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Strategies for Increasing the Competitiveness of Food Commodities in the Digital Era

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Abstract: In order to face the ASEAN Economic Community (AEC) / ASEAN Economic Community (AEC) in 2015 to strengthen the competitiveness of food commodities is absolutely necessary in order to penetrate export markets. For that we can not just rely on the ability of farmers (individual or company), as East Java has 29 districts and 9 Cities with most of the farming community that levels of education and low productivity. Sales of products for farmers are still dependent on middlemen who come to the level of prices is not profitable for farmers. With advances in information technology today is almost everyone, including farmers can use the mobile phone in particular, it must be used optimally in order to help the marketing of its products in a wider range. This study aims to produce a model of effective and efficient trading for farmers, especially of food commodities by utilizing information technology simple and socialize. The analytical tool used in this study is: Productivity Analysis, Static Location Quotient, Dynamic Location quotients (DLQ), Matrix Potential Commodity Food and Geography Information System. Preliminary results showed that featured food commodities East Java is the rice plant. Another commodity that can be seeded are coffee, cocoa, cloves, coconut, sugarcane, cassava and domestic poultry.

Keywords: Competitiveness, Food Commodities, Export

1. INTRODUCTION

As a result of globalization then all sectors of the economy is expected to have competitiveness in order to penetrate export markets (Suliswanto and Kaluge, 2010; Suliswanto, 2016). To improve competitiveness, the agricultural sector in East Java, especially food crops must be properly managed. Agri-food sector is still considerable potential for expansion, if it succeeds in overcoming the constraints faced. Currently, Indonesia's competitiveness, especially in agriculture is still at No. 6 among the ASEAN member countries,

this is due to a number of challenges yet to overcome. among others related to productivity, an increase in the amount of agricultural land, reduce the level of efficiency with the potential loss of yield (losses) after harvest.

Some constraints and other problems facing the crops in East Java are: (i) low welfare and relatively high poverty of farmers; (ii) agricultural land is narrowing; (iii) limited access to productive resources, especially access to sources of capital accompanied by the low quality of human resources; (iv) acquisition of technology is still low; (v) not yet optimal management of agricultural resources / fisheries, and (vii) the lack of infrastructure (physical and non-physical) in the agricultural sector and rural areas in general.

The problems are still happening because there is no real policy of the government in the field of agriculture in achieving food self-sufficiency. One proof of that is the government of East Java still import policies, such as import sticky rice and soybeans. According to the Department of AgricultureJatim mention soybean import policy for soybean harvested area experiencing penurunan of 24 797 hectares with soybean production volume decrease of 33 277 tonnes. Import policy is actually a decision which is seen as a cost and time efficient. However, this is not favorable for agriculture in East Java, is actually more favorable policies and foreign merchants.

In addition, in order to develop the agricultural sector face the MEA in 2015, local governments need to know the level of competitiveness komoditi food when compared with other countries, know the marketing strategy of export orientation and the continuation of production as a condition of entering the international market. But until now the local government to the level of district / city is still not able to map the level of competitiveness of various food commodities, yet mamiliki international marketing network on food commodities, when planning the future of food production.

Based on the above, it is necessary to research studies related to the businesses to be able to penetrate markets, food commodity exports that commodity pangan increased competitiveness and efforts in production planning in order to guarantee its sustainability. For that you need to know What food commodities are ready to enter the export market in each regency / city in East Java and how the model to increase competitiveness of food commodities in order to penetrate the export market?

2. LITERATURE REVIEWS

2.1. Research Accomplished

Daryanto (2009) analyzed the position of agricultural competitiveness and efforts to increase obtain the result that the overall competitiveness of agricultural commodities in terms of comparative advantage (DRCR) and kenggulan kompetitive (PCR) indicates that the situation is quite alarming especially for paddy (rice), soybean, and sugar cane (sugar) in which DRCR and PCR approaches (0.80 to 1.00), some cases of > 1. As for corn and peanuts, and livestock competitiveness moderate where DRCR and PCR coefficient between 0.50 to 0.70. Meanwhile, for the products hortilkututa (vegetables) and tobacco have a fairly high competitiveness with DRCR and PCR far (0.30 to 0.60).

Boedirachminarni (2014) Analyzing the resilience of food insecurity based Bantur district villages in the district of Malang, producing data that the village needs to subtitasi staples other than rice such as cassava, maize, yam.

2.2. Measurement of Food Commodities Competitiveness

Saptana (2010) explained the various kinds of measuring tools competitiveness of food commodities. Status measurement competitiveness of the agribusiness sector / industry / commodity may use the Relative Trade Advantage / RTA (Balasa, 1989; Volrath, 1991). While the status analysis of competitiveness mainly to do with the executive opinion Agribusiness Executive Survey (AES). Meanwhile, for the qualitative and quantitative at the institutional level agribusiness can use Confidence Agribusiness Index (ACI). Measuring instrument of competitiveness is also widely used is Revealed Competitive Advantage (RCA). Lately can use Policy Cost Ratio (PCR) which is indikator competitive advantage which demonstrates the ability of the system to pay the cost of domestic resources and remain competitive in private and Domestic Resource Cost Ratio (DRCR) is an indicator of comparative advantage which indicates the amount of resources domestic which can be saved to produce one unit of foreign exchange (Monke and Pearson, 1995).

2.3. E-Commerce

E-commerce business activity involving consumers, manufacturing and marketing agents by using computer networks, namely the Internet. (Saputro, Hendra W. 2008). E-commerce system is classified into three:

1. *Electronic Markets (EMS)*

A tool that uses information and communication technologies to perform / present offers in a market segment that buyers and sellers are able to transact more quickly and efficiently. This means for sellers to be more quickly distribute information about products fast to reach more buyers.

2. *Electronic Data Interchange (EDI)*

That is a means to streamline the data exchange transactions are repeated regularly in large quantities between commercial organizations.

3. *Internet commerce (IC)*

Is the use of Internet-based information and communication technology to trade. Transactions can be done on the internet is usually the booking / purchase of goods and then shipped after the buyer make a transfer payment to the seller's account.

3. METHODOLOGY

In this study, the type of data used is secondary data, secondary data drawn from 29 districts and 9 in East Java, secondary data obtained in several ways, among others through supporting documents or reports from departments / agencies, including the Department of Agriculture, Food Security Agency of East Java Province, the Central Bureau of Statistics, and Bappeda at each study site. The tool analyzes in this study are:

1. Productivity Analysis. Productivity is the ratio between the effectiveness of the achievement of goals at a certain quality level (output) and the efficient use of resources (inputs). Productivity is a combination of effectiveness and efficiency, so that productivity can be formulated (Gaspersz, 1998).
2. SLQ (*Static Location Quotient*)

Formula for SLQ is:

$$\frac{Vik / Vk}{Vip / Vp}$$

Where:

Vik = value of production of food commodities i study area (district)

Vk = total production value of food commodities i study area (district)

Vip = value of production of food commodities i reference area (province)

Vp = total production value of food commodity reference area (province)

SLQ possible values obtained are:

- a) SLQ > 1: this means that the study area (district) have specialized food commodities i compared to the same commodity at the local level reference (provinces).
- b) SLQ < 1: this means that food commodity i is not an area of specialization studies (county) compared to the same food commodity i at the local level reference (provinces).
- c) SLQ = 1: this means that the food commodities either i specialized in the study area (district) and reference areas (provinces).

3. DLQ (Dynamic Location Quotient)

While the formula for DLQ are:

$$\left[\frac{(1 + gj) / (1 + Gj)}{(1 + gi) / (1 + Gi)} \right]^t$$

Where:

gj = rate of growth of commodity i in regional

Gj = average growth rate of commodity i in regional

gi = The rate of growth in the national commodity i

Gi = average growth rate of commodity i in the national

t = Difference in year end and year-awa

DLQ possible values obtained are:

- a) DLQ > 1: this commodities have the potential faster development than local (district) else in the reference region (province).
- b) DLQ < 1: This commodity has the potential to progress more slowly than local (district) else in the reference region (province).

DLQ = 1: This commodity has the same potential for growth faster than local (district) else in the reference region (province).

4. *Analysis Geography Information System*, This analysis is used to refine the analysis in order to allow the depiction of the map of potential economic sectors of potential per area known clearly.

4. RESULTS AND DISCUSSION

Each region would have different economic sectors that dominate the Regency / the City. Sectors of the economy can be grouped into 3 sectors: Sector Primary, Secondary, Tertiary. Primary sector includes sectors: Agriculture and Mining and Quarrying. Whereas the secondary sector includes sectors: Manufacturing, Electricity and Water and Buildings. While Tertiary sector includes sectors: Trade, Hotels and Restaurants, Transport and Communication, Finance, Leasing and Business Services and Services.

Based on the results of the analysis showed that regions in East Java has three categories of Economic Structure. First, the area is dominated by the primary sector is Banyuwangi, Bondowoso, Bojonegoro, Tuban, Lamongan, Sampang, Pamekasan, and Sumenep. Second, the area is dominated by the secondary sector is Mojokerto and Kediri. Third, the area is dominated by the tertiary sector, Pacitan, Ponorogo, Trenggalek, Tulungagung, Blitar, Kediri, Malang, Lumajang, Jember, Situbondo, Probolinggo, Pasuruan, Sidoarjo, Jombang, Nganjuk, Madiun, Magetan, Ngawi, Gresik, Bangkalan, Kota Blitar , Malang, Kota Probolinggo, Pasuruan, Mojokerto, Madiun, Surabaya and Kota Batu. This shows that the majority of regions in East Java is dominated by the tertiary sector.

Economy development is mostly contributed by some regencies in East Java through agriculture sector, especially food farming. In East Java, this sector is categorized as the prime ones with high contribution and high level of development. By modifying Matrix Klassen Typology analysis, the following map shows agriculture development sectors in East Java.

Based on the map, agriculture sector becomes the prime sector in several regencies; meanwhile, agriculture sector is categorized as under-developed in the cities.

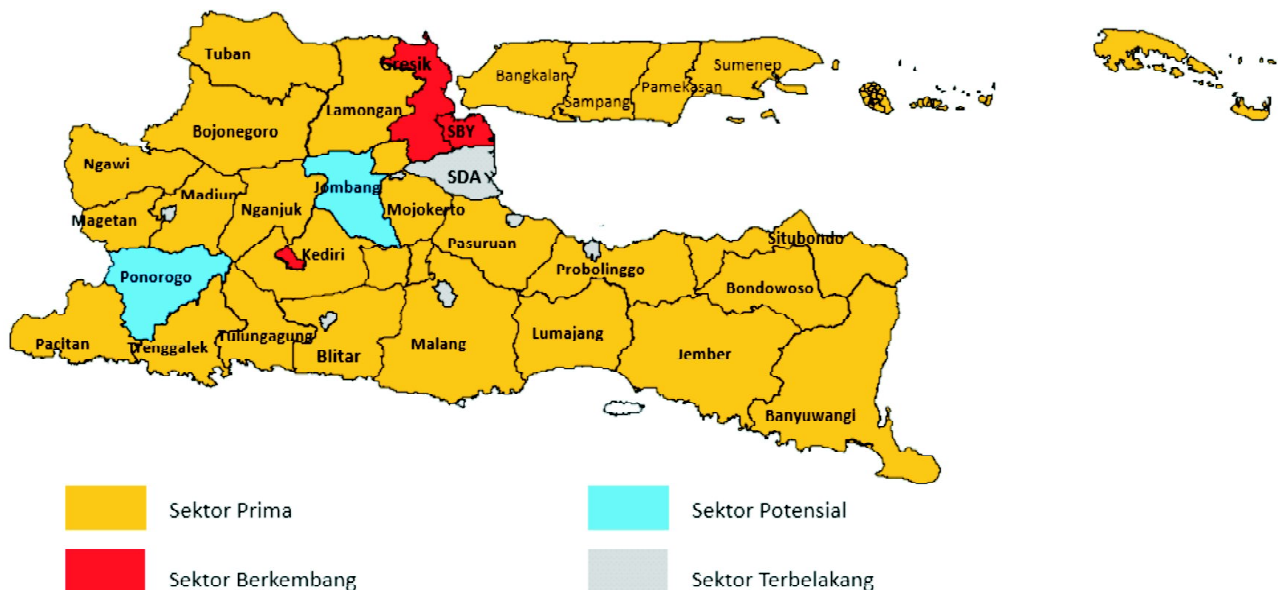


Figure 1: Map of Agriculture sectors in East java Based on the Combination of Basic and Potential Sector

Source: Researchers' analysis (2015)

4.1. Potential Food Commodities in each district / city in East Java

First, Potential crops in East Java province, namely: 1) Rice fields; 2) Rice fields; 3) Corn; 4) Cassava; 5) Sweet Potatoes; 6) Peanut; 7) Soybeans; and 8) Green Beans. Based on the analysis of potential food commodities, it can be mapped as follows:

- 1) *paddy*: Rice is a staple foodstuff of the most important and vital role for the economy, social and political. Rice is the main food ingredients community of East Java province, so that rice production in each region is quite evenly. Based on the results of the analysis showed that the District / Municipal rice crops not become a commodity just Pacitan, Trenggalek, Tulungagung, Situbondo, Probolinggo, Magetan, Sidoarjo, Bangkalan, Sampang, Pamekasan, Sumenep, Kota Blitar, Malang, Kota Probolinggo, City Pasuruan, Kota Kediri, Madiun, Mojokerto and Batu. As for the category of paddy fields can be seen in the following figure:
- 2) *Corn*: Corn is one of the most important food crops, in addition to wheat and paddy, Corn also be an alternative source of food in some areas. Corn also can be used as woof livestock (forage and cob), an area that has a large corn production will be a boon for the area. As well as rice crops, maize commodity also almost all districts / cities have large production. Regency / City corn production little is Pacitan, Trenggalek, Tulungagung, Madiun, Magetan, Ngawi, Gresik, Sidoarjo, Pamekasan, Kota Blitar, Malang, Batu, Kota Probolinggo, Pasuruan, Kota Kediri, Madiun, Mojokerto and Surabaya.
- 3) *Cassava*: Cassava is also known as a staple food-producing carbohydrates and leaves as a vegetable. This means a large production area would be an advantage compared to other regions. Based on the analysis, cassava is becoming a commodity that are in Pacitan, Trenggalek, Tulungagung, Malang, Bondowoso, Probolinggo, Pasuruan, Kediri, Nganjuk, Ponorogo, Ngawi, Sampang and Sumenep.
- 4) *Soy*: Soybean is the main source of protein and vegetable oil so that it can be used as a basic ingredient foods such as tofu, soy sauce, tempeh, soy milk, soy flour and others. Based on the analysis, which is becoming a commodity soybeans are in Blitar, Jember, Banyuwangi, Pasuruan, Jombang, Nganjuk, Madiun, Ponorogo, Ngawi, Bojonegoro, Lamongan, Sampang and Sumenep.

Second, Potential plantation crops in East Java province, namely: 1) Cashew, 2) Coconut, 3) Coffee, 4) Clove, 5) Tobacco, 6) Tea, 7) Cane and 8) Cocoa. Based on the analysis of potential food commodities, it can be mapped as follows:

- 1) *Coconut*: This plant is used almost all parts by humans that is considered as a versatile plant, especially for the people coast, Coconut also is the name for fruit produced by this plant. Based on the analysis, palm plant into a commodity that are in Pacitan, Trenggalek, Tulungagung, Blitar, Malang, Lumajang, Jember, Banyuwangi and Sumenep.
- 2) *Coffee*: Famous coffee would womb caffeinetail one. Various health effects of coffee are generally associated with the activity of caffeine in the body. leading role caffeine this body of work is increasing psychomotor so that the body remains awake and give effect physiological include increased energy, Based on the analysis, the coffee is becoming a commodity that are in Blitar, Malang, Lumajang, Jember, Banyuwangi, Bondowoso, Probolinggo, Pasuruan and Kediri.

- 3) *Clove*: essential oils of cloves has a function anesthetics and antimicrobial, Clove oil is often used to eliminate bad breath and to relieve paintooth, Substances contained in clove named eugenol, used dentist to soothe nervetooth. Based on the analysis, cloves into a commodity that are in Pacitan, Trenggalek, Tulungagung, Blitar, Malang, Lumajang, Probolinggo, Pasuruan, Kediri, Ponorogo, Nganjuk and Jombang.
- 4) *Tobacco*: These products are consumed not for the food but as a pastime that is as raw material for cigarettes and cigars. Tobacco may also be in chewable, The content-rich secondary metabolites also makes it useful as a pesticide and raw materials. Based on the analysis, tobacco became a commodity that are in Jember, Bondowoso, Situbondo, Probolinggo, Bojonegoro, Lamongan, Sampang, Pamekasan, and Sumenep.
- 5) *Cane*: Sugarcane is a plant grown for raw materials sugar and MSG, Dry sugarcane leaves (in Javanese language, Dadhok) is biomass that has quite high caloric value. Mothers in rural dadhok often use it as fuel for cooking; besides saving kerosene is more expensive, fuel is also fast heat. Based on the analysis, sugarcane became the leading commodities that are in Tulungagung, Blitar, Malang, Lumajang, Jember, Bondowoso, Situbondo, Pasuruan, Kediri, Nganjuk, Madiun, Magetan, Ngawi, Jombang, Mojokerto and Pasuruan.
- 6) *Cocoa*: Cocoa beans is the main ingredient manufacture cocoa powder (cocoa), cocoa powder is an ingredient in baking, ice cream, snacks, milk, and others. Based on the analysis, cacao being a commodity that are in Pacitan, Trenggalek, Blitar, Malang, Kediri, Jombang, Nganjuk, Madiun and Ngawi.

Third, Potential Plants Fruits in East Java province, namely: 1) Mango, 2) Orange, 3) Banana, 4) Rambutan, 5) Durian, 6) Manggis, 7) Pineapple, 8) Apples, and 9) Wine. Based on the analysis of potential food commodities, it can be mapped as follows:

- 1) *Mango*: Mango mainly grown for its fruit. The ripe fruit commonly eaten fresh, as fruit table or a mixture of ice, in the form of slices or blended. Young fruit is often in rujak Or sold on the roadside after the peel, split apart and come with seasoning salt with chili, Mango fruit is also treated as sweetmeat, Slices of dried fruit, canned and others. Based on the analysis, sugarcane became the leading commodities that are in Situbondo, Bondowoso, Probolinggo, Pasuruan, Kediri, Magetan, and Gresik.
- 2) *Orange*: Oranges can be used by humans as food, fragrances, as well as industry. Citrus fruit is the source of vitamin C and fragrances / perfumes important. The leaves can also be used as a spice. Based on the analysis, the orange becomes a commodity that are in Pacitan, Malang, Jember, Banyuwangi, Ponorogo, Magetan, and Kota Batu.
- 3) *Banana*: Bananas are a food is a source of energy (carbohydrate) And minerals, especially potassium, Carbohydrates provide energy bananas slightly slower than with sugar and syrup, but faster than rice, biscuits, and a type of bread. Therefore, a lot of athletes during the pause or break eating bananas as energy reserves. Based on the analysis, bananas are becoming a commodity is in Malang, Lumajang, Jember, Banyuwangi, Mojokerto, Bojonegoro, and Bangkalan.

Fourth, Potential farms in East Java province, namely: 1) Cattle, 2) Buffalo, 3) Horses, 4) Ram, 5) Sheep, 6) Pigs, 7) Chicken, 8) Duck, 9) wild duck. Based on the analysis of potential food commodities, it can be mapped as follows:

- 1) *Cow*: Cows have the benefit of the meat can be used as a side dish of food. Animal protein contained in beef have amino acid structures that are similar to humans, can not be made by the body (essential), amino acid composition is relatively more complete and balanced. Based on the analysis, the cow that became a commodity that are in Tulungagung, Malang, Lumajang, Mojokerto, Jombang, Lamongan, Sidoarjo, Malang and Surabaya.
- 2) *Buffalo*: Buffalo meat contains for better health compared to other meats kinds of beef, chicken, mutton, beef and even fish. Based on the analysis, the buffalo were becoming a commodity is at Trenggalek, Tulungagung, Malang, Lumajang, Jember, Pasuruab, Kediri, Magetan, Tuban and Pamekasan.
- 3) *Goat*: Goat meat is a good source of iron, vitamin B, choline and selenium best. Vitamin B helps the body burn fat, while choline and selenium were able to ward off cancer. Based on the analysis, the goat that became a commodity that are in Trenggalek, Tulungagung, Malang, Lumajang, Sidoarjo, Gresik, Lamongan, Bojonegoro, Ngawi, Sumenep, Malang and Surabaya.
- 4) *Chicken*: Highest chicken meat contains protein, vitamins and minerals, yet lower in fat and cholesterol. Protein is essential for maintaining bone density and prevent osteoporosis. Based on the analysis, domestic poultry that becomes a commodity that are in nearly all the district / city. Regency / City that commodity-range chicken is not a commodity that is Terri, Bondowoso, Situbondo, Ponorogo, Magetan, Ngawi, Gresik, Sampang, Pamekasan, Sidoarjo, Surabaya, Pasuruan, Probolinggo City, Malang, Batu, Kota Blitar, Kediri city, and the city of Madison.
- 5) *Duck*: The properties and benefits of duck meat is not much different from chicken meat containing protein, vitamins and minerals. Based on the analysis, duck into a commodity that are in Tulungagung, Blitar, Malang, Lumajang, Jember, Banyuwangi, Mojokerto, Jombang, Kediri and Sidoarjo.
- 6) *wild duck*: Properties and benefits is not much different wild duck meat with chicken and duck meat containing protein, vitamins and minerals. Based on the analysis, wild duck who became a commodity that are in Trenggalek, Tulungagung, Blitar, Malang, Banyuwangi, Mojokerto, Jombang, Kediri, Nganjuk, Bojonegoro, Tuban, Bangkalan, and Sidoarjo.

Fifth, Potential fisheries in East Java province, namely: 1) marine fisheries, 2) Fisheries public waters, 3) Fishing pond, 4) Fishing cages, 5) Fisheries paddy ponds, 6) Fishing mina padi, and 7) Fishing pond. Based on the analysis of potential food commodities, it can be mapped as follows:

- 1) *marine fisheries*: Sea fish contains omega 3 which is higher than most freshwater fish because of the ability to maintain body temperature so as fats remain liquid at a temperature of sea water. Despite the high content of omega 3 but not all marine fish is good for health, especially forpregnant motherand breastfeeding. Marine fish that contain high mercury should be avoided to help maintain your health and your baby. Based on the analysis, marine fisheries are becoming

a commodity is at Banyuwangi, Probolinggo, Tuban, Lamongan, Gresik, Sidoarjo, Bangkalan, Sampang, Pamekasan, Sumenep, Surabaya and Probolinggo city.

- 2) *Fisheries public waters*: Freshwater fish and catching fish is very good for consumption, because it has so many nutrients and beneficial for the body. Thus, the fish need to be taken into account as a source of essential nutrients. Based on the analysis, the fishing public waters become a commodity that are in Tulungagung, Blitar, Malang, Lumajang, Bondowoso, Nganjuk, Ngawi, Bojonegoro, Tuban, Lamongan, Gresik and Sidoarjo.
- 3) *fisheries pool*: Fisheries pool that becomes a commodity is at Trenggalek, Tulungagung, Blitar, Jember, Kediri, Jombang, Nganjuk, Ponorogo and Sidoarjo.
- 4) *Fisheries mina padi*: Mina fisheries rice into a commodity that are in Pacitan, Blitar, Malang, Jember, Banyuwangi, Bondowoso, and Nganjuk.
- 5) *fishery ponds*: Fishery ponds that become a commodity that are in Banyuwangi, Lamongan, Gresik, Sidoarjo, Pasuruan, Probolinggo and Surabaya.

4.2. Competitiveness Improvement Strategy of Food Commodities

Embodiments of the competitiveness of food commodities in a region not only fulfills the availability of food in a region, but also can be accessed by the public at large in other regions. Thus the competitiveness dimension of food commodities in fact is not only the formation of a good agricultural foundation in the region to grow and develop, but also has a dimension of product marketing.

Attention on food commodities also can not be seen from the aspect of macro or aggregate, but must use a smaller unit of analysis to the household or farmer. Food security to the household level is crucial to be monitored from time to time. Data collection system are arranged into a key to his success.

Improving the competitiveness of food commodities to realize not only the obligation of the government but also the wider community, so that people's participation in efforts to increase competitiveness of food commodities to be very important. Pemerintah as a facilitator and a dynamic economic region needed support in creating a climate that is conducive to production and marketing of food and agriculture products in general, both at farm and investment deregulation package of institutional restructuring of agriculture.

Public participation in efforts to increase competitiveness of food commodities can be shaped to support efforts to improve the capacity of food production and agriculture in general, acceptability is high on the improvement of new technologies, respect for food products of domestic or local, and wish to increase knowledge about the pattern of a good food match expectations so that sufficient nutrition for a healthy body and productive. Provision of infrastructure and health facilities become very important also to consider in efforts to maintain public health.

In accordance with the development of globalization and trade liberalization, some food commodities have become increasingly strategic commodity. Therefore, in an effort to improve information related to food commodities, the researchers offer a program to help farmers in marketing their agricultural products.

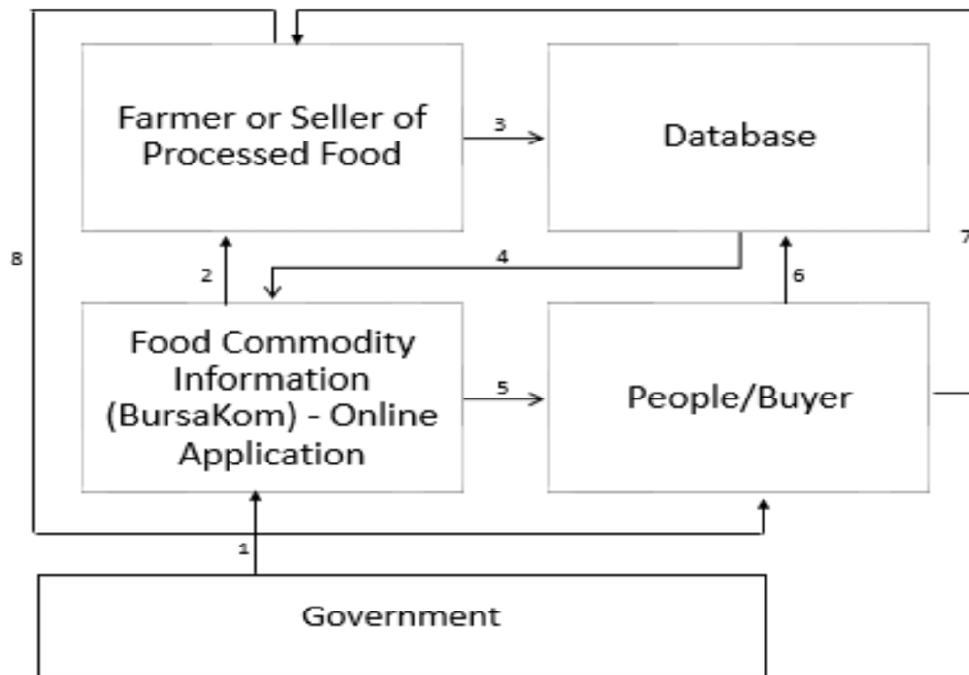


Figure 2: Food Commodity Marketing in the digital era

Information

- a) The Government provides online trading applications (Trading Commodity Online) as a means of marketing food commodities or processed products. This application is designed to be used with internet and SMS networks that can be connected directly with the website.
- b) This online trading app is called Bursakom. The government disseminates the use of Bursakom.
- c) Farmers or Seller of processed food using Bursakom by SMS or internet network. Commodities to be sold are stored in the database.
- d) Commodities to be sold will appear in the Bursakom app.
- e) The community or potential buyers will know the information related to sales through Bursakom.
- f) Prospective buyers can search for the desired commodity through regional commodity database.
- g) Prospective buyers can directly contact the farmer or seller (bargaining process).
- h) Farmers or sellers can directly contact potential buyers in need (bargaining process).

5. CONCLUSIONS

The results of this study show that featured food commodities East Java is the rice plant. Another commodity that can be seeded are coffee, cocoa, clove, coconut, sugarcane, cassava and domestic poultry. Commodity information systems in several districts / cities in East Java, can be applied to the web that can be accessed by the entire community, especially farmers and traders / prospective buyers. They can be bought and sold just enough through technology Short Message System (SMS) directly by the system will be published on

the Internet. With this system the farmer will be able to increase the sale value / competitiveness of its products as more and more prospective buyers know the sales information.

Implementation of the system development to increase competitiveness of food commodities is the responsibility of Java together government, private sector and society at large. Each of the components involved in the development of food security activities have an active role in development.

In essence, each component must have a synergistic action of a management system so as to increase competitiveness of food (use commodities online) can be implemented through a planning process involving diverse institutions but have the same goal of improving the competitiveness of food commodities. Implementation of the program also requires the participation of all parties. Even aspects of global macro and became greatly affect the performance of this system.

System evaluation and monitoring of the implementation of the program of food commodities online is very necessary to know which position is located in East Java with respect to aspects of food security. And also regarding the efforts to see the performance of the construction of the food security system that has been implemented based on standards set in the planning. Thus it can be seen the extent to which the implementation as planned, or can be known until the extent of the deviation on the development of food security has occurred.

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