

Consumer Market Segments in the Philippine Vegetable Industry

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Abstract

Stakeholders of the vegetable supply chain must determine the ultimate consumers' purchase and consumption habits to better plan production and marketing strategies. This study provides a market profile and analysis of the purchase and consumption preferences for vegetables of households in Davao City, Cagayan de Oro and General Santos. A systematic sampling method with a random start was used. Three hundred forty eight (348) households were surveyed in proportion to the population of the three cities at the village level.

Households generally purchase vegetables three times a week and predominantly from the wet market. While most households consider price as their primary criteria for purchase, quality in use is considered important. Wives continue to play a major role in the decision to purchase, cook and serve vegetables. Usually five (5) kinds of vegetables are purchased per purchase occasion with an average weight of 250 to 600 grams for each kind of vegetable. The commonly purchased vegetables are squash, eggplant, cabbage, okra and string beans (yard beans).

Stakeholders in the vegetable supply chain, including smallholder farmers can focus their strategies to develop a strong domestic market for vegetables through increased consumption, and better quality management systems to defend their products against the threat of imports.

Key words: consumer preferences, vegetables, Philippines, market segments, supply chain

Problem Statement

The Philippine vegetable industry began to be market oriented in the early 2000's. Few studies on household and institutional market preferences and purchase habits for vegetables have been conducted in the Philippines. Information of how much the market buys and consumes for a certain period, what perceptions they have on quality of vegetables, and other consumption-related behaviour will help producers and other stakeholders of the supply chain, plan and decide on their planting and harvesting, selling and storing activities (Schiffman and Kanuk, 1997). Consumption patterns and preferences must be considered along with farm inputs, soil conditions and climate. The misconceptions of supply chain actors about the market leads to inefficiencies in the supply chain (Concepcion, et al., 2003) and contributes little to the poverty alleviation of the Filipino smallholder farmers.

Innovations in supply chains can be attributed to changing consumer preferences, food safety legislation, competitive pressures and the market share dominance of large retailers together with the rationalisation of their supply bases (Nicholas, 2001; Woods, 2003). Thus, supply chains must have an intimate knowledge of the ultimate consumer's needs and wants in order develop production, post-harvest, logistics and marketing strategies that will profitably engage demand. Development agencies attempting to assist the small holder farmers in linking their products to markets must have knowledge of the market segments that can be potentially lucrative markets for small farmers.

Objectives

This study provides a market profile and analysis of the purchase preferences for vegetables of households in the three major urban centres in Mindanao, the cities of Davao, Cagayan de Oro and General Santos.

Specifically, this study investigated the purchase behaviour patterns of the market like types and volume of vegetables purchased, frequency of purchase, place of purchase, including acquisitions of vegetables other than purchase.

Procedures

A household survey was conducted using systematic sampling with a random start. A total of 348 household samples were drawn from the most populated cities in Mindanao, namely Davao City, Cagayan de Oro and General Santos City using a proportional allocation method. The respondents of the study were the members of the household who were at least 18 years old and expressed willingness to be interviewed. A structured questionnaire was used. Each interview process lasted from 45 minutes to one hour.

The households in the sample were composed mostly of nuclear families with 8% of them having at least one domestic helper. Two percent have at least 2 domestic helpers. This is roughly equivalent to the proportion of the upper socio economic level households. Nineteen percent of the households have at least one other relative living with them aside from the members of the nuclear family. Eight percent have at least two relatives living with them and 2.3% have at least 3 relatives living with them. One household even has as many as 7 other relatives living with them, indicating the possibility of two related nuclear families living in one

household. This scenario is common in the Philippines as this is often a way by which families are able to save on household costs especially if living in the urban areas.

Results

Income is the most important segmentation variable in a very price sensitive market like the Philippines. The total sample approximates the socio-economic breakdown of households in Mindanao. Of the total sample, 10.9% belong to the upper income, 19% to the middle income and 70.1% to the lower income.

Sources of Vegetables.

Twenty percent of the respondents source some of the vegetables they consume from their own home gardens, 11.8% get from neighbors' gardens, and some have farms in other areas of Mindanao where a small portion is allocated to growing vegetables for own consumption. Vegetables most frequently taken from backyards and neighbors' gardens are Malabar nightshade (alugbati), horseradish tree leaves (moringa or malunggay), sweet potato tops, eggplant, water spinach (kangkong) and okra. Most of these vegetables are tropical vegetables, easily grown in backyards.

Around ninety-one percent of respondents buy vegetables from the wet market, and only 9% buy from the supermarkets. Other sources include the neighbourhood mom and pop stores, neighbours' gardens, and the roving vendor. Majority of the respondents (64.1%) purchased **all** of their vegetables from the wet market. Wet markets are still the dominant source of vegetables for most households in Mindanao. There is however, an increasing global trend for consumers to buy fresh produce from supermarkets as they become more sophisticated and increase in buying power. In the Philippines, beginnings of this trend can be discerned as supermarkets begin to stock more fresh produce (Digal and Concepcion, 2004).

Using Tukey's HSD, there is a statistically significant difference, between the proportion of vegetables that the upper income class buy from the wet markets compared to those of the middle and lower income classes. The upper income class purchased more of their vegetables from the supermarkets compared to those in the lower income classes.

Purchase Frequency.

Around 49.7% of the respondents purchase vegetables twice a week. This may mean 2 things: first, the buying power of the household for any given period of time is just enough to purchase food for the next three days, or second, the storage facility in the household can keep food fresh for only three to four days.

On the average, the upper social class purchase 2 times per week, the middle class 2.6 times and the lower class 3.47 times. The upper income class purchase more kilos of vegetables per week than the lower income classes. This is due to the higher buying power of those in the upper income class who can afford to spend more in one occasion, while those in the lower classes cannot buy all they need for a week.

Table 1 Purchase Frequency & Volume per Income Class

	Income Classes		
	Upper Income	Middle Income	Lower Income
Number of purchases per week	2	2.6	3.5
Average kilos purchased per respondent per purchase occasion	5.5	2.7	2.3
Ave kilos purchased per week	11	7	8

There is a statistically significant difference between the average kilos purchased per purchase occasion of the upper and the lower income classes.

Vegetables Commonly Purchased.

The typical Filipino meal would consist of rice and fish. Daily Filipino cuisine is composed mostly of single viand meals with rice. Viands would sometimes consist of pork or fish with some vegetables. Beef is used, but to a limited extent, because of its high price. Most Filipinos eat vegetables either as part of the main dish or as the main dish itself. In most low income households, vegetables are considered as substitute to fish when the price of fish is high.

Table 2 details the volume bought per purchase occasion per type of vegetable in the different income classes, as calculated from the responses of households interviewed. The most commonly purchased vegetables are tropical vegetables like squash, eggplant, ampalaya, okra and string beans. Tomatoes and potatoes as well as cabbages, were also purchased by many respondents in their last purchase occasion. The average quantity purchased per vegetable was mostly less than one kilo, averaging 250 grams to 600 grams.

Temperate vegetables are not as popular as tropical vegetables, but are gaining popularity as more and more upper income households drive the demand for salads and temperate vegetables. Exposure to different types of cuisine from the American or European continent increases the awareness of the Filipino urban consumers even as they develop a taste for these types of vegetables.

The upper income purchase more vegetables in terms of types of vegetables and volume. ANOVA calculations show that the upper income class purchase significantly more than the other income classes for 8 of the 9 types of vegetables, except for sweet potato tops where the middle income purchase more.

The upper income in Mindanao would be a lucrative market for temperate vegetables like cabbage, carrot and potato. They are also a good market for horseradish tree leaves, pechay kangkong, okra and tomato.

Table 2 Types & Volume of Vegetables Purchased per Income Class

Vegetables Purchased	Upper income in kilos n=38	Middle income in kilos n=66	Lower income in kilos n=244	P
Semi-temperate vegetables				
Sweet Green and Red Pepper	0.49	0.27	0.25	
Beans	0.72	0.83	0.82	
Cabbage	0.90	0.62	0.52	.006
Carrot	0.75	0.50	0.47	.021
Chinese Cabbage	0.73	0.47	0.59	
Potato	0.98	0.62	0.70	.023
Cauliflower	0.20			
<i>Total semi-temperate purchased (kilo)</i>	76.10	54.73	114.50	
Tropical Vegetables				
Bitter Gourd	0.82	0.57	0.57	
Eggplant	0.77	0.72	0.65	
Squash	0.89	0.61	0.65	
Kangkong	0.70	0.30	0.34	.000
Radish	0.89	0.44	0.33	
Horseradish tree leaves	0.51	0.32	0.22	.003
Okra	0.63	0.32	0.41	.007
Sponge gourd	0.78	0.58	0.43	
Pechay, native	0.76	0.45	0.40	.004
Banana blossom	0.75	0.50	0.62	
Yard / String beans	0.74	0.45	0.73	
Sweet potato tops	0.50	0.64	0.25	.007
Tomato	0.69	0.40	0.43	.015
Bottle gourd	0.75	0.40	0.72	
Sayote	0.25	0.43	0.33	
Cucumber			0.42	
Malabar night shade	0.5	0.93	0.32	
Winged beans			0.20	
Taro leaves			9.00	
<i>Total tropical purchased</i>	133.20	124.33	447.18	
total volume (K) purchased per purchase occasion	209.3	179.06	561.68	

Criteria for Purchase.

In key informant interviews, respondents were asked regarding the criteria they use in the purchase of vegetables. The criteria developed from the key informant interviews as well as those derived from secondary literature were used as statements in the survey to which respondents can react. Respondents for this survey were asked to rate the importance of these variables on a scale of 1 to 6, “6” being very important and “1” as not so important. These variables were processed using factor analysis and the resulting criteria are shown in Table 3. This model is sound since the Eigen values for all factors are greater than 1 and the Cronbach Alpha Reliability Statistic are all acceptable.

Table 3 Criteria for Choosing Vegetables

Criteria	Mean	Standard Deviation	Eigen Values
1. Price	5.600	0.76	1.110
2. Quality in use	5.529	0.739	2.824
• Vegetables that are firm	5.45	0.82	
• Vegetables that can be stored well	5.50	0.85	
• Vegetables that cooks well	5.56	0.80	
• Good tasting vegetables	5.61	0.75	
3. Sanitary and phytosanitary criteria	5.520	0.818	3.395
• Vegetables that are free from mechanical injury	5.39		
• Vegetables that are free of soil	5.40		
• Vegetables that are free of chemical residues	5.57		
• Vegetables that are free of pest/disease damage	5.61		
• Vegetables that are free from physical injury	5.62		
4. Product appearance	5.336	0.752	2.559
• Vegetables of good size	5.10	1.22	
• Vegetables with good shape	5.15	1.20	
• Vegetables with good color	5.43	0.99	
• Attractive, good-looking vegetables	5.64	0.84	
5. Package	4.330	0.762	1.947
• Vegetable that is well-packed	3.96	1.84	
• Vegetable in the desired quantity	4.71	1.53	

Price is the main criteria consumers use in the purchase of vegetables in Mindanao, mainly because of the low income levels of households in the island. The second set of variables that consumers use indicate that these are variables that have something to do with *Quality in use* and includes several variables like cooking quality, taste and shelf life. The third set of attributes considered important by household consumers are the *sanitary and phytosanitary*

criteria like freedom from pest and disease damage, mechanical injury, physical injury, soil and chemical residues. Although consumers are mostly concerned that the vegetables they buy and consume are the best price possible and taste good, they are also concerned about safety and health issues. While ideally, food safety should be the first concern, the Mindanao urban consumer gave these attributes an importance rating that placed these in the middle range. Consumers consider the appearance of the vegetable as the fourth set of attributes that are important, which include color, shape and size. The least important criterion to urban households in Mindanao is packaging.

While packaging received low relative importance, consumers who shop from supermarkets gave high satisfaction rating for supermarkets when it came to packaging.

Conclusions

Based on the behaviour of the market, it is apparent that a strong potential demand for vegetables in the Mindanao area can be developed. The household demand for vegetables in the urban areas has enough volume to encourage players in the chain to consistently supply their needs.

Two consumer market segments can be developed for the marketing of vegetables. The first is the upper income market segment which has fewer members but larger per capita buying power, purchase larger volumes and higher value of vegetables. This segment will increasingly purchase from supermarkets and will increasingly demand more vegetables as their health consciousness grows. High value supply chains for vegetables can go through the distribution systems of supermarkets. This market segment buys salad vegetables and temperate vegetables. As the income increases, the purchase of vegetables will increase.

The second is to tap the high volume but price sensitive market segment who purchase from the wet markets or the traditional supply chains. The low price market segment may remain basically the same as currently practised in the traditional supply chain (Murray-Prior, et al., 2006). Strategies for the high value chain can be developed to act as a buffer to the highly price sensitive traditional chain.

Intervention at the level of the production can be done to enhance the chances of small holder farmers to gain access to the markets. Production planning among small holder farmers can help them produce the volume required by the market and can help develop a more efficient supply chain. Communication strategies directed at the household consumers to encourage purchase and consumption must be developed. Reminders at the point of purchase like wet markets and supermarkets can be put up to increase purchase incidence. Recipes of different vegetable dishes can also be handed out at point of purchase to help cooks plan the menu and find alternative uses of the products offered. Increased convenience can also be offered to consumers by offering them minimally processed vegetables, washed, cleaned and ready for cooking. Some supermarkets in the Philippines are beginning to offer these products, washed, cut and ready for cooking or consumption.

In summary, collaborative relationships along the vegetable supply chain are crucial in the development of a strong domestic market base. Joint activities by members of the chain, i.e., farmers and traders, wholesalers and retailers, and even farmers and retailers, can increase efficiency not only due to economies of scale but also due to the availability of information that can aid the entire chain in the formulation of strategy. Consumers of vegetables currently

purchase through the traditional chains, but in the near future, supermarkets and other institutional markets will play a bigger role in fulfilling the household needs. As such, more quality standards should be in place, not only in the production, but also the entire supply chain.

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