

## What Attributes Do Consumers Seek When Buying Vegetables: The Case of East Timorese Consumers

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*In recent years, there has been a change in consumer attitudes towards food in general, and vegetables, in particular. Recent health and food scares as well as the increasing concern over pesticide use and food safety have made consumers more selective and demanding in terms of the quality of food. This paper outlines the results of a study on the attributes consumers seek when buying high value vegetables (carrots, snow peas and cabbages) in Timor Leste. The study was conducted in Dili and Baucau, the two major districts in the country. The study found that when buying these high value vegetables, the attributes Timorese consumers seek are that the product is free from physical damage, is fresh, is free from pest and diseases, free from chemical residues and is competitively priced. Furthermore, consumers have a high expectation for producers to meet these attributes.*

### 1. Introduction

Over the last decade, consumers have increasingly become concerned about the quality and safety of food. According to Darby and Karni (1973) quality is commonly categorised into search (e.g., appearance), experience (e.g., taste) and credence (e.g., healthy, organic, etc.) dimensions. The number of new products that have failed in the marketplace, coupled with falling brand loyalty, have created awareness among buyers of their power as they do not just passively receive the choices offered by sellers (Grunert 2002). Today's modern consumers not only want food products to be of high quality, but also to meet health, safety and environmental attributes. As income increases, food consumption also changes, and consumers become more demanding in terms of the quality and safety of the products (Grunert 2002). They are also demanding consistency and value for their money.

In addition, consumers are becoming increasingly characterized by being health conscious and more aware of the impact of their food choices on their well-being (Gilbert 2000; IFIC 2000). Vegetables and fruits are more and more recognized for their benefits towards healthy living (Cox et al. 1996). Furthermore, consumers now recognize their influence over products and stores. Therefore, it is important to understand consumer needs and preferences so that retailers and suppliers can better anticipate the changes that may happen in the future. As mentioned by Jacobs et al. (2007) consumers' choice are unlimited and they expect more in terms of performance, quality and choice.

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Consumers are more and more demanding higher expectations from their buying experiences and the products they buy and use every day. In addition, there is a growing number of studies (Grunert et al. 2001; Verbeke 2001; Eales & Unnevehr 1998; Rappoport et al. 1993; Anderson & Shugan 1991) that have shown that consumers' willingness to pay is correlated with food choice. Studies conducted by Rohr et al. (2005) and Wilcock et al. (2004) for instance showed that 80 per cent of consumers are willing to pay a higher price for products that have been quality assured or which were assured of food safety, thus showing that as long as products are safe to consume, consumers are ready to pay a premium price.

In Timor Leste, despite the fact that rice and maize are the main staple food, horticulture products such as cabbages, carrots, mustard, tomatoes and other vegetables are also consumed by the majority of the population. As most of the population earn less than one dollar a day, many East Timorese cannot afford to buy fish or meat and other products that are more expensive on a regular basis. Because of this, most East Timorese people tend to purchase vegetables rather than meat or fish. Most consumers and local restaurants in Dili and Baucau mainly use local vegetables in their menus. However, local producers have to compete with imported vegetables, which some consumers and the larger restaurants seem to prefer to buy. But what are the attributes consumers are seeking when buying vegetables? The research question this study seeks to answer is, do East Timorese consumers consider quality and safety of food when purchasing vegetable products?

This paper outlines the results of a study on attributes consumers are seeking when buying vegetables in Timor Leste. The focus is on carrots, cabbages and snow peas, which are popular amongst East Timorese households. The study was conducted in Dili and Baucau, the two major districts in Timor Leste.

The main objective of the study is to find out general attributes that consumers are looking for when buying vegetables in Timor Leste. Specifically, the study aims to find out whether quality and safety of food are important to consumers and to find out the characteristics that consumers associate with the quality of vegetables. The study also aims to determine how important attributes such as variety, size, shape, colour and other attributes are for consumers when buying vegetables.

## 2. Literature Review

Around the world, consumers are paying more attention to the food they eat, the value they get from it, and what it does for them. Food attributes that offer value to the consumer through good health, sound environment, and ethical treatment of people and animals are becoming more important (Ragaert et al. 2004). In addition, information about attributes of the systems that are used to produce the food (e.g., information about environmental and ethical impacts) is increasingly becoming important as these influence consumers in deciding what foods to consume.

Steenkamp (1996) identified three groups of factors that influence consumers' attitude and behaviour. These factors are properties of the food (e.g., consumers understanding

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of the food such as how it appears, feels, smells and tastes); factors related to the person involved in food consumption (e.g., personal beliefs about a certain product can influence the attitude towards a product, as do socio-demographic factors); and environmental factors including that in relation to culture, economy and marketing (Steenkamp 1996).

According to Grunert et al. (1996) and Steenkamp (1989), attributes can be classified into intrinsic and extrinsic attributes. Grunert et al. (2000), Sloof et al. (1996) and Nelson (1974), presented an alternative classification which includes search attributes (e.g., price, colour and appearance); experience attributes (e.g., taste and flavour) and credence attributes (e.g., health and microbiological safety). Insights into the perceived importance of attributes are keys for better understanding consumer behaviour since they are used as evaluative criteria reflecting consumers' beliefs and attitudes and intentions. Kraus (1995), meanwhile, pointed out that attitudes are significant psychological constructs as they not only affect, but determine, human behaviour.

Food safety is another attribute consumers are concerned with when it comes to food. Many consumers want to be assured that the food they are consuming is safe to eat and they are willing to pay for it (Brewer et al. 1994). A study conducted by the Food Marketing Institute of the United States in 1996 found that most consumers believed that the food they bought was safe to consume (Goodacre et al. 1999). However, most of the respondents considered food spoilage as the greatest threat to food safety. In this study, respondents also looked at the freshness, expiration date, processing, preparation of food and most importantly, bacteria and contamination.

The process of choosing food involves consideration of various factors including the sensory properties of food, individual preferences and environmental and cultural stimuli (Furst, et al. 1996; Randall & Sanjur, 1981). The choice of food of a person is an expression of the personality and lifestyle of that person (Brunso et al. 2004; Lindeman & Sirelius, 2001). Understanding what determines consumer choice is essential for better designing promotional campaigns, and is important to the effective development of food and health policies. According to Pfannhasuer and Reichhart (2000) it is important to explore consumer attitudes toward food because it will be indispensable for food producers, manufacturers and retailers to know about the attitude and behaviour of their customers. This is vital as it will provide guidance as to what food crops/ products to grow, how to package, transport and display food in a way desired by or acceptable to the majority of consumers.

In marketing, it is important to understand the drivers for demand and understanding the reasons for consumers' choices. One aspect commonly used to increase understanding of consumer choice is the consideration of the attributes consumers seek from products (Assael 1998; Bach-Larsen et al. 1997; Pay et al. 1996; Thøgersen 1996). Market research helps in understanding consumer attitudes; this is critical as attitudes affect behaviour. A purchase of a product or service is the desired outcome in marketing. Therefore it is important for marketers to know what attitudinal obstacles exist in buying arrangements so they can develop strategies to counteract these barriers.

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The empirical studies mentioned in this section looked at attributes consumers consider when buying products. While the insights provided by these studies on attributes consumers are seeking are important, no previous study on food attributes, particularly for vegetables have been conducted in Timor Leste.

This paper identifies the attributes that consumers are looking for when buying vegetables in Timor Leste, thus providing insights on the consumer decision making process when buying vegetables.

### **3. Data and Methodology**

Data for this study was collected through a consumer survey using an administered questionnaire, with the population consisting of consumers who bought and consumed vegetables. The survey was undertaken for three weeks in August 2009. In order to account for differences in purchase times, data gathering was conducted on a daily basis during the data collection period. Likewise, interviews were administered in different times of the day (morning and afternoon).

The survey was conducted in Dili and Baucau City which are the major cities in Timor Leste. Dili is the capital of Timor Leste and has the highest concentration of people particularly for finding jobs, for education and for business. Baucau is the second largest city in terms of population, and it is also a popular tourist destination.

The population for this study are household consumers in Dili and Baucau, the two major cities in East Timor. Using random sampling a total of 152 respondents were chosen as the sample in this study, with 50 respondents from Baucau and 102 respondents from Dili. More respondents were chosen from Dili because the population of consumers in Dili is much larger than that in Baucau. Data was analysed using SPSS. Descriptive statistics such as frequency tabulation and mean scores were used. The results and findings of the study are discussed below.

The hypothesis of the study is that despite their low income, quality and food safety are important to consumers in Timor Leste.

### **4. Findings and Discussion**

Outlined below are the findings of the study, commencing with a background of the respondents followed by the attributes consumers are looking for.

#### **4.1 Background of Respondents**

Of the 152 respondents, 11.2 per cent were male and 88.8 per cent were female, which is not surprising because in Timor Leste women are responsible for purchasing food in the household. The average age of respondents was 33 years. The sample composition in terms of employment status of respondents was as follows: majority (55.3 %) of the respondents classified themselves as housewife/ househusband or were not in paid employment. About 27 per cent were employees and 9 per cent were self-employed.

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Seven per cent were students; while about one per cent was retirees. With respect to education, about 86 per cent of the respondents had schooling until their 18th year, about nine per cent beyond the age of 18 and about five per cent had not attended school at all. The average household size was 6.95 members, with a mean of 3.5 dependents (i.e., household members below 15 years).

### 4.2 Buying Pattern

The results of the study showed that most of the respondents (77.6%) bought vegetables on a daily basis and only 22.4 per cent of respondents bought vegetables on a weekly basis. This is because many respondents could not store vegetables for extended periods due to lack of refrigeration and problems with electricity.

Vegetables was one of the highest food spend of Timor Leste households, second only to rice (USD10.29), with respondents spending an average weekly food expenditure of USD7.97 for vegetables. Most respondents tended to consume more vegetables as compared to meat and fish. This can perhaps be attributed to the low average household income in Timor Leste. Many households could only afford to buy vegetables, a cheaper alternative to meat and fish.

Looking at the breakdown of vegetable consumption, all respondents consume carrots and cabbages while 75 per cent consume snow peas. When asked how often they buy carrots, cabbages and snow peas, more than 50 per cent said they buy these vegetables about once a week or more than once a week (Table 1).

**Table 1: Frequency of Purchase of Carrots, Cabbages and Snow Peas**

Product	Frequency of purchase (%)				
	More than once a week	About once a week	Once or twice a month	Less than once a month	Others
Carrots	40.8	51.3	5.3	0.7	-
Cabbages	51.3	43.4	3.9	-	1.3
Snow peas	30.3	29.6	8.6	3.9	2.6

Most respondents buy their carrots, cabbages and snow peas from retailers in the wet market. The average volume purchased, price per unit and the total money spent for carrots, cabbages and snow peas per month is shown in Table 2.

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**Table 2: Average Volume Purchased, Price per Unit And Total Money Spent for Carrots, Cabbages and Snow Peas per Month per Household**

Product	Average volume purchased (kg)	Price paid (\$/unit bought)	Average spent per month (\$)
Carrots	6.76	1.00	6.85
Cabbages	11.94	0.50	5.97
Snow peas	6.63	1.00	5.66
Total	8.44	0.83	6.16

As shown in the table, the highest volume purchased by households is cabbage. The per unit price of cabbage is also lower than carrots and snow peas. On average, the total money spent by a household per month for all three products is USD6.16. Furthermore, when purchasing these vegetables, respondents often select from a range of products with different quality and prices. According to respondents, they want to get the best quality products at a reasonable price. They also want to find fresh and cheaper products. Others said the quality of the vegetables is not the same among different product offerings, therefore they need to carefully select the products when buying vegetables.

### 4.3 How Do Consumers Define Quality in Vegetables?

The characteristics consumers associate with the quality of carrots, cabbages and snow peas are presented in Table 3. For carrots, weight, maturity, size and shape are the attributes consumers associate with quality. For cabbages, colour, shape and weight are the main criteria used by consumers to assess quality; while for snow peas they look at maturity, weight and shape. Other criteria consumers associate with quality are that the product is free from pest and disease damage, free from physical and mechanical injury, and are clean and fresh.

**Table 3: Characteristics Associated with Quality of Carrots, Cabbages and Snow Peas**

Characteristics	Mean score		
	Carrots	Cabbages	Snow peas
Shape	1.09	1.53	1.24
Size	1.19	1.09	0.92
Weight	1.71	1.51	1.51
Maturity	1.58	1.35	1.55
Colour	1.00	1.75	0.80
Pest/disease damage	1.00	1.00	0.78
Physical injury	1.00	1.00	0.78
Mechanical injury	1.00	1.00	0.78
Cleanliness	1.00	1.00	0.78
Freshness	1.00	1.00	0.78
Firmness	1.01	1.00	0.78

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Majority of respondents claimed they prefer to buy locally produced vegetables than imported vegetables. According to the respondents, local vegetables are cheaper, fresh, organic, and always available when needed. Some consumers, particularly in Baucau, said that there are no imported vegetables so they rely on locally grown vegetables. More than 90 per cent of respondents reported that they are satisfied with the local vegetables they bought; only a small percentage of respondents were not satisfied. Most respondents (94.7%) also claimed they are aware of food safety issues. This is one of the reasons they prefer buying local products that are organic and hence do not contain chemical residues.

The few respondents in Dili who purchased imported vegetables bought them from supermarkets. The reason they gave for buying imported vegetables such as carrots and snow peas is that sometimes these vegetables are not available locally. They also claimed that the quality of imported vegetables is better than locally grown vegetables. In general, however, most of the respondents said there were no difficulties in finding local carrots, cabbages and snow peas. The majority of the respondents said that they were willing to pay a higher price for high quality local carrots, cabbages and snow peas.

### 4.4 What Do Consumers Seek When Buying Vegetables?

So what attributes do consumers seek when buying vegetables?

Respondents were asked to rate a list of criteria such as variety, size and others, when buying carrots, cabbages and snow peas. Their response is shown in Table 4.

**Table 4: Importance of Various Criteria to Respondents When Buying Carrots, Cabbages and Snow Peas (1 is Not at All Important; 6 is Very Important)**

Criteria	Percent						Mean
	1	2	3	4	5	6	
Freedom from physical damage and defects	-	-	-	0.7	2.0	97.4	5.96
Freedom from pest and disease	-	-	-	0.7	4.6	94.7	5.94
Free from chemical residues	-	-	-	0.7	5.3	94.1	5.93
Desired shape	-	-	0.7	1.4	59.2	38.9	5.75
Well graded	-	-	-	1.3	56.6	42.1	5.40
Colour	-	-	-	0.7	64.5	34.9	5.34
Keeps quality (freshness)	-	-	0.7	4.6	62.5	32.2	5.26
Desired size	-	-	0.7	-	75.0	24.3	5.23
Desired variety	-	-	0.7	13.2	60.5	25.7	5.11
Produce is pre-packed	0.7	-	0.7	13.8	68.4	16.4	4.98

As shown in Table 4, the three most important attributes consumers are seeking when buying vegetables are freedom from physical damage and defects, freedom from pest and disease and freedom from chemical residues. It appears that pre-packaging is not as important as the other attributes. The characteristics identified as most important reflect quality attributes based on East Timorese definition of quality, but also reflect

food safety particularly the latter, freedom from chemical residues. Thus, the results of this study support the hypothesis that consumers in East Timor are seeking quality and food safety when they purchase vegetables.

### 5. Conclusion and Implications

Although most consumers in Timor Leste have a low average income, they are still particular about quality and food safety, with consumers willing to pay a higher price for safe food. As with most consumers worldwide, East Timorese consumers have also become increasingly concerned about the quality and safety of the product and the negative effects of bio-industrial production. This is perhaps why there is a strong preference for locally grown vegetables as they are perceived as fresh, organically grown and free from chemical residues. They are also cheaper.

Quality is defined by customers in various ways, but the most common criteria used to assess quality by East Timorese consumers are weight, maturity, size and shape for carrots; colour, shape and weight for cabbages, and maturity, weight and shape for snow peas. Other attributes they associate with quality are freedom from pest and disease damage, freedom from physical and mechanical injury, cleanliness and freshness.

It appears that in contrast with some studies (Maruyama & Trung 2007; Cadilhon et al. 2006; Reardon & Timmer 2003) that mentioned that most products sold in supermarkets are fresh and of higher quality compared to local markets, most East Timorese customers believe that vegetables sold in local markets are fresher and of better quality and are cheaper. This is because imported vegetables sold in supermarkets are perceived to have been grown in conventional ways using pesticides and other chemicals and are not as fresh as those locally grown. People who buy vegetables from supermarkets are mostly expatriates and East Timorese from higher income groups; and they only account for about 5-10 per cent of the population and are mostly concentrated in Dili.

In terms of attributes consumers are seeking when buying vegetables, the most important attributes East Timorese consumers are looking for are that products are free from physical damage and defects, fresh, free from pests and diseases and free from chemical residues. According to the literature, search dimension, credence dimension and experience dimension are important factors in determining the quality of the product both before buying and after consuming the products (Grunert & Andersen 2000; Schiffman & Kanuk 2000). It appears that in Timor Leste, respondents are more interested in the search and credence dimension of the products such as appearance and organic as compared to the experience dimension.

In terms of the attributes, generally, the results of the study are consistent with previous studies (Grunert et al. 2000; Goodacre et al. 1999; Sloof et al. 1996), as consumers also looked at price, appearance, colour and safety when they buy vegetable products. However, this study showed a different insight in terms of freshness and quality of the product from supermarkets and local markets. For instance, past studies such as

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Maruyama & Trung (2007) and Cadilhon et al. (2006) found that products sold in supermarkets are fresh and of high quality. On the contrary, this study found that vegetable products sold in local markets are fresher and of better quality than those sold by supermarkets, at least for carrots, cabbage and peas. This is perhaps because most of these vegetables stocked by supermarkets are imported and as transport and refrigeration in the country is quite poor, the product quality is affected; whereas those sold in the local markets are produced locally and are directly coming from local farms. However, with the increasing push for bringing in imported vegetables in Timor Leste, it is critical for producers to meet consumers' demand. When buying local vegetables, consumers have a high expectation for certain attributes which in turn need to be considered by the retailers and the producers. The fact that consumers are also willing to pay higher as long as they are assured of good quality and food safety, mean that producers and people along the supply chain need to be conscious of handling and transporting fresh vegetables so that the produce reaches the market in as good condition as possible.

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