Value Chain Analysis for Mandarin in Nueva Vizcaya, Philippines

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ABSTRACT

Mandarin production and marketing has developed very significantly in recent years. However, the industry in Nueva Vizcaya, Philippines, a much heard mandarin producer, was not able to develop by world standard. There is definitely a need for government to intervene. The value chain analysis approach is used in this study to provide direction for growth and development of the mandarin industry by analyzing opportunities and constraints, identifying viable interventions, formulating strategies and setting competitiveness directions based on development thrusts of players, and stakeholders. Data were collected from different agencies and by interviewing key players in the mandarin supply chain. Opportunities and constrains were identified. Recommended interventions are capability building of farmer associations, forming farmers into production clusters for standardized production and marketing practices and management by using a package of technology, and continuous R and D on the enhancement of the mandarin chain from input provision to post harvest practices.

INTRODUCTION

Mandarin production and marketing has developed very significantly in recent years. Mandarin is one fruit that had a significant development in the province of Nueva Vizcaya, Philippines. In the production of mandarin there are several stakeholders who participate in the production, processing, marketing, and distribution. This includes growers, traders, wholesalers, retailers, processors and consumers. Each of them assumes one or more functions.

There are several factors that affect the benefits of each stakeholder in the value chain such as climate, productivity, prices and support to the industry. It is, therefore, important to conduct a value chain analysis of our local fruits including mandarin to be able to determine the exact intervention needed in the industry.

Objectives of the Study

The primary objective of the study is to provide a direction for the growth and development of the mandarin industry in the province.

Specific objectives of the VCA include the following:

1. Develop and analyze the value chain map of mandarin in the province;
2. Analyze opportunities and important constraints; and
3. Recommend policies and programs for government intervention.

METHODOLOGY

Framework

This study followed the concept of value chain analysis. The stages in the analysis

start with input provisions, production, post-harvest, distribution then consumption.

The mandarin value chain is mapped and analyzed by analyzing the product and process flow, the costs involved, assess the value chain growth and competitiveness, describe inter-firm cooperation horizontally and vertically, describe the supporting products and services and the business enabling environment and come up with competitiveness direction.

Data gathering

The VCA for mandarin utilized primary and secondary data. Primary data were gathered through personal interviews of players in the chain consisting of mandarin producers, buyers, processor, cooperative members, and farmer leaders. A researcher guided questionnaire, was used to get information from farmers, traders, retailers, processor and stakeholders such as government units, cooperatives and private businesses. Secondary data were obtained from local government units and other agencies involved in the mandarin industry. These information were used in establishing trends in production, market, and price.

Tracer methodology was applied to locate chain players and capture the actual product distribution. Data gathering through personal interviews were complemented with information from key informant interviews and stakeholders consultation.

RESULTS AND DISCUSSIONS

The Mandarin Value Chain Map

Value chain mapping entails

Table 1. Value Chain Map of Mandarin, Nueva Vizcaya, Philippines

Segment	Task	Operator	Enabler
Input provision	Seedlings Fertilizers Pesticides Fruit wax Etc	Farmers' cooperatives Private businesses	Government agencies (DA, DTI, BPI, SUCs, DENR)
Production	Weeding Fertilizing Pest and disease management Pruning Harvesting	Farmers	Government agencies (DA, DTI, DOST, SUCs)
Post-harvest	Washing Sorting Waxing Packaging Fruit Processing	Farmers Cooperatives Buyers	Government agencies (DA, DTI, DOST, DPWH, SUCs)
Distribution	Transporting Distributing Selling	Farmers Cooperatives Buyers	Government agencies (DTI)
Consumption	Local market	Local markets Supermarkets Markets outside the province	Local Government units, DTI

drawing a visual presentation of the chain, which involves various linkages among the mandarin growers, input providers, buyers and traders. The value chain map depicts the flow of mandarin fruits in the market, activities carried out at each stage of the value chain, the structure of actors and the support involved in the value adding process. Table 1 summarizes the different segments along the value chain with the corresponding tasks, operators, and enablers.

Fig 1 illustrates the marketing channels for mandarin. Each farmer has his own buyer and way of selling his produce. This adds to the differences in cost and selling price of mandarin across farmers making some farms less profitable than others.

Price and Cost Structure

Cost and returns analysis of mandarin production (Table 2) shows that an average farmer gets a gross revenue of PhP 80,861.25 which is way below the revenue generated by well managed farms in the same area. (The well managed farms generate an average of PhP625,000/ha). Fertilizer and labor expenses got high shares in terms of costs.

Farm labor consists of labor in weeding, fertilizer application, other chemical inputs application, and harvesting. Table 3 shows expenses in amount and percentage. Labor gets 33% which is very high next to fertilizer which is 41.93%.

Labor cost is the expenses incurred in weeding, fertilizer and other chemical inputs application, and harvesting. The bulk of labor cost goes to harvesting. Harvesting cost includes the hauling of harvested mandarin to accessible roads. Harvesting cost gets the bulk of labor expense that implies farms, on the average, are far from accessible roads.

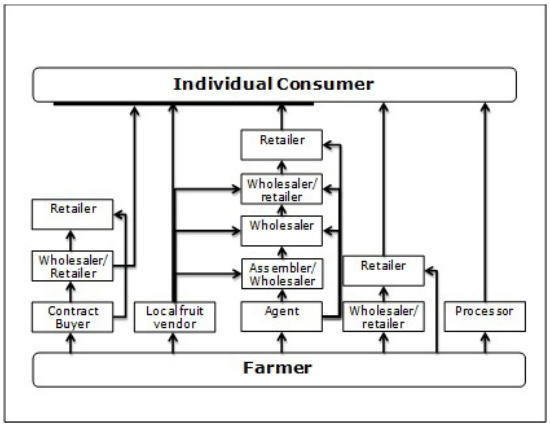

Fig. 1. The different marketing channels of mandarin

Table 2. Average Costs and Returns of Mandarin Farmer-Respondents Per ha, Nueva Vizcaya, Philippines

Items	Value per ha (PhP)
Gross Revenue	80,861.25
Farm Expenses	
Labor	12,621.06
Fertilizer	15,978.98
Chemical Inputs	7,607.28
Transportation	1,754.45
Other Expenses	152.27
Total Farm Expenses	38,114.04
Net Income	42,747.21
Average cost to produce/kg	8.30

Table 3. Expenses Incurred in Mandarin Production and Marketing of Farmers-Respondents, Nueva Vizcaya, Philippines

Items	Amount (PhP)	Percent share (%)
Labor	12,621.06	33.11
Fertilizer	15,978.98	41.93
Other chemical inputs	7,607.28	19.96
Transportation	1,754.45	4.60
Other expenses	152.27	0.40
Total	38,113.04	100.00

Table 4. Percent Share of Labor Expenses Incurred in Mandarin Production and Marketing of Farmers-Respondents, Nueva Vizcaya, Philippines

Labor expenses	Amount (PhP)	Percent share (%)
Fertilizer application	2,043.04	16.19
Other chemical application	1,870.36	14.82
Weeding	1,561.37	12.37
Harvesting	7,146.28	56.62
Total	12,621.05	100.00

Value Adding Along the Value Chain

Very little was done in the mandarin supply chain. Farmers sell it fresh after applying some wax. Some farmers classify their mandarin before selling. However, most of the classifying is done by buyers before they transport it to the big markets at the National Capital Region.

Profit analysis was done and it was found out that the retailer gets the biggest profits share (49%), the wholesaler gets 29% and the farmer the smallest (22%).

Opportunities in the Mandarin Value Chain

In the input segment, the opportunities are increasing demand for mandarin locally and internationally, presence of government agencies conducting research and development, increased sources for organic fertilizer, wide area for expansion, farmers are interested to learn more on new technology for mandarin production and use of organic agriculture, there is available labor for farm work, presence of trading centers, and presence of mandarin processing plant.

Priority Constraints and Interventions

The VCA for mandarin in Nueva Vizcaya has come up with constraints on input provision, production, post-harvest, and marketing. The constraints in input provisions are: High costs of agricultural inputs for fruit bearing trees (P250, 000-350,000.00/ha), limited financial capital of individual growers, and continuing production and use of planting materials without quality assurance. The recommended interventions are: (1) provision of a common credit service for bulk acquisition of agricultural inputs; (2) enhancement of production of disease-free planting materials from existing foundation blocks of accredited/ credible sources (Bureau of Plant Industry, Nueva Vizcaya State University and Local Government Units such as the Department of Agriculture); (3) establishment of organic input production facility for production of organic inputs; (4) conduct of training on organic agriculture; (5) construction/improvement of farm to market roads; (6) training in GAP-Good Agricultural Practices; and (7) GAP certification of mandarin areas.

The constraints on production are: differing orchard management levels resulting to low productivity (well managed orchards with 30- 35 tons/ha; orchards under low level technology with 15- 20 tons/ha); dependence of mandarin growers on natural sources of water; and limited delivery of technical assistance due to poor road conditions. The recommended intervention strategies and approaches are: (1) Organization of mandarin growers into production clusters (a group of farmers with contiguous small and big orchards) for standardizing cultural practices and management through a package technology transfer scheme on pruning, fertilizer application, irrigation and drainage, pest management, strengthen extension delivery system in the transfer of package of technology in mandarin production, and linkage with importer of tested products for pest management (e.g. Medopaz summer oil from Israel); (2) training on the application of package of technology for mandarin production; (3) provision of irrigation system for the cluster consisting of a water reservoir with water tanks connected to the orchards through pipe channels; (4) R and D on effective management of citrus greening, fruit

flies, and rind borer; (5) establishment of a soil and analytical laboratory in partnership with a university offering soil science; (6) practice of organic agriculture; (7) construction of farm to market roads; (8) enhancement in the skills of producing quality seedlings; (9)accreditation of seedling producers; (10) strengthen quarantine posts in points of entry to the province; and (11) strengthen extension delivery system.

The problems in post- harvesting are: the manual sorting resulting to unreliable classification, increase in inventory of unsorted fruits, high post- harvest losses (5- 10%), 5 - 10% of harvest are off-size and are not marketable, and high transport cost due to poor road conditions. To address the constraints, the interventions are: (1) provision of a packing house with a mechanical grading facility (for sorting and packaging); (2) provision of a processing house with a mechanical grading facility for immediate processing; (3) linkage with wax importer for surface coating of fruits; (4) R and D on prolonging shelf life under ambient and low temperature conditions; (5) provision of a processing facility in partnership with a university that offers food technology courses; (6) product development; (7) construction of farm to market roads; (8) training on post- harvest technologies; (9) and training in the operation and maintenance of post- harvest facilities.

On the marketing aspect, poor road conditions from production sites to the agricultural trading terminals; some areas have problems on market linkage; limited availability of year round supply of mandarin to satisfy demand; and limited product forms for the market are the problems. The recommended interventions are: (1) provision/ improvement/ rehabilitation of a farm to market road for ease of product transport; (2) establishment of marketing linkages; provision of a packing house with a mechanical grading facility and cold storage; (3) R and D on prolonging shelf life under ambient and low temperature conditions; (4) product development; (5) encourage private sector to go into processing; and (6) conduct of annual mandarin farm and festival.

Furthermore, the constraints in the final market are: inability to meet consumers requirements (quality, volume, timeliness); and limited product forms. The recommended interventions are: (1) organization of mandarin growers into production clusters (a group of farmers with contiguous small and big orchards) for standardizing cultural practices and management: package of technology transfer scheme on pruning, fertilizer application, irrigation and drainage, and pest management; strengthen extension delivery system; product development and encourage private sector to go into processing; and (2) conduct of training, techno- demo to increase productivity and improve quality of mandarin.

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