

BESSH-16**The Policy Strategy of Enhancing Competitiveness of Indonesian Horticulture by Improving the Products Quality, Quantity and Continuity**Etty Soesilowati^{1*}, Sucihatingsih DWP², Dyah Rini Indriyanti³, Rosidah⁴^{1,2}*Economic Department of Semarang State University, Indonesia*³*Department of Biology, Semarang State University, Indonesia*⁴*Department of Technology, Semarang State University, Indonesia*

Abstract

The diversity of agro-climate in Indonesia allows the horticultural plants of tropical as well as subtropical horticulture development, which includes 323 kinds of commodities, which consists of 60 types of fruit, 80 types of vegetables, 66 kinds of biopharmaca and 117 kind of ornamental plants commodities. The objectives of the research are calculating the products competitiveness, mapping the farming systems, the institutional systems, and the distribution channel so that the alternative models of integrated sectorial policies were established. This research is using qualitative and quantitative approaches to 18 Empowerment of Farmers Center sites in Central Java. The data were analyzed through interactive methods, field test, index of Revealed Comparative Advantage (RCA), Trade Specialization Index (TSI), Intra Industry Trade (IIT), and percentage descriptions. The results of RCA and TSI calculation show avocado, mango, mangosteen, watermelon and cantaloupe have a good competitiveness. IIT calculation determines the bananas, watermelon, melon, durian and longan commodity are suitable for imperfectly competitive market selected for their increasing returns to scale, while avocado, mango and mangosteen commodities are suitable for perfect competition market. There are three patterns of marketing distribution: (1) farmers - consumers; (2) farmers - middlemen - outlet - the consumer; (3) farmers - distributors - outlet - the consumer. The government issued a CSR policy for companies directed at the horticultural farmers' empowerment to maintain the supply quality, quantity and continuity. The program was conducted highly structured from the provincial down to the village with the assistance of technical consultants. Activities are started with the creation of reservoirs and Farmer Empowerment Centers (FEC). FEC is farm container regeneration and serves as: (a) supply center (seeds, fertilizers, medicinal plants); (B) training center and; (C) research center.

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Keywords— Competitiveness, Quality, Quantity, Continuity, Horticulture Introduction

Introduction

Fruit export – import development always gradually increased each year, in line with the increased of Indonesian population. However, the import is always bigger than the export. Import in 2009 – 2012 significantly rose from 606,8million USD to 848,7 million USD. While the export rose from 261,2million USD in 2009 to 40,1 million USD in 2012 (Kompas, 1st April 2013).

Another point of concern is Indonesian fruit import is not only subtropical fruit, such as red apple, grape, pear and kiwi, but also Indonesian tropical fruit such as durian and jack fruit. There are several causal factors: first, imported fruit is cheaper; second, the continuity of imported fruit supply; third, imported fruit appearance is more attractive; fourth, the regularity of imported fruit distribution network from distributor to retailer.

Ministry of Agriculture and Ministry of Trade then issued decree No. 60 of 2012 on Recommendation of Horticultural Products Import and Ministry of Trade Regulation No. 60 Year 2012 on Imports of Horticultural Products. Import prohibition of 11 horticultural products for the period from January to June of 2013, includes six kinds of fruits (durian, pineapple, melon, banana, mango, and papaya), four types of vegetables (potatoes, cabbage, carrots, and peppers), and three types of flowers (chrysanthemums, orchids, and heliconia).

There are severalfactor that cause the competition: first, imported fruit is cheaper than local one; second, the continuity of imported fruit supply; third, imported fruit appearance is more attractive; fourth, the regularity of imported fruit distribution network from distributor to retailer.

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Those various obstacles and problems need to be addressed by the integrated horticulture development approach and it is an inseparable unit, known as the six (6) pillars of the horticulture development, which is carried out simultaneously and integrated between central, province and district. The six pillars of horticulture development activity are as follow:

- Development of Horticulture Agribisnis Region
- Supply Chain Management (SCM)
- Good Agricultural Practices (GAP) and Standart Operating Procedures (SOP)
- Integrated Facilitation Horticulture Business Investment
- Development of Institutional Business
- Consumption Improvement and Export Acceleration

All of those programs above become a connected unit and dependent so it cannot be separated.

Table 1:
Export – Import
Export-Import Comodity Indonesian Horticulture Sub- Sector
January- September 2013

Comodity	Export		Import	
	Volume (kg)	Value (USD)	Volume (kg)	Value(USD)
Fresh Banana	1.563.989	991.471	86.111	130.679
Pineapple	122.814.386	110.757.143	237.094	298.261
Mango	168.880	263.526	34.200	96.552
Mangosteen	5.129.790	4.031.286	-	-
Oranges	1.434.292	1.039.197	79.745.394	103.622.391
Grapes	412.963	10.434.930	29.658.685	76.598.860
Apple	72.767	69.804	101.640.743	136.212.308
Pear	71.919	83.431	102.843.865	87.344.730
Longan	2.142	3.213	44.446.627	52.642.066

Source: Retnoningsih (2015)

Indonesian local fruit product contribution can be done in the form of fresh fruit product or refined fruit product. World total refined fruit (import) demand in 2005 is 31.964, 57 million USD and in 2006, 35.393,78 million USD, with 10% demand growth each year, the total world demand in 2010 is 51,820 million USD. The Indonesian market share of canned refined fruit and juice on the world market is about 4% (USD 138, 03 million) and located in the 51st of the canned refined fruit world demand is USD 3,450.75 million. The world's major exporting countries for canned fruit and juice / fruit essence products are US (41%), Norway (27%), Japan (16%) and Malaysia (12%). Estimated demand for refined fruit in 2015 is 1,425,996 ton. Some fruits agroprocess industry that have contributed in supporting economic growth in Indonesia, they can be seen in table 2:

Table 2:
Fruit Refinement Industry in Indonesia

Nama Perusahaan	Produk	Letak
PT. Great Giant Pineapple	Canned Pineapple	Lampung
Tris Delta Agrindo	Dried Pineapple	Lampung
PT. Indogram	Fruit Essence	Bekasi, Jabar
PT. Ultrajaya Milk & Trad.co	Fruit Essence	Bandung, Jabar
SAF	Fruit Essence	Bogor, Jabar
PT. Henson Makmur	Fruit Essence	Surabaya, Jatim
PT. Inni Pioneer Industries	Pineapple Sweets	Kerawang, Jabar
Keong Nusantara Abadi	Canning Fruit	Kediri
PT. Agrofood Propanindo	Jackfruit Chips	Pasuruan, Jatim
PT. Welco	Jam	Surabaya, Jatim
Fruit Chips “Qreesh”	Jackfruit & Papaya Chips	Semarang, Jateng
AgroKusuma	Fruit Essence	Malang, Jatim
CV. Promindo Utama	Fruit Puree (mango, soursop, guava)	Cirebon

Source: Industry and Trade Department (2010)

Some of the obstacles faced by the refined industry:

- Raw material supply is not continuous because fruit production is seasonal, the consistency of quality and size and degree of ripeness uneven due to the limited investment commercial scale cultivation of fruit plantations;
- Lack of post-harvest handling technologies of production of fruits and mastery of the production process technology at the level of small and medium-scale enterprises;
- The limitation of Good Manufacturing Practice (GMP) application, Hazard Analysis and Critical Control Point (HACCP); Not optimal role of R & D in the field of fruit refinement; Refined fruit generally produced by small medium scale industries are still constrained in its packaging.

Fruits product diversification exciting because the behavior of modern society is more like the food / drinks juice in practical packaging, particularly in small packaging and has longer shelf life than expensive fresh fruit. It not only can be a fruit grower opportunity to increase production but also provide a multiplier effect for employment in the industrial sector.

Literature Review

Saptana (2001) on the competitiveness of tropical fruits Indonesia on the world market by using Revealed Comparative Advantage (RCA) and the Export Product Dynamics (EPD) shows that fruits Indonesia has a competitive position that is lower than that of competing countries headliner. The performance of Indonesian fruits exports is generally not too good. Only avocado is the "Rising Star", while other fruits are "Falling Star", "Lost Opportunity" even "Retreat".

The decline of local apple production year by year, and increasing imports of apples cause local apples marketing delays. Kusuma Agro as one of the producers of apples local made strategy by determining the most efficient marketing channel both technically and economically. There are four marketing channels in Kusuma Agro, namely: (1) the Trading Department - Consumers, (2) the Trading Department - big salers - Retailers - Consumer, (3) the Trading Department - Retailer - Consumer, (4) the Trading Department –big salers - Small salers - Consumer. 1 marketing channel is the most technically and economically efficientchannel, because it has the smallest technical efficiency index and the most economical efficiency index (Suyono, 2012).

Deny Utomo is researching related mango channels distribution,show that: 1) the success factors of supply chain management have significant influence most of the production process and distribution channels, 2) the production process significantly influence the distribution channels and agro mango, 3) The distribution channel significantly influence the mango agro-industry, 4) Agroindustri make significant effect on the refined mango agro-industry, 5) institutional key element is *Disperindag*, 6) the maximum selling price of mango farmers Grade A at Rp. 15 376, - / kg, suppliers Rp. 28 269, - / kg, and exporters Rp. 39 201, - / kg. While the maximum selling price of mango farmers Grade B at Rp. 5916, - / kg, suppliers Rp. 11 716, - / kg, and exporters Rp. 32 083, - / kg. The selling price of Grade C in the maximum mango growers Rp. 2386, - / kg and suppliers Rp. 5447, - / kg. 7) Total cost of transportation Mango Grade A minimum of Rp. 896 489, - / ton, Grade B Rp. 710 625, - / ton, and Grade C Rp. 509,000, - / ton. Production of mango plant in Probolinggo decreased due to the low technological mastery of both aspects of breeding, quality and quantity is relatively limited. Meanwhile, the ones whichwas exported to Singapore is also confronted with obstacles, because the current mangoes source in must compete with mango from Thailand (Agriculture Department, 2009).

Suprijatna (2005) stated that the efforts to enhance the competitiveness of marketing, whether on the domestic market or the international market, there is no other way Indonesia should work hard to provide abundant product with high quality and produced with efficientcost, and using Supply Chain Management (SCM)strategic approach.

SCM approach on horticultural products based on; (A) The cultivation process to produce product (horticulture), (b) Transforming raw material (harvest and post-harvest handling), and (c) The delivery of products to consumers through the distribution system. To ensure the successful implementation of SCM or Supply Chain Management needs to understand the supporting factors of success include: policy, human resources, infrastructure, facilities, technology, institutional, capital / finance, information systems, social, cultural and other environments (Saptana et al. 2006).

Setyabudi et al., (2007) stated that fruit post-harvest losses and damage, from the collectors to retailers, estimated at 30%. This suggests a potential and promising investment opportunities in the postharvest handlingbusiness field, rescue crops, and industrial refinement.

In China, the government has a very important role in agro industrialization, particularly in planning and implementing supply-chain partners to coordinate the functions of production and distribution of supplies according to market conditions (Wei and Yangrong, 2004). In Thailand, there are two activities have been done to develop agro-industry SCM, through, 1) the establishment of the center of post-harvest handling area in Ratchaburi province to accommodate all the fresh mango products in this place, for quality control and safety of their products before selling

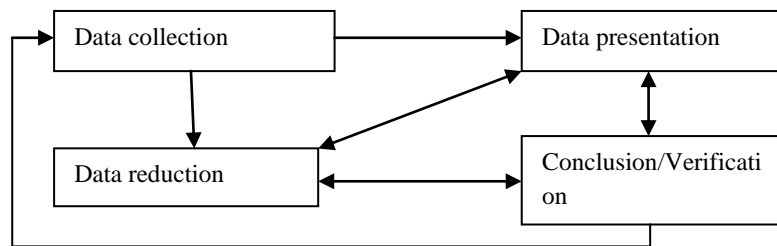
in the domestic market and export, 2) establishment of packing centers in Bangkok Air Port, all the products have passed the test at the center of post-harvest handling of export quality in the grading, sorting, washing and packaging process in the center of this packaging before export. This is done to maintain the quality and minimize the cost of distribution to get the maximum selling price (FAO, 2007).

Research Method

The research used two approaches simultaneously, i.e. qualitative or naturalistic approach. According to the the theme of the study, the aspects that will be examined are: (1) the economic aspect, has a measurement parameter values, the extent of the market, as well as the competitiveness of the product; (2) The political aspect is intended policies, programs and strategies are executed stakeholders; (3) The technical aspects are intended cultivation technical and product diversification.

The research located in 18 districts / cities in Central Java program recipients Centers Farming Empowerment (FEC). Recognizing the background characteristics of the different sites, so the appropriate type of qualitative research is a multi-site study. Multi-case studies take a variety of formats starting with a single case study as a pilot for other cases. Two or more case studies carried out, then compared for resulting generalization. So to obtain a holistic and integrated data and considering the relevance of the data for focusing the research, formulation of the problem and the goal, then use the data collection techniques: (1) in-depth interviews; (2) observation; (3) Focus Group Discussion; (4) questionnaire; (5) study the documentation; and (6) laboratory testing.

In qualitative approach, the data were analyzed through interactive model as follows:



Source : Miles danHeberman (1992)

Meanwhile, in quantitative approach, data were analyzed with RCA, TSI, IIT and descriptive percentage.

Revealed Comparative Advantage (RCA) Indexes

The RCA index is based on a consideration that export performances of a country is determined by the competitiveness powers of a product from country, as compared to the same product from other country (or countries), assuming (*ceteris paribus*) that all other factors influencing exports remain unchanged. Tulus Tambunan (2004) defined RCA as when the export of a commodity by a country (country I for instance) has a higher percentage as compared to export of the same commodity by all countries around the world, then the country (country I) has a comparative advantage in both the production and the exports of the commodity. RCA is then formulated as follow:

$$RCA = \left(\frac{X_{IK}}{X_M} \right) / \left(\frac{X_{WK}}{X_{WM}} \right)$$

X_{IK} = export value of commudity I by country K

X_M = total exsport of country K

X_{WK} = the world export value for commudity I

X_{WM} = total export value of the world

When an RCA index for a commodity is higher than 1, then the commodity has arelatively goodcompetitive power . Conversely, when an RCA index for a commodity is less than 1, then the commodity has less competitive power.

Specialized Trades Index (STI)

STI indexes can be used for finding out whether or not a commodity has a potential either to be exported or imported. Therefore, STI index can be used for determining the stages of both the industrialization processes and the trading practices of any country. By using STI whether product has become saturated (there is no room for growing

further)or is still in its growing phases is able to be monitored. The value of STI -1 to +1. When a product has a positive value (0to 1), then the product has a strong competitive power and may become a commodity for exports, where domestic supply is higher than domestic demand). Conversely, when a product has a negative value (0 to -1), then the product has low competitive power and might have to be imported (domestic supply is lower than domestic demand).

The variations of comparative advantage of a product relative to either its export or import potentials can be formulated as follow:

$$STI = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}}$$

STI = Specialist Trade Index for,

X_{ij} = export value of commodity i by country j,

M_{ij} = import value of commodity i by country j

Intra Industry Trade (IIT) Indexes

Intra Industry Trade index (IIT) as defined as a trade where an export value by a country for an industry is exactly equalized by another country for the same industry. An IIT index nearing to zero would mean that the trade is suitable to be practiced in a *perfect market competition* where product abundance is a very important factor and the trade is based on a comparative advantage. An IITindex of exactly zero mean that the trade should be practiced in an imperfect market competition due to increasing returns to scale. For calculating ITT indexes for a country, the Grubel - Lloyd (1975) index is used in the following manner:

$$IIT I = 1 - \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}}$$

IIT = Index for Intra Industrial Trades,

X_{ij} = export industry i to country j,

M_{ij} = import industry i to country j

Results

From 60 kind of fruits in Indonesia, have been chosen some exotic fruit, such as: avocado, durian, mango, mangosteen, melon, banana, dan watermelon. The productivity of these fruits are as follows:

Table 3:
Indonesian superior fruitsProductivities (Ku/Ha)

No	Commodity	2009	2010	2011	2012	2013
1	Avocado	129,00	109,40	127,44	140,14	130,50
2	Durian	129,00	106,30	128,02	140,55	123,94
3	Mango	104,20	97,80	102,32	108,17	88,70
4	Mangosteen	88,00	82,60	72,67	106,60	76,70
5	Banana	535,50	568,30	588,79	599,95	606,99
6	Water melon and melon	148,50	132,00	151,80	159,70	149,15

Source:Processed Data (2015)

It clearly can be seen from data above, that avocado, durian, mango, mangosteen, banana, watermelon and melon productivity yearly increase, they are: 10,2% ; 9,3% ; 5,8% ; 47,2%; dan 1,8%

Analyses on competitive powers of the seven exotic fruits from 2009 to 2013 showed the following results (Table 4)

Table 4:
Competitive Powers of Indonesian Exotic Fruits based on STI

Year	Banana	Mango	Mangosteen	Water melon	Melon	Durian
2009	0,101	0,265	0,998	-0,304	-0,618	-1,000
2010	-0,990	-0,061	0,998	-0,923	-0,533	-0,998
2011	-0,977	0,201	0,997	-0,663	-0,152	-1,000
2012	-0,928	0,180	1,000	-0,242	-0,152	-1,000
2013	-0,541	0,803	1,000	0,995	0,976	-1,000

Source: Processed Data (2015)

It can be seen in Table 4, the products that have positive indexes for Specialization Trade Index are avocado, mango, mangosteen, where water melon and melon only have positive index in 2013. This means that the exports for these five fruits were higher than the imports. Banana and durian had negative STI, which meant that the exports for these three fruits were lower than the imports. This means that the production and quality of those two fruits are low. Based on the large hectareage of durian and banana, the low export for these fruits is suspected to be its lower quality compared to those of imported ones. Therefore, it is duty of Indonesian Government to help increase the quality, quantity and the continuous supply of Indonesian fruits in order for the fruits to compete strategically in international and particularly ASEAN markets.

One point to note, the analysing using STI on banana also revealed that banana had a positive index in 2009 when the quantity of export was larger than that of import. However, from 2010 to 2013, the STI for banana decreased drastically to almost minus 1. This may be an indication that banana can be a potential fruit for export if the quality of the fruit is at par with imported ones.

Table 5:
Analyses on Indexes for Intra Industrial Trades for Indonesian Fruits

Year	Banana	Avocado	Mango	Mangosteen	Water Melon	Melon	Durian
2009	0,899	0,186	0,735	0,002	1,304	1,618	2,000
2010	1,990	0,261	1,061	0,002	1,923	1,533	1,998
2011	1,977	0,233	0,799	0,003	1,663	1,152	2,000
2012	1,928	0,749	0,820	0,000	1,242	1,152	2,000
2013	1,541	0,003	0,197	0,000	0,005	0,024	2,000

Source: Processed Data (2015)

Table 5 shows that banana, water melon, melon and durian had IIT (Intra Industry Trade) indexes higher than 1 which indicates these four commodities were suitable in imperfect market competition due to increasing returns to scale. On the other hand, avocado, mango and mangosteen had IIT index of zero or nearing to zero indicating that these fruits are more suitable in perfect market competition where product abundance is a very important factor and the trade is based on comparative advantage.

Next is the RCA index. The analysing using RCA indexes showed that avocado, banana, mango, mangosteen, durian, and watermelon from Indonesia had competitive powers as shown in Tables 6 to 11

Table 6:
RCA Indexes for Avocado

Year	Indonesian Avocado Export to ASEAN (Kg) (Xij)	Total Indonesian Export to ASEAN Countries (kg) (Xtj)	ASEAN Avocado Export to Indonesia (Kg) (Xiw)	Total ASEAN Export to Indonesia (Xtw)	Xij/Xtj	Xiw/Xtw	RCA
2009	65	24,623,898	160	199,561,320	2.64E-06	8.01759E-07	3.292403
2010	68	33,347,509	247	263,328,091	2.04E-06	9.37993E-07	2.173931
2011	78	42,098,910	236	310,223,221	1.85E-06	7.60743E-07	2.435488
2012	72	41,831,096	291	325,327,521	1.72E-06	8.94483E-07	1.924248
2013	278	40,629,939	638	330,512,805	6.84E-06	1.93033E-06	3.544592

Source: Processed Data (2015)

RCA index for avocado in ASEAN markets in 2009 to 2013 showed positive index of greater than 1 and in 2013 was 3.54. These indexes showed that alpukat from Indonesia had the competitive power in ASEAN markets.

The RCA index for banana had always been less than 1 since 2009 except that it reached 1.39 in 2013. This shows that production of this commodity had not been able to fulfill the need for export but is picking up in 2013.

Table 7:
RCA Indexes for Banana

Year	Indonesian Banana Export to ASEAN (Kg) (Xij)	Total Indonesian Export to ASEAN Countries (Kg)(Xtj)	ASEAN Banana Export to Indonesia (Kg) (Xiw)	Total ASEAN Export to Indonesia (Kg) (Xtw)	Xij/Xtj	Xiw/Xtw	RCA
2009	16	24,623,898	28,473	199,561,320	6.5E-07	0.000142678	0.004554
2010	13	33,347,509	31,046	263,328,091	3.9E-07	0.000117899	0.003307
2011	35	42,098,910	35,173	310,223,221	8.31E-07	0.00011338	0.007333
2012	37	41,831,096	46,327	325,327,521	8.85E-07	0.000142401	0.006211
2013	109	40,629,939	638	330,512,805	2.68E-06	1.93033E-06	1.389786

Source: Processed Data (2015)

Table 8:
RCA Indexes for Mango and Mangosteen

Year	Indonesian Mango & Mangosteen Export to ASEAN (Xij)	Total Indonesian Export to ASEAN Countries (Xtj)	ASEAN Mango & Mangosteen Export to Indonesia (Xiw)	Total ASEAN Export to Indonesia (Xtw)	Xij/Xtj	Xiw/Xtw	RCA
2009	938	24,623,898	19,348	805,241,419	3.81E-05	2.40276E-05	1.58539
2010	649	33,347,509	25,539	1,051,786,118	1.95E-05	2.42816E-05	0.801502
2011	1810	42,098,910	33,527	1,244,568,991	4.3E-05	2.69386E-05	1.595997
2012	1868	41,831,096	61,439	1,254,690,329	4.47E-05	4.89675E-05	0.911948
2013	3806	40,629,939	97,057	1,271,324,185	9.37E-05	7.63432E-05	1.227021

Source: Processed Data (2015)

The analysis using RCA index on mango and mangosteen showed fluctuating from 0 to 1.5.

RCA of watermelon has been less than 1 since 2009 which strongly indicates the lack of comparative advantage to compete in the regional market.

Table 9:
RCA Indexes for Durian

Year	Indonesian Durian Export to ASEAN (Kg) (Xij)	Total Indonesian Export to ASEAN Countries (Kg) (Xtj)	ASEAN Durian Export to Indonesia (Kg) (Xiw)	Total ASEAN Export to Indonesia (Kg) (Xtw)	Xij/Xtj	Xiw/Xtw	RCA
2009	0	24,623,898	24,242	199,561,320	0	0.000121476	0
2010	13	33,347,509	21,296	263,328,091	3.9E-07	8.08725E-05	0.00482
2011	0	42,098,910	30,295	310,223,221	0	9.76555E-05	0
2012	5	41,831,096	23,557	325,327,521	1.2E-07	7.24101E-05	0.001651
2013	0	40,629,939	15,283	330,512,805	0	4.62403E-05	0

Source: Processed Data (2015)

Durian from Indonesia did not have competitive power as shown by RCA indexes of always less than 1. This mean that Indonesia has not been able to produce durian in sufficient quantities. For fulfilling domestic consumption alone, Indonesia has to import durian from other countries.

The RCA index for melon seem to fluctuate between 2009 and 2013. This could mean that melon may have the potential to be an export commodity for ASEAN if melon is given due attention.

Table 10:
RCA Indexes for Water Melon

Year	Indonesian Water Melon Export to ASEAN (kg) (Xij)	Total Indonesian Export to ASEAN Countries (kg) (Xtj)	ASEAN Water Melon Export to Indonesia (Kg) (Xiw)	Total ASEAN Export to Indonesia (Kg) (Xtw)	Xij/Xtj	Xiw/Xtw	RCA
2009	224	24,623,898	7,467	199,561,320	9.1E-06	3.74171E-05	0.24312
2010	21	33,347,509	8,752	263,328,091	6.3E-07	3.32361E-05	0.018947
2011	39	42,098,910	8,920	310,223,221	9.26E-07	2.87535E-05	0.032218
2012	169	41,831,096	8,926	325,327,521	4.04E-06	2.7437E-05	0.147249
2013	409	40,629,939	9,722	330,512,805	1.01E-05	2.94149E-05	0.342223

Source: Processed Data (2015)

Table 11:
RCA Indexes for Melon

Year	Indonesian Melon Export to ASEAN (Kg) (Xij)	Total Indonesian Export to ASEAN Countries (Kg) (Xtj)	ASEAN Melon Export to Indonesia (Kg) (Xiw)	Total ASEAN Export to Indonesia (Kg) (Xtw)	Xij/Xtj	Xiw/Xtw	RCA
2009	102	24,623,898	1992	199,561,320	4.14E-06	9.98189E-06	0.414983
2010	280	33,347,509	2446	263,328,091	8.4E-06	9.28879E-06	0.903931
2011	318	42,098,910	2496	310,223,221	7.55E-06	8.04582E-06	0.938828
2012	568	41,831,096	2894	325,327,521	1.36E-05	8.89565E-06	1.526411
2013	180	40,629,939	3360	330,512,805	4.43E-06	1.0166E-05	0.435788

Source: Processed Data (2015)

Discussion & Conclusion

In Central Java several regions producing avocado, mango, mangosteen, water melon, melon, banana and durian have three distinct patterns of marketing distributions for these commodities as shown in Figure 1. The distribution channel is still in a traditional format and lack innovative marketing outlets to ensure that end products are not priced highly due to the middle people in the distribution chain.

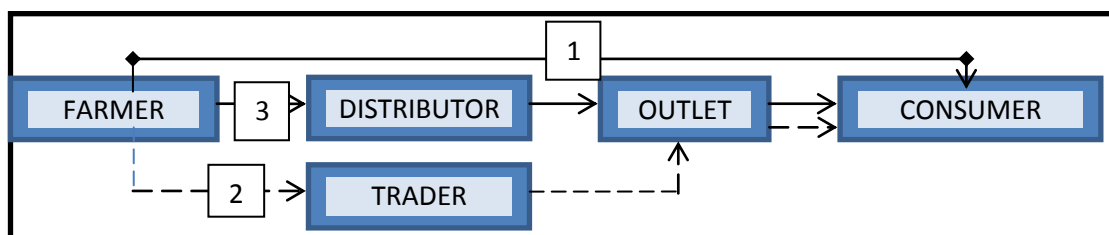


Figure 1: Distributor Systems for Indonesian Fruits

Other than traditional distribution system, several factors which also inhibit the effective distribution of local fruits in Indonesia are : (1) Production which depends heavily on natural climate condition that there was no guarantee for the quantity and continuous availability of the fruits; (2) Producers have not been oriented to quality. Local producers still lack the concern for the quality of their products. In deliveries, high quality fruits were mixed with bad quality ones and even with leaves, small branches and rotten fruits. As a result, 40% to 60% of deliveries were rejected and disposed . Low quality of these local commodities was closely related to the lack of cultivations technologies, harvesting methods and post-harvest management ; (3) Most fruit cultivations in Indonesia still use inefficient and traditional production system and agro forestry; (4) Lack of appropriate Research & Development programs by the government. Farmers conduct uninstitutionalized and unintegrated developments program on their own initiative, producing relatively low added value fruits.

Many approaches and strategies that have been made by various parties and the government to increase the added value of horticultural products. The strategy that has been developed includes two things, namely on-farm and off-farm activities (Goddess. R, 2008). Models developed on farm should not return to the traditional model, but need to be adapted to the situation changed environment. One thing that needs to be developed is a model of integrated farming (sustainable agriculture) in which this method combines a variety of ways farmers have the opportunity to earn additional income from various sources. Sustainable agriculture is a multicultural, respect biodiversity, respect for local knowledge, using appropriate technology and in accordance with local culture, but has a high added economyvalue.

In implementing the strategy, it was applied through a "triple helix", include: Academics/ University, Industry/ Business, and Community/ Government. Creation of benefit is an effort to achieve business efficiency, while benefit distribution is the process of trying to achieve justice. The involvement of small farmers is one of the key supply chain developments of agribusiness and agro-industries in developing countries. Small farmers in developing countries generally have limited access to technology, extension services and market integration that cannot meet the demands of export markets such as the sustainability of quantity and quality.

Horticulture development to meet global market demand is required institutional innovations. Institutional innovation are formed due to the interaction between small farmers and markets, as well as the interaction between universities, the private sector and government. The interaction between universities, the private sector or industry and government is the key to innovation and growth in the knowledge-based of economy era (Etzkowitz, 2008)

Realizing the Triple Helix approach then drafted a model as shown in Figure 2. Academics act as researchers and developers, industry act as funders and government regulators.

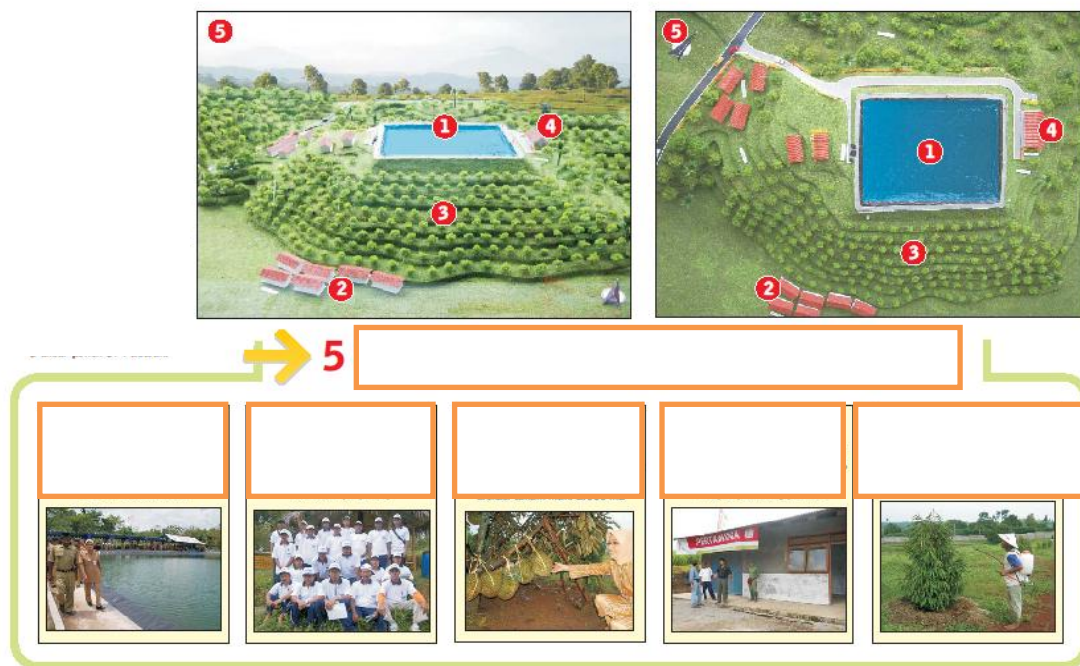


Figure 2: Integration of Farm Empowerment Model

As a conclusion, to enable the horticulture industry in Indonesia to flourish and grow, three actions have to be taken:

- Fruit producers to improve the production and quality of their products. This should be supported by R & D by experts in the field of horticulture.
- The distribution channel (marketing) be integrated and improve in order to enable easy flow of products with less cost and time efficient.
- The government of Indonesia to play an active and effective role in making policies that benefit the domestic producers.

As for the development of horticulture based industries can be illustrated in Figure 3.

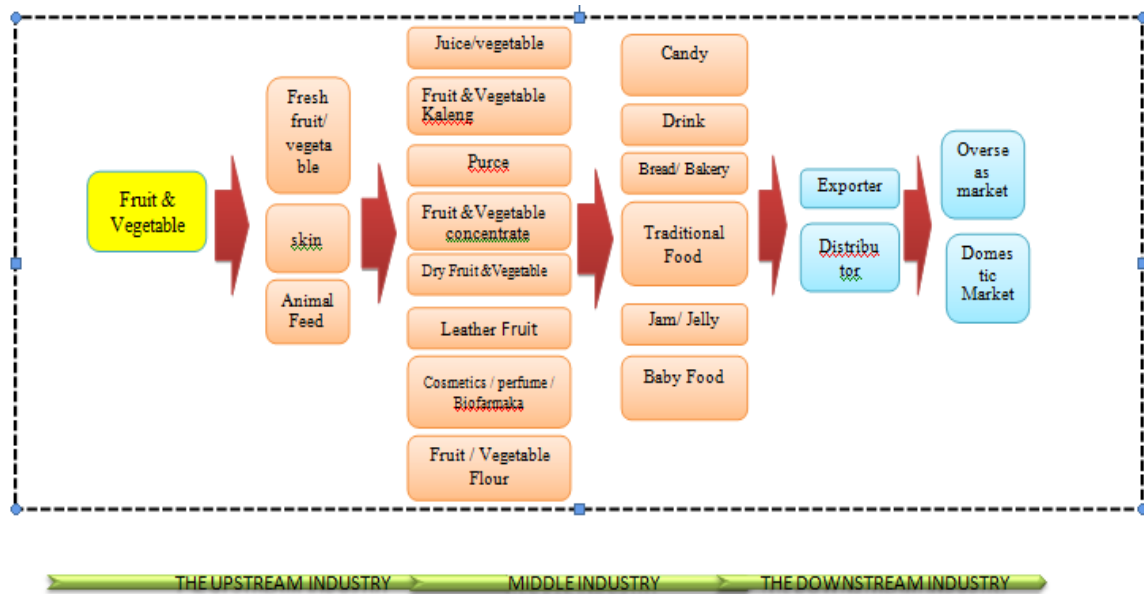


Figure 3: Horticultural Product Development Potential for the Future

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References

Agriculture Department. (2009). *Bad quality of mango from probolinggo*. Retrieved from <http://www.probolinggokab.go.id/site/index.php>.

Dewi, R. (2008). *Pucuk the income analysis. Final Project*. Syarif Hidayatullah Islam State University, Jakarta, Indonesia.

Ranga, E., M. (n.d). *A triple helix system for knowledge-based regional development: from “Spheres” to “Spaces”*. University International Institute of Triple Helix, LaSalle Madrid, Spain Stony Brook University, Spain.

FAO. (2007). *Agroindustrial supply chain management: Concepts and applications*. Food and Agriculture Organization of the United Nations.

Anonymous (2010). *Roadmap of fruit refinement. Indonesia: Industry and Trade Department Industry*. Retrived from: agro.kemenperin.go.id/media/download/23

Miles, M. B., & Huberman, A. M. (1984). Qualitative data analysis: A sourcebook of new methods. *Educational Evaluation and Policy Analysis*. 8(3), 329-331

Retnoningsih. (2015). *Indonesian germplasm fruits characteristics and evaluation for sustainable utilization*. Semarang State University, Indonesia.

Saptana, S., Siregar, M., Mayrowani, H., Sadikin, I., & Friyatno, S. (2001). *Competitive advantage of commodities horticulture analysis*. Centre for Research and Socio-Economic Development of Agriculture. Bogor Agriculture Research and development.

Setyabudi, D. A. W., Broto, S. R., Rahmat, R., Hasbullah, P., Dewandaridan, K.T., & Mulyawanti, I. (2007). *Research and development of mango post harvest technology for local marketing and export. research report*. Indonesian Center for Agricultural Postharvest Research and Development

Supriatna, A. (2005). *Performance and prospects of mango commodities marketing (case study mango farmers in west java)*. Assessment and development of the Center for Agricultural Technology (ADCAT).

Suyono. (2013). *Apple Marketing Efficiency*. FapertaSoedirman University