CHAPTER II

LITTERATURE REVIEW

2.1 Hedonic Price Model

Products are wanted because of the utilities they provide. The utilities provided depend upon the product characteristics. Hence, the total amount of the total amount of utility a consumer enjoys from his purchases of product depends upon the total amount of the product characteristics purchased. Let x_{oj} be the total amount of j^{th} product characteristic provide to the consumer of all product. Let x_{ij} be the quantity of j^{th} characteristic provided by one unit of product *i*. Let q_1 represent the quantity of the i^{th} product consumed. Suppose we have *n* product and each of the first m product characteristics is provided by general products, but each product also produce a unique characteristic provided by no exact product. Then total consumption of each characteristic can be express as function of quantities of products consumed and of consumption input-output coefficients:

$$x_{oj} = f_i(q_1, q_2, \ldots\ldots\ldots, q_n, x_{1j}, x_{2j}, \ldots\ldots\ldots, x_{nj}) \quad \text{for } j = 1,2,\ldots,m \qquad (1)$$

$$x_{om+i} = f_{m+i}(q_i, x_{im+i}) \quad \text{for } I=1,2,\ldots\ldots n. \qquad (2)$$

Where consumer's utility function is expressed:

$$U = U(x_{01}, x_{02}\ldots\ldots\ldots\ldots\ldots x_{om}, x_{om+1}, \ldots\ldots\ldots x_{om+n}). \qquad (3)$$

Because each x_{oj} is a function of the q_i's and .....

$$U = U(1, q_2, \ldots\ldots\ldots, q_n, x_{11}, x_{12}, \ldots\ldots\ldots, x_{1m}, x_{21}, \ldots\ldots\ldots, x_{mn}, \ldots\ldots\ldots x_{mn+n})$$

It is assumed that the consumer can vary only the quantity (q_i's). The magnitudes of the x_{ij}' s are parameters to the consumer; their magnitudes are determined by producers. The consumer is assumes to maximize equation (2) subject to the budget constraint

$$\sum_i p_i q_i = I \qquad (4)$$

Where p_i is the fixed price paid for the *i*th product, and I id the consumer's fixed money income, that is, the consumer selects the value of the q_i that maximize the Lagrangian

$$L = U(x_{01}, x_{02}....., x_{om,} x_{om+1}, ..., x_{om+n}) - \lambda\left(\sum_i p_i q_i - I\right). (5)$$

The consumer is viewed as selecting the compensation the product that provides combination of total product characteristics that maximize utility. Choices of products are based on their different characteristics. Because the x_{oj}'s are function of the q_j' s, compound function (function of a function) rules for differentiating U must be used:

$$\frac{\partial L}{\partial Q_i} = 0 = \sum_j \left(\frac{\partial U}{\partial X_{oj}}\right)\left(\frac{\partial X_{oj}}{\partial q_i}\right) + \left(\frac{\partial U}{\partial X_{om+i}}\right)\left(\frac{\partial x_{om+i}}{\partial q_i}\right) - \lambda p_i \qquad (6)$$

The marginal utility of income is $\lambda : \lambda = \frac{\partial U}{\partial I}$. Substituting this expression into equation (6) and solving for p_i yields

$$p_i = \left(\frac{\partial x_{oj}}{\partial q_i}\right)\left[\left(\frac{\partial U}{\partial X_{oj}}\right)/\left(\frac{\partial U}{\partial I}\right)\right] + \left(\frac{\partial X_{om+i}}{\partial q_i}\right)\left[\left(\frac{\partial U}{\partial X_{om+i}}\right)/\left(\frac{\partial U}{\partial i}\right)\right] \qquad (7)$$

The marginal yield of the j^{th} product characteristic by the i^{th} product is $\partial x_{oj}/\partial q_i$. The marginal yield of the i^{th} product's unique characteristic is $\partial x_{om+i}/\partial q_i$. In the bracketed terms, $\partial U/\partial x_{oj}$ is the marginal utility of the j^{th} product characteristic, and $\partial U/\partial I$ is the marginal utility of income. Their ratio is the marginal rate of substitution between income and the j^{th} product

characteristic. By equation (4), income equals total expenditure. Therefore, the bracketed term can be interpreted as the marginal rate of substitution between expenditure and the j^{th} product characteristic, that is, as the (marginal) implicit or imputed price paid for the j^{th} product characteristic (Ladd, 1976).

Waugh (1929) said that there is a distinct tendency for market prices for many commodities to vary with certain physical characteristics which the consumer identifies with quality, and the relation of these characteristics to price may in many cases be fairly accurately determined by statistical analysis. If this generalization is accepted as true, it opens up a field in a theory of price, which has been practically untouched.

A model of product differentiation based on the hedonic hypothesis that goods are valued for their utility bearing attributes on characteristic. Hedonic prices are defined as implicit price of attribute and are reveal to economic agents from observe price of differentiated products and the specific amount of characteristics associated with them. (Rosen, 1974)

Ladd *et al.*(1976) suggested to take a product characteristics approach to the study of product heterogeneity. This approach views a product as a collection of characteristics. Then product heterogeneity arises in various ways. Two products can possess different amounts of the same characteristics or one product can contain characteristics that the other does not. Two products may contain completely different sets of characteristics.

Kavamura (1999) estimated consumers' evaluation of cooked rice packaged by using hedonic price function and applied the results of the hedonic analysis to marketing process, especially to price determination and package design. His model included three independent categories, the first one is characteristics of product, which contains two sub-categories: one is a characteristic for rice in the package such as amount of each nutrient content; and the

other is the characteristic of the package. The second category contains store condition as store location, store size and store type. The third one captures the price fluctuation along with time.

Kajikawa (1998) conducted the research that quantitatively analyzed the relationship between selected internal apple characteristics and prices. He found that wholesale prices for apples in Japan were associated with Brix, acid, and juice content, moreover the prices and quality of apple imported from New Zealand and the United State could not be competitive with Japanese ones.

2.2 Efficiency of Marketing

The efficiency of marketing is concerned with two types, those are technical efficiency and pricing efficiency. Technical efficiency refers to the inputs-outputs relationship involved in the task of production utility throughout the marketing systems. Pricing efficiency refers to the capacity of the systems to effect change, and to the prompt of a reallocation of resources to maintain consistency between what is produced and what is demanded by the consumers. In effect, the price mechanism serves as a communication system to relay the wishes of the consuming public to the producing segment (Purcell,1979).

For the food system as a whole, it is more difficult to measure efficiency, or even to establish an appropriate definition of what is being measured. Efficiency measures the ratio of output to input. One measure of the denominator of the efficiency ratio is the cost of delivering the required product/service mix. There are two components to this cost: technical (operational) efficiency of all members of the industry (does operating meet world "best-practice" norms?) and pricing efficiency (is there sufficient competition at all levels in the system to ensure that technical efficiency is translated into value for consumer, rather than into monopoly profits (Schaffner, *et al.*1998).

Increased efficiency is in the best interests of farmers, traders, processors, wholesalers, retailers, consumers and society as a whole. The efficiency of a marketing system is measured in terms of the level and/or costs to the system of the inputs, to achieve a given level and/or quality of output. Such inputs are generally in the form of land, finance, time, manpower and materials. Typical outputs include the movement of a given amount of product to markets at specific distances, the supply of a particular level of service to target market segment and the supply of products at target price. Hence resources are the costs and utilities are the benefits that comprise the marketing efficiency ratio. Efficient marketing optimizes the ratio between input and outputs.

Marketing firms, operating within a competitive environment, are especially well motivated in seeking to increase operational efficiency. Although their goal may be higher profits, often the benefits of improved operations accrue to customers in the form of lower prices. Competition acts as a brake on the extent to which profits increase and limits any tendency for customer service and satisfaction levels to fall (Crawford, 1997).

2.3 SWOT Analysis

The above approaches are all related to the study of marketing efficiency. This study attempts to assess efficiency of an organization to provide information for better understanding of the marketing practices.

Smith (1994) describes that SWOT is an assessment of the organization's (company's) strengths and weaknesses, and an analysis of the opportunities and threats which exist in the market place. It is a combination of many methodologies that lead to succinct lists of the resource realities (strengths and weaknesses) and the environmental realities (opportunities and threats). These lists can be generated by a meeting of informed persons, or by more sophisticated structures (Smith, 1994).

Kotler (1997) described that for building the appropriate model and fitting the data with the proper statistical techniques, and in setting pricing policy, a company follows the six-step procedure. First, it selects its pricing objective, what it wants to accomplish with its product offer. Second, it estimates the demand curve, the probable quantities that it will sell at each possible price. The more inelastic demand is, the higher the company can set its price. Third, it estimates how its costs vary at different levels of output, at different levels of accumulated production experience, and for differentiated marketing offers. Fourth, it examines competitor cost, price, and offers. Fifth, it selects one of the following pricing methods: markup pricing, target return pricing, perceived–value pricing, value pricing, going-rate pricing, or sealed-bid pricing. Finally, it select the final price, taking in to account physiological pricing, the influence of other marketing-mix elements on price, company pricing policies, and the impact of price on the other parties (Kotler, 1997).

2.4 Characteristics of Vegetable

The analysis of color is frequently an important consideration when determining the efficiency of post-harvest treatments. Consumers can easily be influenced by preconceived ideas of how a particular fruit or vegetable should appear, and marketers often attempt to improve upon what nature painted. McGuire (1992) suggested the aspects of color, which are addressed directly (in the color chart-based Munsell notation that specifies the elements of perceived color) as value (lightness, from black to white on a scale of 1 to 10), chroma (degree of departure from gray toward pure chromatic color), and hue (red, orange, yellow, green, etc.).