase price of the Local Food Commodity from the supplier rise easily. Value of these factors in total is 2,234, while the average is 9.12. Meanwhile, the lowest value on factors constraining the competitiveness of the food is the lack of IT facilities which help buyers to shop the local food commodities in the traditional market (total value of 24 with an average of 0:10). The result of the calculation on factors constraining the competitiveness of the food can be seen in Table 2.

Table 2
Constraint factors of Food Competitiveness

No.	Factors	Sum	Average
1	Fluctuating local food purchase price.	2,234	9.12
2	The lack of investments on the local food products.	1,696	6.92
3	The arrangement of shops in Traditional market are not well-managed, not sophisticated, and not clean	1,548	6.32
4	the lack of integration for the upstream and downstream of agricultural business	1,415	5.78
5	Local Food commodities are not durable and are vulnerable to climate change	1,230	5.02
6	The increase of agricultural land conversion	1,123	4.58
7	Information on local food commodity prices in traditional markets is incomplete and unclear	740	3.02
8	Imported food commodities have attractive quality and packaging	499	2.04
9	The amount of costs to be incurred by traders and incorporated into the selling price of the component so that the price rise easily in food commodity (likely to be high)	335	1.37
10	No significant increase in food production to keep up with domestic demand	324	1.32
11	Availability of local food commodities tend to be unsustainable according to the needs of individual buyers and industry	285	1.16
12	No increase in the model of transportation of food to facilitate both domestic needs and export	261	1.07
13	Many modern market which sells imported food commodities	156	0.64
14	The absence of import tariffs against imported food commodities	128	0.52
15	No IT facilities which help buyers to shop the local food commodities in the traditional market	24	0.10

Source: Primary Data (2016, processed)

3.3 Priority Factors on Constraint of Food Competitiveness

Based on AHP Analysis, it is known that the main priority of food competitiveness constraint is the upstream and downstream integration on agricultural business with value of 0.20. Meanwhile, the least priority is the quality and the price of local food commodities with values of 0.05, each. The explanation of the AHP analysis results can be seen on Table 3.

Table 3
Priority of Food Commodity Competitiveness Constraint Factors.

No.	Factors	AHP's Score
1	The upstream and downstream integration on agricultural business	0.20
2	Affordable and Accessible Imported Food Commodities	0.18
3	The availability of local food products.	0.17
4	The Conversion of Agricultural Land and Animal Husbandry and Fisheries Business Area	0.14
5	Incomplete Local Food Price information	0.14
6	Traditional Market conditions compared to Modern Market	0.07
7	The Quality of Local Food Commodities	0.05
8	Food Commodity Prices	0.05

Source: Primary Data (2016, processed)

4. CONCLUSIONS

This study shows that there are fifteen factors that become the trader's preference on the food competitiveness constraint. Besides that, there are eight factors that become the priority of food competitiveness constraint all of those factors is relevant to the policy makers to devise a strategic plan to increase food competitiveness in Indonesia. Some important recommendations that can be used for the policy makers are: increasing the investments on the upstream and downstream integration project on the agricultural business that employ both domestic and foreign investors; the increase of domestic food production quality through the advancement of workforce, technology, and the area of harvest; improvement of domestic food trading system; and improved management of traditional markets.

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