

ORGANIC VEGETABLES SUPPLY CHAIN CHARACTERISTICS OF SMALL ENTERPRISES IN MALANG

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Abstract Supply chain is a valuable and strategic decision even for small enterprises. This research aimed to identify the supply chain characteristic of small enterprises in Malang. Data and information were collected through observation and in-depth interviews based on business processes in the SCOR model. The result shows that small organic farming already has a strong relationship between stakeholders. However, the research found a lack of traceability for organic input, unstable production due to some situations, and a limited served market.

Keywords: *Supply chain; supply chain characteristic; organic farming; SCOR*

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INTRODUCTION

Global competition among food industries insists that producers explore strategies to gain and maintain competitiveness. Supply chain management (SCM) is a company's emerging strategy. A supply chain is a new topic to running a business. However, many small and medium companies growing companies have begun to realize the importance of modeling and improving entire supply chain. Recently, there has been a surge of interest in SCM (Burgess et al, 2006 ; Zhou and Benton, 2007).

Many small and medium businesses have begun to show enthusiasm for trying the supply chain model. Nevertheless, the application of this concept faces different conditions and challenges. SCM is mainly related to the coordination of business process output from one actor to input from other actors' processes. The mainstream supply chain business processes are products, orders, and information. Appropriate supply chain models will illustrate the supply chain characteristics as a relationship between members, business processes,

and information flow. The reference model for companies is essential as a primary perspective to analyze a business process and the entire supply chain (Fetkcke et al, 2006).

The supply chain could assist by Supply-Chain Operations Reference (SCOR) model by providing a process-based approach. SCOR is a conscientious tool that enables companies to assess their supply chain's configuration (Huan et al, 2004; Li et al, 2011) and is very useful as a "Best practice module" (Zdravkovic et al 2010). Each of the SCOR components is considered a strategic intra-organizational function and a critical inter-organization process (Erkan and Bac, 2011). Reference models have a crucial role in supply chain management.

The SCOR model has several processes: plan, source, delivery, and return. The plan is activities to analyze information about products and estimates market trends. The source is a procurement system with a procurement model that includes negotiations and evaluations to change supplier selection, negotiation, and evaluation. Creating is manufacturing goods that have time and batch constrain. Giving provides finished goods and

services to achieve demand. Last, return is the return of goods or receipt of products. SCOR models enable companies to communicate, compare and learn (Irfan et al, 2007).

SCM matures companies in stable and relatively predictable environments and clearly defines organizational structures and internal processes. Each enterprise will be different in chain complexity due to its size (Irfan et al, 2007). The business process reference model is an essential basis for analyzing business processes and the whole supply chain. Processes-oriented reference models can be used to develop improvements for the firms (Fetke et al, 2006).

This research aimed to identify the general characteristics of the current supply chain processes of Organic Vegetables SME based on the SCOR model business processes. This research provides an overview of supply chain business processes in small enterprises that are still developing with complicated access to capital and skilled labor.

SCOR OVERVIEW

SCOR (Supply Chain Operation Reference) is a reference model of supply chain operations based on a process. SCOR is effective in mapping the parts of the supply chain. SCOR divides supply chain processes into 5 core processes: plan, source, make, deliver, and return (Pujawan & Mahendrawathi, 2010).

The SCOR model provides a standard framework for effective communication. It is a helpful tool for the company's decision-maker to achieve the desired performance by designing and configuring a reset supply chain. SCOR consists of 4 levels as the analytical stages that lead to the implementation of effective SCM strategies. Level 1 is the basic level which provides a general definition of 5 processes above (plan, source, make, deliver, and return). 2. Level 2 is said to be the configuration level where the supply chain enterprise can be configured based on 30 core processes. A company can form the current or desired configuration. 3. Level 3, called the element level process, contains the definition of elements processes, inputs, outputs, metrics of each processing element, and references (benchmarks and best practices) .

RESEARCH METHODS

Location

A small enterprise of organic farming, which name is KKAF, was selected to be the object. KKAF is a family business engaged in organic vegetable cultivation, the sale of input goods (seeds, organic fertilizer, husks, planting media, etc.), partnering with farmers, post-harvest handling, and marketing of organic vegetables.

Data collection and analysis

Supply chain characteristics were examined by the participants observer method. The research was carried out for 4 months by recording supply chain activities. In-depth interviews with key informants also completed the data collection interviews to dig up information that cannot be understood through observation. The initial sample of the research was the business manager using the non-probability sampling method purposive sampling. The selected respondents are those who know business supply chain activities. The sampling procedure was carried out by the "snowball sampling" method. Responsible managers and staff for production operations and supply chain were interviewed. Questions were developed using SCOR reference model.

This research uses only the first level of SCOR to define the critical supply chain processes: plan, source, make, deliver, and return. Table 1 shows the SCOR model process definition at 1st level, which is shown in Table 1. Informant responses were then tabulated and analyzed for better understanding.

Table 1. SCOR Level 1 - Process Definitions

No	Process	Definitions
1	Plan	Processes complement customer requirements, collect information about available resources, also meet the requirements and resources to determine the capabilities specified and complete the resources
2	Source	Processes describe the order of goods for production
3	Make	Processes related to material conversion or content creation for services
4	Deliver y	Processes describe activities related to the fulfillment of customer orders in terms of time and quality assurance
5	Return	Processes describe the activities related to returning goods returned from customers.

We used guidelines in conducting observations and interviews. These guidelines were adopted from the 2014 research by Georgie et al., which is presented in Table 2.

RESULT AND DISCUSSIONS

Supply Chain Overview of KKAF

KKAF established a partnership to strengthen its business. This partnership aimed

to increase revenue, and business balance, improve the quality of partner group resources and increase business scale to grow and improve the ability of an independent partner group business. KKAF use "plasma" as their partnership pattern. Partners had to be in charge of producing the components needed—farmers and “Family Welfare Empowerment” ladies in Malang.

Plasma will receive training in cultivation materials and institutional and post-harvest handling. Every plasma will get convenience in terms of marketing; the products produced will be sent to KKAF which market the product. In addition, KKAF also provides a commodity planting schedule along with the amount that must be planted. It is set based on predictions and the market needs for vegetable commodities—the result shows that KKAF already has a strong relationship with its stakeholders.

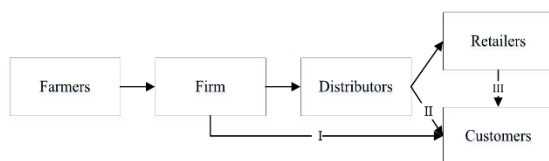


Figure 1. Supply Chain Configuration of Organic Farming in Malang.

Supply Chain Characteristics Based on SCOR Model

According to the organization, research findings are presented into five categories in five business processes.

Plan

Besides getting a product from the plasma, KKAF also produces organic vegetables itself. KKAF was sued to regulate and estimate how many vegetables would be permeated to market. KKAF made some strategies to set a plating schedule and define a combination of planted vegetables. Those plans were then distributed to all plasma farmers. The existing planning strategy sets a minimum production level to cover fixed costs. Because of a need for more information on the organic vegetable market, KKAF plans

its production quantities based on previous demand without any formal forecast. The company will increase production with 30% of buffer stock in production planning. It will help the company to meet the surging demands. The same thing was done on seeding regarding anticipating the increasing plant death rate due to pests and diseases. Meanwhile, if the company has excessive products, they will be preserved in a storage refrigerator.

Resource

Raw materials for cultivation are supervised frequently. Supervision starts from the organic fertilizers used, seeds, and natural fertilizers or pesticides. Usually, a company purchases its fertilizer from an organic supplier which already standardized. The company usually uses local seeds or its product. However, when the local supplier stock is run out, KKAF will purchase their seed from the market.

Nevertheless, they have to remove the chemicals from the seeds before planting. The research found a lack of traceability for organic input, unstable production due to some situations, and a limited served market. KKAF has no constraints on suppliers for another resource, because other input does not become crucial in production.

Make

Regarding the company using a partnership system, and due to the cost implied by the return, the product loss is assumed by KKAF. Organic vegetables are a risky perishable product, so time is a critical variable in delivery. KKAF has followed the Organic Certification Institute (LSO) regulation to guarantee their quality. However, the company faces several problems from their farmers : not continuous supplies, inconsistent qualities, poor post harvest handling, and lack information about organic input. Non-continuous supply from farmers causes

Delivery

Generally, KKAF has 3 distribution channels in order to enhance its market. 1st channel is the shortest way because KKAF

delivers products directly to customers by displaying their products in a kiosk. Otherwise, 3rd channel has the highest product margin because of the extended distribution channels. The distributor delivers the product to the supermarket in Sidoarjo and Surabaya. Recently, supermarkets have become the last option to sell products in some cities. Customers consist of individuals, industries, and restaurant companies.

Return

Several times, returns to the product occur because the company needs to deliver the product on time to the retailer. Products that arrive late at their destination will be fully returned, making KKAF must bear a substantial loss. Regarding the return process to the suppliers (Plasma), the company has a set of specifications to verify the quality of returned products which are assisted by the quality control department.

Table 3 shows the summarized characteristics of the supply chain process in KKAF. Thus, based on observation, the company face several conditions that led them to inefficient supply chain process, which are :

- 1) Limited number of suppliers of organic products in Indonesia
- 2) Lack of understanding of organic philosophy among farmers
- 3) In general, plasma is managed traditionally on a small scale
- 4) Supply is inconsistent (often dropped) both in terms of quality, quantity and quality continuity
- 5) Poor post-harvest handling (quality loss and loss of organic properties)
- 6) Lack of cooperation between suppliers and supermarkets (waste risk)
- 7) Product packaging is less attractive
- 8) Lack of promotion

CONCLUSION

The result revealed specific characteristics of small organic farming enterprises in their supply chain processes. KKAF demonstrates a lower level of practices for the supply chain application. However, the general characteristics of KKAF provide a better understanding of the existing supply chain. It can be used to further model adaptation to other small enterprises, identify contributing factors accurately about performance, and quickly initiate corrective actions in further research.

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Table 2. Observation Guide on Supply Chain Bussines Pcatice

No	Supply Chain Indicators
<i>Planning</i>	
1	What-if' analysis implemented in supply and demand planning
2	Forecasts used to determine quantitiy in production
3	Information system used for forecasting
4	Product planning used daily
5	Demand management navigated by customer information
6	Cross functional team help each other in planning
7	The company has specific performance indicators in planning
8	Retailers contacted frequently to get information about market demand
<i>Delivery Practice</i>	
9	Cross functional coordination in delivery
10	The company has distribution centers for product distribution
11	Lowest inventory cost
12	Just-in-time (JIT) delivery
13	The company responsive to customer's needs
14	The company federate orders by customers
15	The company has a flexible capacity to respond to unplanned orders
16	The company use third party logistics
17	Delivery always within lead time
18	Performance indicators are determined for distribution
19	Information system used for tracking
<i>Sourcing practice</i>	
20	Long-term relationships with strategic suppliers
21	Frequent performance feedback to suppliers
22	Information system used in procurement
23	JIT from suppliers
24	Performance indicators are defined for suppliers
25	Constant measurement of suppliers' performance
<i>Making practice</i>	
26	Planning to material and capacity were done by cross functional department
27	The outcomes of planning procedures were aligned with actual demand
28	Internal and external customers' needs for material or capacity are met with the existing processes
29	Delivery schedules and material requirement planning for external customers are integrated
<i>Return practice</i>	
30	Company have specifications to verify the returned products

- 31 Personnel, equipment, and facilities were decided to handle the process of returned products
 - 32 Product return rate were recorded
 - 33 Product return process is easy to follow
 - 34 Product return process were documented
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Table 3. KKAF General Characteristics of Processes

Processes	Characteristics
Plan	• “What-if” analysis has been implemented for supply/demand balancing • The balancing of product line on a growing season • No formal forecasting, demand planning only refers to historical data • The minimal production already determined • Devide a safety stock as a consequence of sales variability
Resource	• long-term relationships with strategic supplier • Raw material always sufficient for production • No trace about organic raw material
Make	• High production cost • Customers’ needs inline with the existing processes and partnership with plasma farmers and farmer groups
Delivery	• Company respond to customer’s needs quickly • Company federate the orders by customers, collectors, supermakets, etc • Poor risk mitigation of delivery process • Performance indicators are determined for the distribution process and quality control process supermarket)
Return	• Has some specifications set to verify the returned products • Just-in-time (JIT) delivery • Time is being a critical variable • Do not have any plan for return process