STRATEGY FOR EXPORT-ORIENTED FRESH VEGETABLE SUPPLY CHAIN IN YOGYAKARTA

by Joshua Ronal

Submission date: 16-Oct-2017 12:00AM (UTC+0700)
Submission ID: 862923934
File name: 12.pdf (577.1K)
Word count: 4052
Character count: 23784

STRATEGY FOR EXPORT-ORIENTED FRESH VEGETABLE SUPPLY CHAIN IN YOGYAKARTA

Masrul Indrayana*, Ambar Rukmini*, Rika Ampuh Hadiguna+

*Universitas Widya Mataram Yogyakarta
Dalem Mangkubumen KT III/ 237 Yogyakarta
Masrul_indrayana@yahoo.com
+Universitas Andalas Padang
Jl. Limau Manis, Padang

ABSTRACT- Vegetable products in Indonesia, especially in Yogyakarta actually are potential to be developed into a leading export commodities. Meanwhile, from importer countries' perspective such as Singapore, Indonesian vegetable commodity is still in the third class below Australia, China, Taiwan and Malaysia as the best producers due to its inability to guarantee the sustainability in terms of quality, minimum supply and accuracy of its delivery time. To address this issue, this research proposes a strategy for building an effective and efficient fresh vegetable supply chain system. Analytical Hierarchy Process methodology is used to selected pre-eminent vegetable products followed by SWOT analysis for formulating the strategy. A number of findings are revealed in this research. First, fresh vegetable exporters for Central Java Province are performed by three groups, namely duty agriculture, group of farmers and private exporters. Secondly, the province of Yogyakarta has not formulated the policy for exporting vegetables, while in Singapore as the targeted export destination has a standard quality for its imported products as written in Good Agricultural Practice for Vagetable Farming issued by Agrifood and Veterinary Authority of Singapore. Based on this standard, particularly price criterion, geographical condition and technical support, it is recommended that Yogyakarta should prioritise a number of commodities to be exported to Singapura, namely broccoli, tomatoes, kale, spinach and small mustard. Apart from that, it is strongly suggested to provide training to the farmers, establish cooperation among farmers, and build a technical team to support the farmers in exporting their commodities. This technical team also play an important role in helping farmers in providing important information regarding the market and price. In addition, it assists local government to map the commodities and to plan the planting schedule for the commodities.

Keyword: Supply chain strategy, Fresh Vegetables Supply Chain, AHP, SWOT, Yogyakarta Region

I. INTRODUCTION

Vegetable products in Indonesia, especially in Yogyakarta actually has the potential to be developed into a leading export commodity. Meanwhile in importer country such as Singapore, Indonesian vegetable commodity is still having in third class below Australian, China, Taiwan and Malaysia as the best producer. Indonesian vegetables still be not able yet to give guarantee for continuity of quality, minimum supply and accuracy of its delivery time.

One of suply chain management problem that growing today is the handling of perishable products. Vegetable supply chain of agro-industry will entangle action, processor, stock and delivery to customer. Principal constraint in vegetable supply chain is planning, socialization and delivery [15].

Fresh vegetable supply chain models is required by government in building an effective and efficient food supply chain system with paying for farmer prosperity. Factors that affect high-value vegetable market is the ability to produce quality vegetables with grade asked by the market, a unit cost that is competitive with the same products by other countries and the ability to distribute their products in international market with timely, quantity, quality and its price.

Indonesian exporters face many obstacles to do long-term contracts with

foreign importers because it has not been able to fulfill clauses for continuity with the number, quality and diversity of vegetables. Whereas long-term contrac is the pattern for international trade of vegetables and holticulture commodity. For addition problems is competition from similar comodities coming from other exporting countries. Varied both in quantity and quality of its products and the price. Therefore through a reliable supply chain management is expected indonesian fresh vegetable products can compete with similar products from other exporting countries.

This research aims to develop a strategy of supply chain risk management system of fresh vegetables in the province of Yogyakarta areas so as to improve competitiveness with regard to the welfare of the farmers. This research will define the characteristics of quality vegetables which can improve the welfare of farmers, formulate priorities types of vegetables export potential for the province of Yogyakarta using Analytical Hierarchy Process methodology and formulate supply chain strategy fresh vegetables province of Yogyakarta with SWOT analysis.

II. BOOK REVIEW

In simple way, Agro-industry supply chain is a series of activities that using the supply and processing of agricultural raw materials. Countries with potential of agriculture commodity try to improve the competitiveness of their agriculture product. Holistic supply chain management is very appropriate to be applied. Principles of proportionality in modern agricultural system can be achieved through the practice of supply chain management. In the agriculutural supply chain systems, stakeholders may consist of farmers, traders, processors, distributors, retailers, final customer and the government. Each stakeholder will have different interests and influenced by alteration in the business environment. It is very important to note for holistic perspective and does not eliminate the complexity.

Agro-industry supply chain has characteristics of two types of fresh products and processed products. Fresh produce for example; vegetables, fruits do not require special processing or chemical transformation processes. In contrast, processed agricultural products require chemical transformation processes or changes shape. This agricultural products would involve several players including farmers or plantations, processors or manufacturers, distributors and retailers. Figure 1 is a generic supply chain at the level of organization of the company in the context of a comprehensive network of agricultural supply chain.

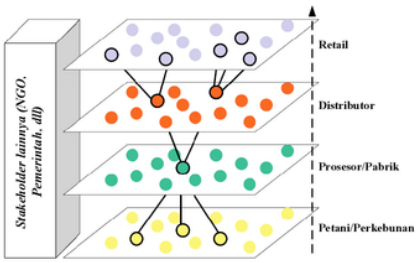

Figure 1. Generic Agro-industry Supply Chain

Supply-chain analysis is becoming an interdisciplinary activity. Production and distribution processes involve a mixture of socioeconomic, technological, legal and environmental criteria that are highly complementary in explaining overall agrofood chain performance (see Figure 2). Economic dimension, related to chain efficiency (in a cost–benefit perspective) and consumer orientation. Environmental dimension, referring to the way production, trade and distribution of food is embedded in its (ecological) environment. Technological dimension, related to the application of (product and process) technology, logistical systems, and information and communication technologies that improve quality performance and enhance innovation of food products. Legal and social dimension concerning criteria of human well-being, animal welfare and sustainable entrepreneurship [19].

Cooperation of producers, processors, traders and retailers within a setting of supply-chain integration is by no means an easy task. Slingerland identified some simple mechanisms that proved to be helpful in practice to enhance sustainable agro-food chain and network integration [23]. The first; reduce complexity: supply chains that involve a large number of very heterogeneous participants are likely to face many coordination problems. The second; Starting at home: It may be challenging to start up a cross-border food chain, but it

tends to be better to start operations in nearby markets. The Tird; Farmers' organization: An important aspect for reaching scale concerns the way of organizing primary producers, farmers or growers. The Fourth; Incentive structure: A major point of debate is always the distribution of incentives in food chains. This refers to the question how much each agent receives from the total value-added. The Fifth; Information transparency: Building up trust amongst supply-chain participants requires sharing and disclosing information. The sixth; Exchanging experiences: A last mechanism that may induce food chain partnerships, is based on sharing experiences from others agents, like organizing assistance from supporting agencies, market brokers or knowledgeable institutes.

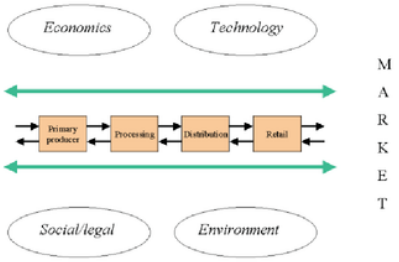

Figure 2. Analytical perspectives on food chains

Specifically in supply chain management of agro-industry, the development of the research has been focused on various industries and types of products. Problem solution of the model used a variety of techniques based on complexity of the problem. We can grouped into three problems modeling and technical solutions are standard optimization , meta - heuristics and simulations. For such a standard optimization model is done by Philpott and Everett [17], Wouda *et al.*[27], Milan *et al.* [14], Grunow *et al.* [7], Gigler *et al.* [6], Widodo *et al.* [26], Burer *et al.* [3]. The second group is simulation that applied by Vorst *et al.* [25] dan Zee dan Vorst [30], Djohar *et al.* [4]. And the third is optimization with meta-heuristic that was new in the field of agro-industry supply chain [29].

At the beginning, supply chain management starts from the supply and inventory management. Collaborative production is often overlooked by some of cooperation with external suppliers [13] and the completion of the model needs to consider the use of efficient techniques to obtain solutions [10]. Advance optimization techniques to be a new approach in the field of supply chain management. Application of genetic algorithms has been carried out by Ding *et al.* [5], Smirnov *et al.* [24], Lim dan Xu [12], Yao and Huang [28], Sha and Che [21], and Keskin and Üster [11]. Fuzzy logic especially used by Petrovic *et al.* [16]. Rohde [19] applied artificial neural network combined with analitical technique. Yandra *et al.* [29] and Aliev *et al.* [2] combined genetic algorithms with fuzzy logic. Heuristic used by Wouda *et al.* [27], Kagnicioglu [10], Sabri and Beamon [20] and Aghezzaf [1]. Djohar *et al.* [4] discusesd the supply chain from the farm to the factory.

The development series of this studies have been done in the field of agro-industry supply chain that has been achieved and has been published [8]. The model consists of determining the types of vegetables that are seeded using a combination of techniques and methods of comparison exponential Pareto, expert system to determine supply needs using fuzzy logic and supply allocation optimization using fuzzy linear programming objective compound. The model is built and then applied to a vegetable agro-industry company with excellent products selected were red peppers. An analysis of the behavior of the model is also done for the pessimistic and optimistic scenarios.

Hadiguna and Machfud [9] developed a model for the aggregate planning crude palm oil agro-industry. This paper discusses a model of production planning within the framework of the agro-industry supply chain in crude palm oil (CPO). The model is made interactive because it involves decision makers preferences in production planning. The model is built on a plantation which uses the system scope Nucleus Plantations (PIR). Sources of supply of fresh fruit bunch come from nucleus, garden farmers, and outdoor gardens.

III. RESULTS AND DISCUSSION

D.I Yogyakarta is a province with an area that is smaller than the other provinces in Indonesia. The total area of

Yogyakarta Province is 3185.85 km^2 which consists of four regencies and one city namely Sleman, Gunung Kidul, Bantul, Kulon Progo and the City of Yogyakarta. The geographic of Yogyakarta Province is located at an altitude of 0 to 2911 meters above sea level consisting of mountains and lowland. Yogyakarta Province is affected by the rainy season and dry season with an average rainfall of 0.2 to 440.1 mm per year.

As the increasing of competition in the free market of agricultural products, the development of agricultural commodities in the province of Yogyakarta maintained with the implementation of Good Agricultural Practice. Based on data Department of Agriculture Yogyakarta in 2006 – 2010 average productivity of vegetable crops in the province of Yogyakarta in three largest are onion (49949.52 tons per year) , chili (41457.60 tons per year) and cabbage (14410.04 tons per year). The production of fresh vegetables in the province of Yogyakarta almost entirely marketed in the province of Yogyakarta.

Unbalance of type and production capacity with market needs, Yogyakarta Province supplied vegetables from Central and West Java. But in Kulon Progo Regency, excess production capacity occurs in chili and has been marketed to West Java and Sumatra.

Central Java Province has supplied for vegetable consume in Yogyakarta. The geographical conditions marked Central Java to be a very productive area in the management of agricultural resources. In the beginning of 2012, Central Java has pioneered the export of vegetables to several countries such as Singapore, Dubai, Thailand and China. Fresh vegetable export supply chain in Central Java Province has been run into the role of the three groups; Department of Agriculture Central Java - Farmers Group - PT. Bumi Sari Lestari as an exporter. Agricultural Department held a coaching role in the training and supervision to a group of farmers. PT. Sari Bumi Lestari role as an exporter and searching for vegetable export market. With the high of vegetables export commodity prices than local market, causes improve to the welfare of farmers. In addition, price stability of the export market is also better than the local market.

Quality fresh vegetables can be categorized as high value crops for the following reasons:

1. Vegetable produtcs grown using the least of insecticides and herbicides,
2. Vegetable products only marketed to exclusive markets for consumers with high purchasing power,
3. Vegetable products are generally consumed in the luxury hotels, in international aircraft flight catering and other western dishes.

Quality vegetable market form should have a clean pattern of dirt, insects or caterpillars then packaged and stored until ready for sale. For overseas markets several factors that must be considered are:

1. The ability to produce quality fit to the requested of foreign markets
2. The ability to produce vegetables with a unit cost that can compete with similar products from other countries
3. Capabilities in marketing and ddistribution the product on time, on quantity, in quality and price.

Japan, Hong Kong and Singapore are the main importing countries of high value crops from China, Taiwan and Australia. Quality characteristics of Singapore vegetables thoroughly outlined in the Good Agricultural Practice for Vegetable Farming (GAP-VF), formulated by the Agrifood and Veterinary Authority of Singapore (AVA). Guarantee for quality vegetable issued by GAP-VF certification. Ccertificateion is to be the measure of safe and quality vegetable production practices in six key areas: location, agricultural structures, environment, the maintenance of agriculture, farming practices and farm management. Certification is expected to establish some criteria of quality vegetables set by AVA in fulfilling the concept of food safety (pesticide residue control), post-harvest application in good management and consistent in application of the cold chain, environmentally friendly packaging and a good transportation system.

Selection of Featured Vegetables

Consideration of featured vegetable in this research adjusted for potential and geographical conditions of each district and the city of Yogyakarta Province. Selection of vegetable products made that has potential to become a commodity export. In addition, the choice of featured vegetable is done by taking into account the price of the export market which is expected to improve the welfare of farmers. In addition, the choice of vegetable seed is done by taking

into account the price of the export market which is expected to improve the welfare of farmers. Export market orientation in this study is Singapore. The range of vegetables prices in Singapore in the period 2005 to 2010 are presented in Figure 3. As household budgets in Singapore in consuming various types of vegetables are presented in Figure 4. In case of the change of vegetable prices in Singapore and Yogyakarta for carrots, tomatoes and potato is presented in Figure 5. The geographical conditions of a region affect the type and management of vegetable production. The types of vegetables lowland and highland are presented in Table 1.

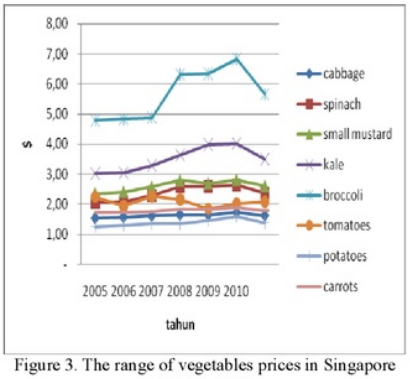

Figure 3. The range of vegetables prices in Singapore 2005 to 2010

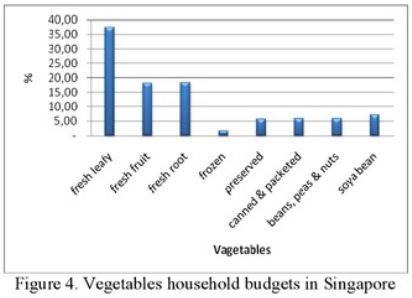

Figure 4. Vegetables household budgets in Singapore

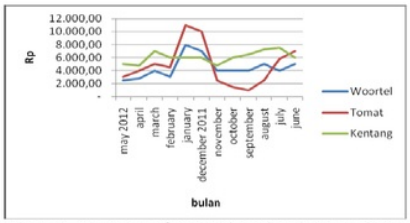

Figure 5. The range of vegetables prices in Yogyakarta

Table 1. The types of vegetables lowland and highland

Lowland Vegetables	Highland Vegetables
Eggplants; peppers, tomatoes, eggplan	Paprika
Onions; onion, garlic, scallion	-
Pumpkin; cucumbers, squash, pariah, pumpkin, gourds, melons, watermelons	-
Nuts; beans, red beans, cowpeas	Beans, peas
Leaf vegetables; spinach, kale, caisin, chinese cabbage, cabbage, lettuce, kale	Chinese cabbage, mustard, broccoli, asparagus, cabbage, caisin, kale
Roots / tuber / others; radish, yam, maize	Potatoes, Carrots

Based on the above considerations and Analytical Hierarchy Process methodologies which used in this study, the structure selection of decision for featured vegetable product in this case can be described as Figure 6 below:

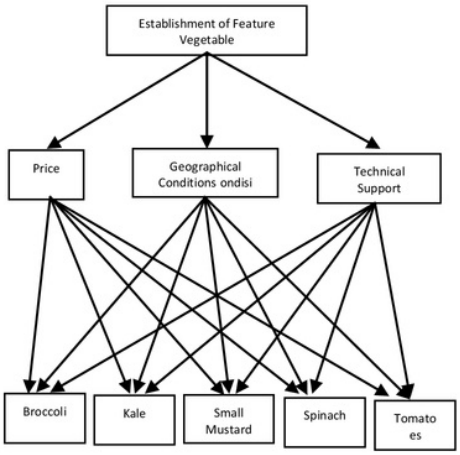

Figure 6. Structure of Decision

Prices are the major factor in improving the welfare of farmers. Comparison of commodity prices in Singapore and Yogyakarta include consideration of shipping commodities to Singapore. Because the commodity in the decision structure is a fresh vegetable, the delivery is done through the use of cargo cold chain system in Airport.

Geographical conditions of cultivation became one of the criteria for decisions because they affect the quality and

quantity of vegetable production. Technical support as one of the decision criteria, including the ability and quality of human resources both farmers and government agencies involved in supporting the program of export vegetables. In addition, technology support and infrastructure for agricultural processing and delivery processes in the supply chain of fresh vegetables are part of the decision-making considerations. Based on priority weight for each criterion, the commodity obtained for each region as shown in Table 2 below:

Table 2. Proposed Strategy Featured Vegetable in Yogyakarta Regency

Priority	Regency			
	Sleman	**Kulon Progo**	**Bantul**	**Gunung Kidul**
1	Broccoli	Broccoli	Broccoli	Tomatoes
2	Kale	Tomatoes	Kale	Spinach
3	Spinach	Kale	Tomatoes	Small Mustard
4	Tomatoes	Spinach	Spinach	Broccoli
5	Small Mustard	Small Mustard	Small Mustard	Kale

SWOT Analysis

SWOT analysis is necessary to formulate supply chain strategy for export fresh vegetables in Yogyakarta Province to Singapore. To set the supply chain procurement strategy conducted in-depth discussions and interviews with relevant parties. They are Yogyakarta Province Department of Agriculture, District Agricultural Office and exporter company PT.BSL. The formulations of the strategy are summarized by using the SWOT matrix as shown in Figure 7.

IV. CONCLUSIONS

The conclusions that can be obtained from this research are:

1. An export of fresh vegetables for the region of Central Java Province has been implemented into three groups, namely the role of the Department of Agriculture, Central Java Province, farmer groups and private exporters. While Yogyakarta Province has not made and formulated vegetable exports.
2. Characteristics vegetables exporting to Singapore has been poured into Good Agricultural Practice for Vegetable Farming (GAP-VF), formulated by the Agrifood and Veterinary Authority of Singapore (AVA)
3. Using Analytical Hierarchy Process methodology, priority export commodities of Yogyakarta Province to Singapore based on the criteria of price, geographical conditions and technical support for the four counties are broccoli, tomatoes, kale, spinach and small mustard.

Strategies that can be done by the Province of Yogyakarta in organizing the supply chain of fresh vegetables export destination Singapore is to increase agricultural productivity of vegetables with the development and training of human resources and the establishment of a technical team. In addition, it assists local government to map the commodities and to plan the planting schedule for the commodities

	Strenghts	***Weakness***
	1. Competitive Price 2. Institutional Support 3. Fertility agricultural land 4. Infrastructure Availability 5. Standard Operational Procedure	1. Low Work Ethic 2. Low consolidation 3. Noncurrent Information 4. Limited R&D Fucntion 5. Uneven fertility of Agricultural Land
Opportunity	***SO***	***WO***
1. Human Resources Avalitibility 2. Agricultural Land Area 3. Demand of Singapore fresh vegetable	1. Enhancing Vegetable Cultural Productivity ($S_{1,3-5}O_{12}$) 2. Doing Exporter of Agriculutral Vegetable ($S_{1,2,4}O_3$)	1. Development and Training fo Human Resources (W_1O_{1-3}) 2. Coaching and Mentoring (W_1O_{2-5}) 3. Formation of a Technical Team ($W_{2-5}O_1$) 4. Commodity Regional Mapping (W_5O_2)
Threatment	***ST***	***WT***
1. Others Commodity Price 2. Competitor Exportir Country 3. Weather and Climate	1. Price Monitoring and Information ($S_{1-2}T_1$) 2. Price Control ($S_{1-5}T_1$) 3. Developing from Support Institution ($S_{2,6}T_{1-3}$)	1. Human Resources Developing and Training (W_1T_{1-3}) 2. Coaching and Mentoring ($W_{1-2}T_{1-3}$) 3. Formation of a Technical Team ($W_{2-5}T_{1,3}$) 4. Plant Scheduling (W_5T_3)

Figure 7. SWOT Matrix

REFERENCES

[1]. Aghezzaf E. 2005. Capacity Planning and Warehouse Location in Supply Chains with Uncertain Demand. *Journal of Operational Research Society* 56: 453-462.

[2]. Aliev RA, Fazlollahi B, Guirimov BG, Aliev RR. 2007. Fuzzy-Genetic Approach to Agregate Production-Distribution Planning in Supply Chain Management. *Information ences* 177: 4241-4255.

[3]. Burer S, Jones PC, Lowe TJ. 2007. Coordinating The Supply Chain in The Agricultural Seed Industry. *European Journal of Operational Research*. Siap Terbit.

[4]. ohar S, Tanjung H, Cahyadi ER. 2003. Building A Competitive Advantage on CPO Through Supply Chain Management: A Case Study in PT. Eka Dura Indonesia, Astra Agrolestasi, Riau. *Jurnal Manajemen Agribisnis* 1: 20-32.

[5]. Ding H, Benyoucef L, Xie X. 2003. A Simulation-Optimization Approach using Genetic Search for Supplier Selection. Chick S, Sánchez PJ, Ferrin D, and Morrice DJ, eds. *Proceedings of the Winter Simulation nference1*: 260-1267.

[6]. Gigler JK, Hendrix EMT, Heesen RA, Hazelka p VGW van den, Meerdink G. 2002. On Optimisation of Agri-Chains by Dynamic Programming. *European Journal of Operational Research* 139: 613–625.

[7]. Grunow M, Günther HO, Westinner R. 2007. Supply Optimization for The Production of Raw Sugar. *International Journal of Production Economics*. Siap Terbit.

[8]. Hadigun A, Marimin. 2007. Model Alokasi Pasokan Berdasarkan Produk Unggulan untuk Rantai Pasok Sayuran Segar. *Jurnal Teknik Industri* 9: 85-101.

[9]. Hadiguna RA, Machfud. 2008. Model Perencanaan Produksi pada rantai Pasok Crude Palm Oil dengan Mempertimbangkan Preferensi Pengambil Keputusan. *Jurnal Teknik Industri* 10: 39-49.

[10]. Kagnicioglu CH. 2006. A Fuzzy Multiobjective Programming Approach for Supplier Selection in A Supply Chain. *The Business Review* 107-115.

[11]. Keskin BB, Üster H. 2007. Meta-Heuristic Approaches with Memory and Evolution for A Multi-Product Production/Distribution System Design Problem. *European Journal of Operational Research* 182: 663–682.

[12]. Lim MH, Xu Y 2005. Application of Evolutionary Algorithm in Supply Chain Management. *International Journal of Computers, Systems & nals* 6: 64-77.

[13]. Meixell MJ, Gargeya GB. 2005. Global Supply Chain Design: A Literature Review and Critique. *Transportation Research* Part E 41: -550.

[14]. Milan EL, Fernandez SM, Aragones LMP. 2006. Sugar Cane Transportation in Cuba, A Case Study. *European Journal of erational Research* 174: 374–386.

[15]. Morgan W, Iwantoro S, Lestari AS. 2004. Improving Indonesian Vegetable Supply Chains. Didalam: Johnson dan PJ Hofman, editor. *Agri-product Supply Chain Management in Developing Countries. Proceeding of a Workshop*; Bali, 19-22 August 2003. i: ACIAR:139-141.

[16]. Petrovic D, Roy R, Petrovic R. 1999. Supply Chain Modeling with Fuzzy Sets. *International Journal of oduction Economics* 59: 443-453.

[17]. Philpott A, Everett G. 2001. Supply Chain Optimisation in The Paper Industry. *Annals of Operations esearch* 108: 225-237.

[18]. Rohde J. 2004. Hierarchical Supply Chain Planning using Artificial Neural Networks to Anticipate Base Level Outcomes. *OR Spectrum* 26: –492.

[19]. Ruben R, Slingerland M, Nijhoff H. 2006. Agro-food Chains and etworks for Development. Didalam: Ruben R, Slingerland M, Nijhoff H, editor. *Agro-food Chains and Networks for Development*. herlands: Springer: 1-25.

[20]. Sabri EH, Beamon BM. 2000. A Multi-Objective Approach to Simultaneous Strategic and Operational Planning in Supply ain Design. *Omega* 28: 581-598.

[21]. Sha DY. Che ZH. 2006. Supply Chain Network Design: Partner Selection and Production/Distribution Planning using a Systematic Model. *Journal of Operations Research Society* 57: 52-62.

[22]. Shen ZJM. 2007. Integrated Supply Chain Design Models: A Survey And Future Research Directions. *Journal of Industrial and Management Optimization* 3: 1–27.

[23]. Slingerland M, Ruben R, Nijhoff H, Zuurbier PJP. 2006. Food Chains and Networks for Development. Didalam: Ruben R, Slingerland M, Nijhoff H, editor. *Agro-food Chains and Networks for Development*. Netherlands: Springer: 219-231.

[24]. Smirnov AF, Sheremetov LB, Chilov N, Cortes JR. 2004. Soft Computing Technologies for Configuration of Cooperative Supply Chain. *Applied Soft Computing* 4: 87-107.

[25]. Vorst JGAJ van der, Beulens AJM, Beek P van. 2000. Modelling and Simulating Multi-Echelon Food Systems. *European Journal of Operational Research* 122: 354-366.

[26]. Widodo KH, Nagasawa H, Morizawa K, Ota M. 2006. A Periodical Flowering–Harvesting Model for Delivering Agricultural Fresh Products. *European Journal of Operational Research* 170: 24–43.

[27]. Wouda FHE, Van Beek P, van der Vorst JGAJ, Tacke H. 2002. An Application of Mixed Integer Linier Programming Models on Redesign of the Supply Network of Nutricia Dairy & Drink Group in Hungary. *OR Spectrum* 24: 449-465.

[28]. Yao MJ, Huang JX. 2005. Solving The Economic Lot Scheduling Problem with Deteriorating Items Using Genetic Algorithms. *Journal of Food Engineering* 70: 309-322.

[29]. Yandra, Marimin, Jamaran I, Eriyatno, Tamura H. An Integration of Multi-Objective Genetic Algorithm and Fuzzy Logic for Optimization of Agroindustrial Supply Chain Design. *Proceeding of the 51st International Society for the System Science Conference*, Tokyo, 2007.

[30]. Zee D J van der, Vorst JGAJ van der. 2005. A Modeling Framework for Supply Chain Simulation: Opportunities for Improved Decision Making. *Decision Sciences* 36: 65-95.

STRATEGY FOR EXPORT-ORIENTED FRESH VEGETABLE SUPPLY CHAIN IN YOGYAKARTA

ORIGINALITY REPORT

22%	%	19%	16%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	"CrossRef Listing of Deleted DOIs", CrossRef Listing of Deleted DOIs, 2008 Publication	4%
2	Submitted to Andalas University Student Paper	2%
3	Submitted to Wageningen University Student Paper	2%
4	Adi Djoko Guritno. "Analysis of Value Added of Fresh Organic Vegetables for The Development Supply Chain Strategy", KnE Life Sciences, 2016 Publication	1%
5	Operations Research Proceedings 2006, 2007. Publication	1%
6	Esmeralda Niño-Pérez, Yaileen M. Méndez-Vázquez, Dick E. Arias-González, Mauricio Cabrera-Ríos. "A simulation–optimization strategy to deal simultaneously with tens of decision variables and multiple performance	1%

measures in manufacturing", Journal of Simulation, 2017
Publication

7	Submitted to Greenwich School of Management Student Paper	1%
8	Hokey Min. "Artificial intelligence in supply chain management: theory and applications", International Journal of Logistics Research and Applications, 2009 Publication	1%
9	Reimann, Marc, Roberto Tavares Neto, and Elisabeth Bogendorfer. "JOINT OPTIMIZATION OF PRODUCTION PLANNING AND VEHICLE ROUTING PROBLEMS: A REVIEW OF EXISTING STRATEGIES", Pesquisa Operacional, 2014. Publication	1%
10	Mostafa Maleki Someah Lu. "Designing Excellent Supply Chain Network in Uncertainty Environment with Fuzzy Logic", International Journal of Business and Management, 04/01/2011 Publication	1%
11	Submitted to Indian Institute of Technology, Kharagpure Student Paper	1%

12	Submitted to University of Bedfordshire Student Paper	1%
13	"Literature Review", Supply Chain Configuration, 2007 Publication	1%
14	Eingereicht an University of KwaZulu-Natal am 2011-05-30 Student Paper	1%
15	F. Jolai. "A fuzzy goal programming and meta heuristic algorithms for solving integrated production: distribution planning problem", Central European Journal of Operations Research, 03/20/2010 Publication	1%
16	Corominas, Albert, Manel Mateo, Imma Ribas, and Sergio Rubio. "Methodological elements of supply chain design", International Journal of Production Research, 2015. Publication	1%
17	C. Ganeshkumar, M. Pachayappan, G. Madanmohan. "Agri-food Supply Chain Management: Literature Review", Intelligent Information Management, 2017 Publication	1%
18	Submitted to TU Bergakademie Freiberg Student Paper	<1%

19	Çağrı Koç. "An evolutionary algorithm for supply chain network design with assembly line balancing", Neural Computing and Applications, 2016 Publication	<1%
20	Submitted to 87988 Student Paper	<1%
21	Vila, D.. "Designing logistics networks in divergent process industries: A methodology and its application to the lumber industry", International Journal of Production Economics, 200608 Publication	<1%
22	Fahimnia, Behnam, Lee Luong, and Romeo Marian. "Genetic algorithm optimisation of an integrated aggregate production–distribution plan in supply chains", International Journal of Production Research, 2012. Publication	<1%
23	Ulubeyli, Serdar, Ekrem Manisali, and Aynur Kazaz. "Subcontractor selection practices in international construction projects", Journal of Civil Engineering and Management, 2010. Publication	<1%
24	Maria Miguel Ribeiro. "Applying Participatory Processes: Findings from a Supply Chain Analysis on the Commercialisation of Paper	<1%

Mulberry Bark in Laos", Systemic Practice and Action Research, 12/10/2009
Publication

---

25 Devi Roza Kausar. "Heritage Tourism in Rural Areas: Challenges for Improving Socio-economic Impacts", Asia Pacific Journal of Tourism Research, 06/2010 — <1%
Publication

---

26 "Integrating Spirituality into Efforts for Improving Value Chains of Farm Products", Islamic Perspectives on Science and Technology, 2016. — <1%
Publication

---

27 Submitted to Padjadjaran University — <1%
Student Paper

---

28 Tang, Sai Hong, Iman Rahimi, and Hossein Karimi. "Objectives, products and demand requirements in integrated supply chain network design: a review", International Journal of Industrial and Systems Engineering, 2016. — <1%
Publication

---

29 Submitted to University of KwaZulu-Natal — <1%
Student Paper

---

30 Jiawang Xu. "A multi-objective robust operation model for electronic market enabled supply Chain with uncertain demands", Journal of — <1%

Systems Science and Systems Engineering, 03/2007
Publication

31 George Q. Huang. "The impacts of sharing production information on supply chain dynamics: a review of the literature", International Journal of Production Research, 5/10/2003 <1%
Publication

Exclude quotes	Off	Exclude matches	< 2 words
Exclude bibliography	Off		