CHAPTER 2
LITERATURE REVIEW

2.1 OVERVIEW

Chapter illustrates the existing literature in the areas of concern in the research. The literature review is focused on giving an understanding to recent developments in fresh Fruit and Vegetable market in Sri Lanka and other countries and Identify issues and constraints in improving fruit and vegetable marketing systems in member countries. I furthermore will seek to methods available for enhancing international competitiveness.

2.2 SRI LANKAN FRUIT AND VEGETABLE MARKET

The island of Sri Lanka is located in Indian Ocean and a 30 kilometres down wards to South India. It is a tropical country with highly favourable conditions for cultivation of crops. At the time of independence, Sri Lanka was heavily dependent on Agriculture sector in terms of output and employment. However, as time went on, its importance declined compared to service and industrial sector. The importance of Agriculture sector for employment and export earning has substantially declined.

At present, its contribution is nearly 20% to Gross Domestic Product. However, a considerable portion of the population still directly or indirectly depends on agriculture sector for livelihood. (Central Bank of Sri Lanka, 2003) The Sri Lankan agriculture sector is divided into two main sectors such as plantation and non plantation sector. The plantation sector mainly comprises of three-export crops; tea, rubber and coconut. The non plantation sector which consists of paddy, other field crops, vegetables, fruits and livestock sub sectors and provides livelihood for a significant proportion of the population in the country who mainly resides in the rural areas.
Table 2.1: Export value of fresh fruits and vegetables – Value (Rs. Mn)

<table>
<thead>
<tr>
<th>Year</th>
<th>Vegetable</th>
<th>Fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>250</td>
<td>437</td>
</tr>
<tr>
<td>2000</td>
<td>617</td>
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<td>1005</td>
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<tr>
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<td>1252</td>
<td>1317</td>
</tr>
<tr>
<td>2008</td>
<td>2717</td>
<td>1508</td>
</tr>
</tbody>
</table>

Source : (Sri Lanka customs, 2009)

Table 2.2: Export volume of fresh fruits and vegetables – Volume (, 000 Kg)

<table>
<thead>
<tr>
<th>Year</th>
<th>Vegetable</th>
<th>Fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>6193</td>
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<td>5709</td>
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<td>11005</td>
<td>12979</td>
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<td>2007</td>
<td>12487</td>
<td>11792</td>
</tr>
<tr>
<td>2008</td>
<td>19398</td>
<td>14415</td>
</tr>
</tbody>
</table>

Source : (Sri Lanka customs, 2009)

Within the domestic food sector or non-plantation agriculture sector, the paddy cultivation plays an important role, as rice is the stable food for the nation. Next to the paddy sector, the vegetable sub sector is the most prominent in the agriculture sector, as vegetables are grown throughout the country and large numbers of farmers are involved in vegetable cultivation. Main vegetables grown in Sri Lanka are classified into two main categories such as upcountry vegetables and low country vegetables. The upcountry vegetables are leeks, beans, cabbage, beetroot, carrot,
etc., which are mainly cultivated in hilly areas located in the central part of the country. The low-country vegetables are brinjals, ladies finger, bitter gourd, snake gourd, long beans, leafy vegetables, luffa, drumstick, capsicum, etc., which are mostly cultivated in low lands, paddy fields and hens of low country areas. Entire local demand for the vegetables is met through local production. (Sri Lanka Export Development Board, 2005) Only negligible share of vegetables has been imported to meet the special demand of tourist hotels.

The table 2.1 and 2.2 showed that the export growth of fresh vegetable and fruit according to the value and volume.

2.2.1 Fruit Production

When considering the fruit sector, the commercial cultivation is reported only for few numbers of fruits such as banana, pineapple, papaw, passion fruit and rambutan. Other fruit varieties such as mango, wood apple, guava, pomegranate, avocado, etc. are supplied mainly from home gardens. Moreover, a considerable proportion of supply of banana, papaw, passion fruit and rambutan is coming from home gardens as well. The demand for local fruits such as banana, mango, pineapple, papaw, etc. is met mainly through local production. Only negligible quantity of these fruits has been imported to meet specific requirements of tourist hotels. However, the local demands for certain fruits such as apples, oranges, grapes and dates are met through imports. During 2003, Sri Lanka imported more than 52,600 metric tons of fresh and dried fruits valued at Rs.1.8 Billion and out of total value of imports, apples accounted for 43 percent (Central Bank of Sri Lanka, 2003).

2.2.2 Vegetable Production

According to statistics, the overall vegetable production was 552,000 metric tons in 2003. Almost all the production is consumed domestically; only one percent of that total production of vegetables is being exported (Central Bank of Sri Lanka, 2003). Table 1 reveals that production of main upcountry vegetables has increased during last ten years. Table 2.1 discloses unsatisfactory trends in production of main low
country vegetables. The production of main low country vegetables has either declined or stagnated during last ten years.

Table 2.3: Production of up country vegetables in Sri Lanka over time (Mt)

<table>
<thead>
<tr>
<th>Year</th>
<th>Cabbage</th>
<th>Tomato</th>
<th>Beans</th>
<th>Carrot</th>
<th>Reddish</th>
<th>Leeks</th>
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</thead>
<tbody>
<tr>
<td>1994</td>
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<td>31746</td>
<td>26158</td>
<td>23415</td>
<td>19929</td>
<td>15590</td>
</tr>
<tr>
<td>1995</td>
<td>34836</td>
<td>31986</td>
<td>27595</td>
<td>24668</td>
<td>18551</td>
<td>13941</td>
</tr>
<tr>
<td>1996</td>
<td>40114</td>
<td>42415</td>
<td>28931</td>
<td>24374</td>
<td>19830</td>
<td>15227</td>
</tr>
<tr>
<td>1997</td>
<td>37513</td>
<td>32442</td>
<td>30148</td>
<td>25109</td>
<td>21606</td>
<td>18730</td>
</tr>
<tr>
<td>1998</td>
<td>47387</td>
<td>36435</td>
<td>28687</td>
<td>25137</td>
<td>22139</td>
<td>17668</td>
</tr>
<tr>
<td>1999</td>
<td>52436</td>
<td>39579</td>
<td>31524</td>
<td>26668</td>
<td>24843</td>
<td>19827</td>
</tr>
<tr>
<td>2000</td>
<td>53419</td>
<td>43976</td>
<td>34646</td>
<td>25942</td>
<td>26039</td>
<td>21969</td>
</tr>
<tr>
<td>2001</td>
<td>53935</td>
<td>40378</td>
<td>30891</td>
<td>28432</td>
<td>25327</td>
<td>24189</td>
</tr>
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<td>23152</td>
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<tr>
<td>2003</td>
<td>50000</td>
<td>44974</td>
<td>31687</td>
<td>27210</td>
<td>20079</td>
<td>22420</td>
</tr>
<tr>
<td>Average</td>
<td>45598</td>
<td>38517</td>
<td>30292</td>
<td>25911</td>
<td>22977</td>
<td>19261</td>
</tr>
</tbody>
</table>

Source: (Department of Census and Statistics, Sri Lanka, 2003)

2.3 THE ROLE OF DEVELOPING COUNTRIES

Developing countries play a very important role in the EU's fruit trade and a substantial, but smaller role in the vegetable trade. In 2007, 37% of the imports of fruits and 13% vegetable into EU member states came from Developing countries (CBI, 2009). In terms of volume, fruit imports from Developing countries are also much higher than vegetable imports. A major reason for this difference is that the EU countries are highly dependent on importing many fruit products, such as bananas or mangos, which are not produced in the EU, and others (such as citrus fruits) that are only produced seasonally. By contrast, EU members produce more vegetables and the
supply of these is less seasonal, so they are much less dependent on imports. In general terms, Latin-American countries are the main extra-EU suppliers of fruits to the EU and African countries (notably Mediterranean countries) play an important role as extra-EU suppliers of vegetables.

2.3.1 Opportunities for Asian Fruits and Vegetables

Greater consumer awareness as outlined above indicates that there are reasons to be optimistic about the opportunities to increase fruit consumption. The new consumer consciousness on health is driving the fruit consumption. It is generally agreed that increased consumption of fruits greatly contributes to a healthier lifestyle. Easy to use and convenient is something that needs to be kept in mind when developing or introducing new fruit products. Consuming fresh products needs to become more attractive and trendy. The growth in sustainable and fair-trade products is also an opportunity that could still be further exploited. Creating added-value products and marketing will be important. Added-value can also be based on the different levels of the food-pyramid: consistent high quality, chain quality and ethical values. (Farhad, 2006)

2.4 CONSUMER BEHAVIOR FOR INCREASING DEMAND FOR FRESH FRUITS & VEGETABLES

According to the Asian market research in 2009 has identified the number of common micro driving consumer behavior in Asia as follows.

2.4.1 Food safety

A significant result of these agricultural-food disease outbreaks is that consumers have become most concerned about the safety of the food that they consume. (Briz, Garcia, Felipe, & Poole, 2009) In the main, the food-safety message is good for fresh fruits and vegetables. Some adverse publicity has been attracted by the
extravagant use of chemicals but in the main these are seen as being issues associated with rogue farmers rather than an industry-wide problem.

Organic foods are perceived as being the safest of all foods. (Thailand Department of Export Promotion, 2001) Again, organics has been a boom to horticulture. Significant growth has been experienced in this sector. Most food retailers commence their move into the marketing of organic product with the fruits and vegetable sectors of their produce range. The widespread acceptances of organic foods nearly preclude any further comment. However, it is useful to point out that certifying agencies need to be vigilant in ensuring that all fruits and vegetables identify as organic are indeed organic and that fraudulent labeling be energetically prosecuted. It needs to be borne in mind that producers with organic certification have paid for the right to use that certification. (Holderness, Sharrock, & Frison, 1999)

They have done so for a number of reasons, but a prime one is for the economic benefit that will result. Whatever market advantage they gain from being organic should be protected with zeal.

2.4.2 Good Food

Once consumers have been assured that food is safe to eat, then they seek to ensure that the food, they are consuming is good to eat. (Farhad, 2006) Where-as the food-safety message reinforces the fact that the food has an absence of bad factors, the nutrition message stresses that the food has an abundance of good factors – high in fiber, high in natural sugar, low in cholesterol.

There is increasingly a blurring between food that is nutritious and healthy, and food that is seen as having medicinal benefits, for example, the nutritional values of dairy products are seen to outweigh their fat content issue. Fruits and vegetables have always been associated with very high levels of healthiness. (Indrakeerthi, 2006) This can only be good for the horticultural industry.
2.4.3 Freshness

Freshness is one of the most important issues in agriculture and food today. (Sri Lanka Export development Board, 1998) Fresh products imply an absence of chemicals. Freshness seems akin to natural and thus is good to eat. “Natural” is seen as products not containing any artificial substances and being minimally processed. A blurred area of “freshness / natural” refers to GMO. It is noted that with the notable exception of the United States, most other countries are wary of GMO. GMOs have raised a food-safety concern in the region, mainly for their perceived threats to humans and biodiversity. There is fear also that they erode the seed security of farmers. A final concern regarding GMO comes from Africa where the reluctance to accept corn from a country as food aid is based on the fear that those countries that do not accept GMO food will not accept their corn because of fear of cross contamination of their future exports. In short, GMO food has real fears for exports. (Food and Agriculture Organization of United Nations, 1989) With horticulture, fresh has always been considered as best: Freshness is still the most important factor for food shopping in a traditional family. This may account somewhat for the rapid rise in the popularity of “fresh cuts”.

As a near substitute for fresh, the consumption of frozen vegetables is increasing. At the same time, it appears canning is not seen as a substitute for fresh with the consumption of canned fruits and vegetables declining. Canned products actually have a negative image due to the perception that they are high in salt and use preservatives. It is noted that canned orange and tangerine products from China to the EU fell by 80 percent in the first five months of 2003 compared with the same period in 2002.

2.4.4 Flavor and Taste

With the move towards convenience, replacement meals, and snacks, there is a trend towards sameness. In order to not be part of the common herd, and in order to create some individuality into one’s life, the food that we eat must be distinctive. Thus flavor and taste are becoming important. (Indrakeerthi, 2006) This bodes well for a
number of “Asian” fruits such as carambola, durian, jakfruit, jujube, lychee, mangosteen, salak, tamarind, and wax apple. A number of Asian vegetables also have distinctive flavor and taste.

2.4.5 Appearance

The product must look good. Remember, consumers buy with their eyes and merely reconfirm within their mouths. The lesson here is that Asian fruits and vegetables could improve their image. To begin with, overall quality selection needs to be improved. The numbers of product displayed with clearly visually imperfections have to be reduced. Grading has a lot to do with this with uniformity of size in each packet being more important rather than just one or two sizes.

In the context of appearance, waxing needs to be mentioned. Waxing is a popular method to give a product an appealing shine as well as help to preserve it. Whilst it is common to wax fruit, especially apples and some citrus, it is noted that cassava in the United States and parts of Europe is more frequently than not waxed (Huang, 2004).

2.4.6 Convenience

“Convenience” is a multi-faceted term. Two elements are identified:

2.4.6.1 Convenience - produce

That can reduce time spent in dull tasks is all-important. Preparing food is essentially dreary work. Producing food in a convenient manner that reduces the time spent in preparing to be a major marketing opportunity. Fruit is the ultimate convenient food - just peel and eat with even the peeling sometimes not being necessary.

Vegetables are usually not seen in the Asian context as being as convenient. (Export Development Board in Sri Lanka, 2005) This is because Asians tend to cook their vegetables rather than eat them raw in the salad form as the West does. However, the consumption of salads is increasing in Asian. This augurs well for such vegetables.
2.4.6.2 Convenience – shopping

Convenience refers to the store where the food is purchased. Thus if the one store can provide end consumers with all their retailing requirements, then consumers are more likely to shop there rather than at three or four stores (Farhad, Fruit and Vegetable Sector, Current status and opportunities, 2006). Convenience also refers to the how food is eaten: fast-food outlets are the epitome of convenience and thus their rise in popularity is in direct inverse proportion to the decline in full service restaurants. The lesson for exporters is clear - work with stores that provide “convenience” in all its ramifications to its clients.

This imperative does affect fruits and vegetables. Whilst they tend to be sold in wet markets, it is rare for the one stall to have the entire range of produce. In contrast, supermarkets tend to have a greater range.

2.4.7 Snacks

Again, this is part of the “convenience” phenomenon. Because of the pace of the modern world, consumers do not sit down to a lengthy meal at fixed hours. Instead, they want to grab something to eat on the run.

Fruit more than vegetables tends to be the ultimate snack food. The combined factors of food safety, nutritious, and convenience made fruit very popular.

2.5 IMPLICATIONS OF THE DEMOGRAPHIC CHANGES FOR DEMAND OF FRESH FRUITS AND VEGETABLES

The following draws heavily on L. Magagane who analyzed the implications of the demographic changes in Asia-Pacific region on the food system (Magagane, Muronga, & Verste, 2008).

It is generally estimated that the population of the Asia-Pacific region will rise by more than 400 million people in the next two decades. Identified three major factors as to how the demographics will affect the region’s food system:
- Urbanization
- Migration of population
- Changes in the age structure of the population

2.5.1 Rapid Urban Population Growth

Drivers behind this growth are high birth rates, migration from rural to urban areas, and immigration into urban areas as urban development is a natural consequence of agricultural surpluses, economic specialization, more efficient allocation of resources, and higher incomes. Urban diets differ from those in rural areas for reasons of higher incomes, life styles, the role of eating-in, greater availability of different foods, and even the ability to store more perishable foods.

Indigenous suppliers to the urban markets need to be aware that many of these urban areas are coastal and have modern port facilities, making them easily accessible to foreign suppliers. Indigenous suppliers, often facing poor infrastructure and deliver a lower quality at sometimes higher prices (Pineda & Tongco, 2006).

The implications for fruits and vegetable marketing from this macro trend are slightly contradictory. On the one hand, the macro implications are for excellent. One of the food types that urban dwellers, with an increase in income, substitute a portion of their previous-grain based diet to fruits and vegetables (Bennett’slaw). Another positive substitution is away from the root and tuber vegetables towards the leafy and fruit ones. Eating out, another urban delight often features greater varieties of fruits and vegetables.

A less optimistic aspect of the urbanization is the greater availability of choice of origin within the range of fruit and vegetables available. This is particularly so for the coastal centers. Foreign supplies of bulk but high-quality fruits and vegetables such as apples, some citrus, and vegetables such as potato, onions, and carrots, are available at very competitive prices (Pineda & Tongco, 2006). As an example, the
imports of fruits and vegetables from the United States into the seaboard China increased from US$17 m in 1996 to US$93 m in 2000.

2.5.2 Growth in Population

Coyle concentrated population growth will undoubtedly challenge the food system, though not equally across the region due to varying population distribution and growth rates. It was noted that there is significant migration within the region, which adds on to the population in the region. The migrants tend to favor economies with higher per capita income: Singapore, Hong Kong (China), Japan, Brunei, New Zealand and Australia.

From all of this movement of people with their various culinary traditions and food preferences, see a fusion of dietary preferences. Initially, there is a local boom in the dietary preferences of the migrants. Vinning has traced this phenomenon in Australia especially for Asian fruits and vegetables whilst Crippen has traced it in other countries. Then as Coyle state, the dietary preferences of the immigrant offspring adopt to the preferences of their adopted countries. Vinning and Young studied this in regard to the root crop taro Colocasia esculenta in the Pacific (Vinning, 1993).

While the growth of population in the region is positive for marketing fruit and vegetable industries, the implications are again mixed when it pertains to immigrants. Receiving countries of the migrating Asian-Pacific people able to grow the new fruits and vegetables are stimulated by the new demand to produce the new products. Thus, there is only a small initial benefit to producers from the host countries. Indeed, there are numerous examples of where the receiving country has become so efficient at supplying the immigrants the needed fruits and vegetables that they wind up becoming net exporters of the product in direct competition to the host countries (Vinning, 1993).
2.5.3 Changes in the Age Structure of the Population

It is stated that between 2000 and 2020, average life expectancy in the Asia-Pacific region is expected to rise from 72 to 77 years, and the median age from 30 to 36 years. (Bell, 2006) Whilst their analysis concentrated on the likes of Australia, Canada, United States, and New Zealand, the drivers behind this phenomenon are common throughout the region.

These include the decline in fertility and mortality rates, which can be attributed to income growth, medical breakthroughs, health care investments, and public policy, as well as the increased participation of women in the work force. Certainly, these factors are applicable in full of Japan and Singapore and in parts to other parts of the region.

At first, the graying of the population may appear not to be good news for the region’s fruits and vegetable industries. After all, with an aging population, food demand declines as activity levels and caloric needs decline. A second direct effect is a change in dietary composition and the frequency of eating out. However, this macro trend is considered excellent news for the region’s horticultural sector. (Food and Agriculture Organization of United Nations, 1989) This is because older people eat much more fresh fruit, salads, and non-fried potatoes.

Of the macro trends, the rising wealth, the increasing urbanization, and, above all, the graying of the population are very good omens for fruits and vegetable market. Nearly all of the micro trends that we have identified have a positive implication for the future marketing of fruits and vegetables.

2.6 VARIABLES INFLUENCING THE QUALITY AND UNIQUE FEATURES OF FRESH PRODUCE MARKETING

Various factors that influence the quality of product are harvesting, post harvest handling, packinghouse operation, distribution and delivery, and marketing. Fresh
produce growing is highly seasonal and risky business. (Farhad, Fruit and Vegetable Sector, Current status and opportunities, 2006)

The variables affecting quality and quantity often are difficult to predict and control. Quality varies due to skill and management of the grower. Export operation depends on sourcing from different farms of varying quality levels. Many types of products remain metabolically active after harvesting and are mostly highly perishable. (Sarananda, 2006) Quality requirements vary depending on markets. Market information requires close monitoring and feedback on a rapid and continuous base.

From farm to table, the fresh produce handling chain is fragmented and involves a large number of small players. Stakeholders consist of farmers, farm contractors, harvesters, collection center or packinghouse operators, packers, and distributors to exporters, importers and consumers. (Bell, 2006) The composition of the chain and how effectively it is managed have very important bearing on quality. Quality of fresh produce cannot be achieved by a single system in a single step of operation, but is the sum of contribution of component sectors/partners along the handling chain. Fresh product production, handling, marketing, as it operates in Thailand, and were exporting firm provided grower-customer interaction is partly manufacturing and partly service, a successful operation needs to take into consideration the functional quality of the produce, technical quality of the people involved and credential and experience of the business operation. Each sector should have its own quality plan decided by what each wants out of the business operation. (Thailand Department of Export Promotion, 2001) The strength of the chain is determined by its weakest link. There is an urgent need to devise a quality assurance system applicable under developing conditions of fresh produce in order to manage the chain effectively and to improve competitive strength of the business firm and the industry as a whole.

Total quality management has to take into consideration the inherent characteristics, features and functions of the product. It operates under a planned quality management system in response to the market-driven requirements and value
Implementation of the quality system is influenced by the changing technical, social and economic conditions against a background of broad trade politics and marketing policies (The Thai Research Fund, 2002)

2.6.1 Successful cases in fresh fruits and vegetable business

Some successful cases of fruits and vegetables industry are briefly discussed in here. Some case studies are old and elaborated in horticultural marketing resource and training manual.

These case studies show how farmers in developing world have improved marketing and thereby increased their income. In each case study, important points are also elaborated. These case studies are not necessarily to be adopted, but it is important to study the techniques and skills used and how farmers adapted their production and distribution to meet the needs of their customers. (Food and Agriculture Organization of United Nations, 1989)

2.6.1.1 Sri Lanka Floriculture Export Industry

There is a growing demand for cut flower in almost all countries of the world, especially the develop markets of Europe. Netherlands is the largest exporter while Germany is the largest importer of cut flowers in the world. Sri Lanka’s floriculture industry is buoyant and expanding. (Farhad, Market Opportunities for Agri Products, 2006) The inputs of technology and scientific cultivation farming have made floriculture production controlled, predictable and commercially viable. Apart from technological inputs and an educated manpower, Sri Lanka’s main advantage is its tropical climate, with uniform temperature throughout the year because of its proximity to the equator.

The industry is capital intensive and sophisticated. Almost all the farmers have in-house Tissue Culture lab, Cooling Houses, Packing facilities, Pest Control Unit, Cooling and Green Houses facilities. All the items are imported either from Holland or France. The farms are structured on scientific line; each plantation site is
specializing in different varieties of plants at different stages of growth. The production is streamlined in such a manner that most exporters manage to ship out one container every week. Poor quality cut flowers are sold in the local market. The growers have their own refrigerated lorries to transport the produce to Colombo airport. (Farhad, Market Opportunities for Agri Products, 2006)

They have highly qualified staff and farm employee, i.e. professional agronomist, tissue culturists, agricultural engineers, entomologist, pesticide expert and many other professionals. The skilled labor is also freely available. They also have strong research and development section.

2.6.1.2 Marketing of Apricot in Hunza, Northern Pakistan

The high-altitude areas of Pakistan, such as Hunza, were brought into contact with the major markets in the Punjab plain and world by the building of the Karakoram Highway. The major crop grown in the area is apricots and some other fruits. Only small volumes were sold in the markets; farmers only grew crops for their own need. They have no experience and expertise of marketing and completely unaware of prices, transport cost, packing and grading required by the major markets. (Department of Postharvest Science of Fresh Produces in India, 2006)

The Aga Khan Rural Support Program (AKRSP) introduced the participatory rural development in the area. The group marketing was introduced with this understanding that they would have to work together if they were to succeed. The sun-dried apricot without any chemical residual got high export demand. The traders and commission agents were encouraged to assist and provide training. They were prepared to do as it was in their own best interest. They recognized that new sources of supply would benefit their businesses. (Department of Postharvest Science of Fresh Produces in India, 2006)
2.6.1.3 Hydroponics’ Sweet Chili Production, Garut, W. Java, Indonesia

Chili is an important and essential of daily Indonesian diet. It is mainly consumed in the fresh semi crushed form, locally known as “Sambals” (RIV, 1996). It is also an important commercial crop in Indonesia, grown year round, mainly by small peasants, both in high and lowlands rain fed as well as in irrigated areas. The sweet chilies are cultivated in the cold mountainous area of Garut, West Java under hydroponics’ system under plastic sheds. The farmers have been organized, and multinational company provides them the technical and financial support and also ensures the purchase of their product. The high-grade sweet chilies are exported to different countries while the lower grade-chilies are locally supplied in super markets in plastic packing. The farmers are cultivating hybrid varieties and earning substantial profit (Sovan, 2007).

2.7 EMERGING EXPORT MARKET OF FRUITS AND VEGETABLE MARKET

With the advent of WTO and globalization, agriculture in general and fruit and vegetable in particular have been expanded and become very competitive. The developing countries have experienced comparatively very rapid growth in their exports of fruits and vegetables. The trade has spread from an initial base of traditional tropical fruits, i.e. bananas and pineapples to a broader array of fruits and vegetables. Growing consumer interest in healthy living and demand for fresh produce variety, freshness, and year-round availability has stimulated this trade.

The opportunities and challenges encountered today by international marketers are bigger and more diverse than ever before. New consumers are springing forth in emerging markets from Eastern Europe, the Commonwealth of Independent States, China and other Asian countries, India, Latin America, etc. Some of these emerging markets have little purchasing power today but hold the promise of huge markets in the future. In the more mature markets of industrialized world, opportunities and
challenge also abound as consumer’s tastes become more sophisticated and complex. Increases in their purchasing power provide them with the means of satisfying new demands (Cateora, 1997).

The EU and USA are adopting measures to strengthen phytosanitary regulations to ensure improved food-safety management and tractability of food products from farm to table. This has led to concerns that developing countries recent progress in fresh produce products in EU countries is endangered. The average rate of growth in EU import volume of selected fresh vegetable, 1999-2000 (%) is presented at Table 2.4

Table 2.4: Average Rate of Growth in EU Import Volume of Selected Fresh Vegetable, 1999-2000 (%)

<table>
<thead>
<tr>
<th>Import Item</th>
<th>Total EU Imports (%)</th>
<th>EU Import From Third World Countries (%)</th>
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<tr>
<td>Tomato</td>
<td>3.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Carrots</td>
<td>2.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Potatoes</td>
<td>1.0</td>
<td>-1.9</td>
</tr>
<tr>
<td>Onions</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Green Peas</td>
<td>9.8</td>
<td>11.1</td>
</tr>
<tr>
<td>Green Chilies/Peppers</td>
<td>5.4</td>
<td>7.2</td>
</tr>
<tr>
<td>Green Beans</td>
<td>5.2</td>
<td>8.6</td>
</tr>
<tr>
<td>Minor’ Vegetables</td>
<td>2.5</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Source: (CBI, 2009)

The EU market for fresh fruit in 2007 measured 46 million tonnes. The FAOSTAT production data does not distinguish between fruit destined for fresh consumption or processing (citrus fruit or apples for juice, canned stone fruit). According to Freshfel, 90% of EU apple production and 70% of EU citrus production is destined for fresh consumption. (Freshfel, 2008)

Between 2002 and 2007, consumption of fruit fluctuated between 46 and 51 million tonnes. Overall, EU fruit consumption decreased by 3.3% in volume, an average annual change of -0.7%. Unfortunately, aggregate data on value
change of consumption are not available. In view of increasing prices and data from individual countries, it can be assumed that the value of consumption (relative to volume) in this period has increased. In 2007, Gross Domestic Product of the 27 EU countries grew by 2.9%. Italy and Spain are the largest consumers, together already accounting for one-third of the EU market. The imports of Italy and Spain are relatively small compared to their domestic production. In both countries, a large part of the demand is met by domestic produce. Germany, France and the UK also have large markets (together 30% of EU consumption). (European Fresh Produce Association, 2007)

France is both a major consumer and producer. French imports are higher than the aforementioned countries while its exports are also substantial. Germany and the UK have high levels of consumption and limited domestic production and therefore, rely heavily on imports. Belgium and the Netherlands have average market sizes, but are important fruit traders (re-exporters). The consumption market in many of the large EU countries is decreasing. Germany and Poland experienced the largest decrease.

Table 2.5: Consumption of fresh fruit by EU member countries, 2002 - 2007, volume in thousand tonnes

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>8632</td>
<td>7699</td>
<td>9773</td>
<td>9541</td>
<td>9583</td>
<td>9298</td>
</tr>
<tr>
<td>Spain</td>
<td>6996</td>
<td>7759</td>
<td>7233</td>
<td>7089</td>
<td>6702</td>
<td>6759</td>
</tr>
<tr>
<td>Germany</td>
<td>6997</td>
<td>5962</td>
<td>5897</td>
<td>5706</td>
<td>5694</td>
<td>5249</td>
</tr>
<tr>
<td>France</td>
<td>5048</td>
<td>4430</td>
<td>5212</td>
<td>4752</td>
<td>4579</td>
<td>4864</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>3221</td>
<td>3179</td>
<td>3376</td>
<td>3543</td>
<td>3674</td>
<td>3730</td>
</tr>
<tr>
<td>Greece</td>
<td>3177</td>
<td>2537</td>
<td>2977</td>
<td>3055</td>
<td>3060</td>
<td>2931</td>
</tr>
<tr>
<td>Poland</td>
<td>3010</td>
<td>3291</td>
<td>3886</td>
<td>3284</td>
<td>3518</td>
<td>2231</td>
</tr>
<tr>
<td>Romania</td>
<td>1810</td>
<td>3094</td>
<td>2870</td>
<td>2783</td>
<td>2572</td>
<td>1843</td>
</tr>
</tbody>
</table>

*Source:* (CBI, 2009)
fresh fruit consisted mainly of apples (21% of apparent consumption in 2007), oranges (15%), bananas (11%), peaches and nectarines (9%), watermelons (6%), mandarins (6%) and pears (6%). Consumption of all these fruits increased between 2002 and 2007 except for apples and pears. Bananas are the most consumed exotic fruit in the EU. Pineapples accounted for 1.5% of consumption and mangos for 0.4%. Though their shares are small, consumption of these exotics is growing vigorously. Consumption of pineapples more than doubled between 2002 and 2007 and consumption of mangos increased 50%. (CBI, 2009)

2.7.1 Vegetables
In 2007, the EU market for fresh vegetables (industrial and consumer demand) totaled 59 million tonnes (Table 2.4) In contrast to fresh fruit; the consumption of fresh vegetables is almost equal to production. This means that the EU relies less on imports of fresh vegetables. Between 2002 and 2007, total EU consumption decreased by 5.5% in volume, an average annual change of -1.1%. (CBI, 2009)

In the old member states of the EU, consumption volumes are variable. Italy and Spain are the largest consumers (and producers) of fresh vegetables and have the highest consumption per head. The UK is the only (major) consumer with an increasing vegetable market though the consumption per head is lower than the EU average (75 kgs per head in the UK and 120 kg per head in the EU). Germany's market volume is in decline though the value is increasing. In the new member states, the situation is also diversified. Especially in the Eastern EU countries, consumption patterns are rapidly changing towards a Western European style. The market in Poland has been fluctuating over the last five years but has good growth potential due to its population size of 38 million people and a growing consumption per capita.
Table 2.6: Consumption of fresh vegetables by EU member countries in 2002-2007, Volume in thousand tonnes

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>12667</td>
<td>13800</td>
<td>14954</td>
<td>14516</td>
<td>13343</td>
<td>12237</td>
</tr>
<tr>
<td>Spain</td>
<td>7638</td>
<td>7673</td>
<td>8151</td>
<td>8401</td>
<td>7320</td>
<td>7905</td>
</tr>
<tr>
<td>France</td>
<td>8986</td>
<td>8803</td>
<td>8996</td>
<td>8554</td>
<td>5941</td>
<td>6079</td>
</tr>
<tr>
<td>Poland</td>
<td>4753</td>
<td>5112</td>
<td>5363</td>
<td>5090</td>
<td>4880</td>
<td>5183</td>
</tr>
<tr>
<td>Germany</td>
<td>6206</td>
<td>6165</td>
<td>6415</td>
<td>5926</td>
<td>5668</td>
<td>4872</td>
</tr>
<tr>
<td>UK</td>
<td>3988</td>
<td>4016</td>
<td>4128</td>
<td>4212</td>
<td>4689</td>
<td>4596</td>
</tr>
</tbody>
</table>

*Source:* (CBI, 2009)

When we analyse Maldives market, the reasons for the drop in imports of vegetables from Sri Lanka in 2008 over 2007, the following could be assumed:

When we consider the eight major types of vegetables (Tomato, Onion, Lettuce, Potato, Chilli (fresh), Cabbage, Carrot and Cucumber) imported into Maldives from Sri Lanka, Sri Lanka's Chilli (fresh) and Carrot has lost a major portion of its share to India and Australia respectively in 2008 over 2007. (Sri Lanka Export Development Board, 2009)

In the case of Chilli Sri Lanka had a share of 35% in 2007, and it has been reduced to 18% in 2008. On the other hand, India has increased its share from 64% in 2007 to 80% in 2008. Further, the average of Sri Lankan price per kg of Chilli (fresh) has been less than that of average Indian price.

It is evident to the study that the price factor has not been the only criteria, which decides the import share of fruits and vegetables in Maldives. For example, Sri Lanka's average price per kg of Melon (excluding Watermelon) has been less than that of Australia and the UAE. However, Australia and the UAE have a higher import share for Melon (excluding Watermelon) in Maldives. On the other hand, the average price per kg of Sri Lanka's Mango has been higher than that of India.
However, Sri Lanka has a higher import share than India. It should also be noted that in the case of Mango, different varieties have been imported into Maldives, and it is difficult to arrive at a conclusion based on the average price. (Farhad, Market Opportunities for Agri Products, 2006) Further, the average price per kg of tomato offered by Sri Lanka has been more than double the average price offered by India. However, Sri Lanka has more than double the percentage share of India.

In the case of Melon (excluding Watermelon) Sri Lanka has a price advantage over Australia and the UAE. Therefore, it could be assumed that with regular supply of Melon Sri Lanka should be able to increase the percentage share of imports. Further, the average price per kg of Strawberry offered by Sri Lanka in 2008 has been very much less than that of Australia. Although the annual import value of Strawberry has not been very significant Sri Lanka could increase its percentage share provided if there is a regular supply. It should be noted that the quality of the fruit also plays a vital role in marketing since Sri Lanka has to compete with Australia. From the above analysis, it could be assumed that the percentage share of imports of fruits and vegetables into Maldives depends on the price, quality and the country of origin. (Sri Lanka Export Development Board, 2009)

2.8. MARKETING CHAIN OF FRUITS AND VEGETABLES IN SRI LANKA

When considering the marketing channel of fruits and vegetables, a change is observed during the recent period. Twenty years ago, fruits and vegetables from all over the country were mainly supplied to Colombo wholesale market (Colombo manning market), and they were distributed throughout the country from this wholesale market. Therefore, the Colombo wholesale market played an important role in vegetable marketing. However this situation has changed with the development of regional wholesale markets. At present, the importance of regional wholesale markets is growing in fruit and vegetable marketing and a considerable portion of (Rupasena, 1999) fruits and vegetables is brought to regional wholesale markets and from where the vegetables are directly supplied to consuming areas.
2.8.1 Different Categories of Marketing Chain

At present, many people are involved in the marketing chain of fruits and vegetables. These fruits and vegetables are marketed as fresh and processed products. The fresh fruits and vegetables produced at a farm level are brought into the market through a chain of activities. (Rupasena, 1999) Therefore, this chain of events involves many people, and they can be categorized into different categories according to the activities they are involved with. The categories are shown below.

1. Grower
2. Collector
3. Transporter
4. Wholesaler
5. Retailer
6. Exporter

2.8.1.1 Grower

Most of the time, the grower harvests the produce at the farm by himself. He sometimes sells his produce to the collector who comes to his farm, or he transports the produce to the collector’s place. Farmer sometimes takes his harvest straight to the wholesale market or to the retail shops. He might even sell his produce to the consumer directly at the farm or in small stalls placed near the farm, his house or at roadsides. He sometimes takes his produce to small fairs in the village and in towns where the consumers buy the produce. In these cases, the farmer acts as the collector, transporter and the retailer.

2.8.1.2 Collector

Collector is the one who collects the fresh produce from the grower. (Rupasena, 1999) He either goes to the farm himself to collect the produce or the farmer brings it to him. In some instances, especially of fruits like mango, the collector might do the harvesting himself and not the grower. The usual procedure in this case is that collector offers a price for the whole tree. In case of vegetables, the farmer harvests
the crop and brings it to the collecting place of the collector. This collected produce will then be transported to the wholesale market. Even the collector might do this. Or the collector gives what is collected to the transporter. Usually, the collector does both these jobs by using a hired vehicle.

2.8.1.3 Transporter
This can be any body; the grower, collector, wholesaler, retailer or a separate person who hires vehicles for such transportation and earns an income out of it. The transporter takes the fruits and vegetables to the wholesale market or the retail market. For this purpose, he uses lorries, trucks, tractors, bicycles, buses and vans, etc.

2.8.1.4 Wholesaler
Wholesaler is a person involved in selling large quantities of commodities (Rupasena, 1999). The collector or the transporter brings the fruits and vegetables to the wholesale market. From this point, the distribution of commodities takes place. The wholesaler will only provide a place to the seller and the buyer to discuss the prices. The wholesaler will earn a commission out of the sales.

2.8.1.5 Retailer
Fruits and vegetables can be drawn from various stages of this marketing chain to the retailer. It can be directly from the farm, from a collector or from the wholesale market. The retailer can be any one; a farmer, collector or a shop owner, etc. This retail market is present in different forms. It can be as a separate retail outlet, a shop or a gathering of retailers. This gathering of retailers can be observed in a fair or “Pola” which is held periodically in once per week, etc. At the retail point the produce is sorted manually and displayed to the consumers.
2.8.1.6 Exporter
To assure continuous supply and quality, the export market prefers to operate in a separate chain with identified growers. A separate collector collects the produce and transports to the required place for preparation before exporting. In some instances, the exporter comes to the farm and collects what is required. The grower stands a better chance in receiving a high price than in the local market.

2.8.1.7 Consumer
All the fruits and vegetables harvested has a common end point; the consumer. This consumer can be a processor, who manufactures processed fruits and vegetables, which again at the end comes to the consumer level. The consumer looks for high quality produce or products for an affordable price. Recently concern for the quality of fruits and vegetables increased than in the past. This trend created a need to apply new technologies in the marketing system to supply better quality products. Few big companies are dominating the processing industry in Sri Lanka. They have their own farms to obtain the fresh produce they need. They also involve themselves in the marketing chain, buying directly from the farmer, collector or at the point of wholesalers. Then the fresh produce is transported to the processing plant and at the end; the processed product is distributed to the retailers.

Therefore, the fruits and vegetables produced on farmlands are sold or marketed at different stages, i.e. at the farm, at the point of collector, wholesaler, and retailer and at the exporter level.

Figure 2.1: Marketing Chain of Fresh Fruits and Vegetables
In Sri Lanka, vegetables and fruits are highly seasonal. Therefore, the price, supply and demand normally fluctuates throughout the year. Apart from that all the people involved above have an effect on the quality, price and demand of fruits and vegetables. They participate in order to obtain a better market value, because even if they harvest a very high quality produce, after harvesting, the quality and the quantity of this fresh products decrease every day due to poor postharvest practices and inadequate packaging. This requires sorting and removal of spoiled and badly damaged fruits and vegetables. This widens the price gap between the grower and the consumer.

2.8.2 Supply- Chain Management Concept

Supply-chain management is being increasingly stressed as a holistic solution to create a win-win. Supply chain is defined as an intricate network of suppliers, distributors and customers who share carefully managed information about demand, decisions and performance and who recognize that success for one part of the supply chain means success for all. The current theories of the supply chain suggest that successful firms recognize the limitations of the adversarial model of exchange and instead work with other firms by engaging in cooperative long-term partnership that helps to improve the efficiency of the supply chain as a whole for the mutual benefit of all parties involved. Successful firms therefore, realize that the real competition is not firms against firms but supply chain against the supply chain. Therefore the focus of supply-chain management is upon the management of relationships so as to bring a more profitable outcome for all parties in the chain. Situation for the team as a whole rather than trying to exploit members within the channel. (Ravichandren, Aijan, Sivakumar, Moghana, & Lavanya, 2003) Perhaps the biggest change we noticed in the method of marketing fruits and vegetables in the region has been the change from, essentially, an ex-farm basis to a DIS or delivery into Store basis.

With ex-farm selling the producer basically sets the price for his product at the farm gate. The buyer is responsible for all the costs associated with picking up the product and taking it to the warehouse/shop/home. A comparable variation is with
exports where the price is set at the point of export, be that airport, seaport, or land border crossing. Again, the buyer is responsible for all costs associated with moving the product to the point of where it can be used by the buyer (Ravichandren, Aijan, Sivakumar, Moghana, & Lavanya, 2003)

2.8.3 Challenges in enterprise global competitiveness

At the business level, enterprises faced several challenges in their businesses (see Figure 2.2). Awareness on these challenges, gathering information on them, identifying the strengths and weaknesses, managing and enhancing productivity will ultimately strengthen the enterprises global competitiveness.

![Figure 2.2: Challenges in Enterprise Global Competitiveness](image)

Under the prevailing scenarios, only those will succeed who will be capable of adopting constant change and adjusting to new challenges. This can only be achieved with the help of new knowledge, skill and technologies. Only those products will be marketed, which are low priced with good quality.
There is a large scope for the export of fruits and vegetables from underdeveloped countries to developed countries due to reduction of subsidies in these countries and comparative advantages of agricultural production in the developing countries. There will be competition within the developing countries. Only those countries can harness the benefit, which have affective and efficient. In this connection, we need to increase productivity and reduce a cost of production.

2.9 CONSTRAINTS AND MEASURES TAKEN AND TO BE TAKEN FOR DEVELOPMENT OF MARKETING SYSTEMS IN SRI LANKA

Sri Lanka being a poor and developing country is facing many problems in the agriculture system, especially in marketing of the agricultural produce. The majority of farmers in Sri Lanka are poor and ignorant. The high tech practices are less available to the farmers or cannot afford. Therefore, they are still using improper techniques in cultivation as well as in postharvest practices, which leads to a low profit and a low market value for their produce. Therefore, there is a need to overcome the prevailing constraints/difficulties. Some of the problems faced are discussed below. Some measures taken and should be taken to overcome these problems are also discussed with them.

2.9.1 Varieties and Cultivars

Much research has been done and is continuously being done on finding suitable varieties to grow. Here, the yield, pest resistance, consumer acceptance, and many other favorable characters are considered. The problem with the varieties is that some cannot compete in terms of qualities required in the export market. Many hybrid varieties with superior qualities are present in the market today, for example, Red Lady papaw varieties, “Thilina” tomato variety and “Delhi hot” chili variety. These have favorable characters, for example; traditional papaw varieties have comparatively small fruits, which weigh for about 500g - 01kg. And its soft peel makes it more susceptible to mechanical damage. The hybrid variety called “Red Lady” has much bigger fruits than the traditional varieties. One fruit can weigh up to about 3kg. And the peel is harder and less susceptible to mechanical damage. The
appearance of these Red Lady fruits is highly appealing to the consumer. But sometimes the consumers complain that the fruit is too big for their small families. But the major problem related to such hybrid varieties is the high price of the planting material (e.g. 01kg seeds of red lady is over Rs. 1000 / US $ 10). Therefore, continuous research is going on in Sri Lankan research institutions to develop varieties with suitable qualities and, which are affordable. “Rathna” papaw variety, MI2 Chili varieties are such developed varieties (Farhad, Market Opportunities for Agri Products, 2006).

2.9.2 Seasonality of Crops

Most fruits and vegetables are seasonal and prices fluctuate drastically. There is season and off-season. In the season, where production is high the price reduces markedly and in the off-season, the price goes up. This becomes a problem, especially in the export market, where a continuous supply is needed. Therefore, some means to give a continuous supply should be established. For example, high tech cultivation practices capable of giving a continuous production should be developed or else storage of fruits and vegetables should be done until the next harvest comes. A low-cost cooling chamber for storing vegetables has been developed by the Institute of Post Harvest Technology. The lime storage technique also has been developed by the same institute and by the Industrial Technology Institute in Sri Lanka.

2.9.3 Land Availability for Cultivation of Crops

Sri Lanka is a small island with limited land availability. Every day arable lands are being used for residential purposes. Therefore, the production reduces and the prices increase. Therefore, suitable techniques for efficient land use should be developed. For example, use of hydroponics and Polly tunnels are being introduced to overcome this problem. Then by practicing drip irrigation like techniques, the lands with less supply of water can be cultivated.
2.9.4 High Cost of Production

High costs of planting materials, labour and of high tech practices have increased the cost of production drastically. This is accompanied by low productivity of the available land. By increasing the productivity, cost of production per unit can be decreased. Further excessive use of chemicals in cultivation is a common practice in Sri Lanka. This has increased the cost of production and thereby the price of the commodity. But, growing awareness and demand for organic fruits and vegetables are present in the market today. This gives a better price and income to the farmer and healthy produce to the consumer.

2.9.5 Postharvest Losses

The major constraint in fruit and vegetable sector in Sri Lanka is postharvest losses. These losses in case of fruits and vegetables account for 30 - 40% of the production, which is around Rs.13 billion annually. In minimizing this loss all the people involved in the market chain should participate. Proper postharvest techniques should be introduced and be adopted by the relevant persons. These techniques can be used at any level from the point of harvesting up to consumption. Some of the measures to be taken are listed below.

Harvesting

Harvesting should be done at correct maturity stage and using proper harvesting equipments. It should be done in mornings or evenings. In case of mangoes, the fruits should be harvested in between 10 am and 3 pm to reduce the latex secretion. Harvesting at correct maturity gives better marketing value and minimizes the postharvest loss. Studies on correct maturities are ongoing and for some crops they are completed. Harvesting equipments are also designed and are available at a low price.
Sorting and grading

This too has to be done after harvesting. This can be done according to the size, variety, color, maturity, presence of pests and diseases, etc. This will minimize the physical damages and spread of pest and diseases, eventually giving a high profit and market value. This will facilitate the marketing process. In Sri Lanka sorting and grading of fruits, to some extent is being practiced but very less in vegetables except at a super market level. The normal sorting is done manually, which is time consuming. Sorting and grading is not done effectively due to unavailability of proper sorting and grading devices or grading houses and lack of knowledge and less interest. Research on development of grading mechanisms is being conducted at the moment in the Institute of Post Harvest Technology.

Pre treatments and prevention of postharvest diseases

Latex secretion is causing many problems in the fruit industry in Sri Lanka, reducing the quality. Therefore, pretreatments and washing should be done after harvesting but is not practiced. Institute of Post Harvest Technology has developed pretreatments to minimize the stem end rot in mango, which is a major problem in Sri Lanka when marketing fresh mango.

Packaging system and transportation

One of the major constraints in fruit and vegetable marketing system in Sri Lanka is use of improper packaging materials in transporting. At present, Polly sack bags, wooden and cardboard boxes are used. These cause considerable damage due to over stacking, excessive packing into one bag, and less rigidity of the packaging material. Therefore, the quality of such transported fruits and vegetables is poor leading to low price. According to the recent studies, plastic crates have proven to be the most suitable out of the available packaging materials in Sri Lanka. According to the studies, the postharvest loss can be minimized up to about 5%, which is around 25%
in transportation. However, still the use of plastic crates is very least. This is mainly due to lack of knowledge and high price of plastic crates. Even when fruits and vegetables are transported by crates, the price received for these and for the ones transported in Polly sack bags has no considerable difference. Therefore, people are not willing to use these crates. At present, mostly super markets and the export markets are offering higher prices when using plastic crates. To overcome this problem, the Institute of Post Harvest Technology of Sri Lanka established a “fresh chain” from Keppetipola, which is an area of high fruit and vegetable production to Manning Market, which is the main wholesale market in Sri Lanka. Here, farmers, collectors, transporters and wholesalers all participate in this fresh chain. The Institute gave one crate free for each crate a person buy. This concept was fruitful in popularizing the use of crates. The price increased markedly when transported in plastic crates.

2.9.6 Wholesale and Retail Markets

The infrastructure facilities present in these markets, especially of wholesale markets are poor in Sri Lanka and what is found in these markets are of low quality. Heaps of wasted fruits and vegetables can be found near these markets. At the retailer point, the highest loss can be found because the damages exert a cumulative effect. Proper infrastructure facilities should be ensured. The Sri Lankan government has already developed some of these wholesale markets with proper buildings and spacing, but still in some places this space is not enough. With the low quality of these commodities, the export market cannot be accessed. The cost of production is high in Sri Lanka due to excessive use of chemicals and postharvest losses. With seasonality of crops, continuous supply is also a problem. Information on the export market is not freely accessible. Therefore, such systems should be developed. In Sri Lanka, the Export Development Board is giving this information at present.
2.9.7 Competition with Imported Fruits

The Sri Lankan market is loaded with apples, oranges, grapes and other imported fruits, but not in the case of vegetables. These fruits are available at low prices, have been high keeping quality and appealing to the consumer than the locally produced. (Sri Lanka Export Development Board, 2005) For example, the local oranges cannot compete with the imported oranges, because the price is comparatively low. The imported grape varieties also dominated the local market with the civil war in Sri Lanka. But with the cease-fire pact, local grape varieties are now available in the market at competitive prices. Further subsidies were given by the government to increase the local production. Improvement of local varieties and reduction of production cost should be done to facilitate the competition with the foreign fruits.

2.9.8 Quality Control

e. The acquisition of ISO, HACCP and other standards is expensive for local exporters of raw and processed fruits and vegetables. Besides, the agro-industrial firms do not have adequate awareness of importance of food hygiene standards and operate outside the framework of formal food hygiene control. This weakens the ability of these enterprises to penetrate industrialized markets where quality controls and food safety measures are strictly enforced.

2.9.9 Testing and Certification Services

Many countries strictly enforce health and quality standards on imported food items. Therefore, the local exporters have to do various inspections, testing and certification of their export commodities. However, most of these services are not available within Sri Lanka. Therefore, the exporters depend on more expensive foreign sources for these services. The present laboratories and testing facilities are inadequate for the increasingly important role required to maintain a high export and domestic standard. It lacks of trained staff for inspection, sampling, testing and
inadequate investment in laboratories aggravate the difficulty of sampling and testing products from various parts of the country. But still, the Sri Lanka Standards Institution, which is the government body dealing with quality standards and control aspects is struggling to provide as much support as it can.

2.9.10 Lack of Market Intelligence and Information System

The exporters need much information on local supply situation, prices, and price forecasting, inter-national prices, international supply, demand characteristics. Moreover, export market trends should be studied to facilitate timely and suitable decision-making on market strategy. The market information service is mainly provided by Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI) in Sri Lanka. However, this service is limited to provision of wholesale and retail prices of selected agricultural commodities of selected markets disseminated through electronic media. However, these services should be effectively provided to improve the competitiveness of agricultural commodities in the export market.

2.9.11 Processed Fruits and Vegetables

In Sri Lanka, fresh fruits and vegetables are freely available. Although there is a market for fruit based products like jam, cordial and other drinks, etc., vegetable-based products such as dehydrated or minimally processed have a very low market. As the sanitation and quality control aspects are costly, other than the prominent manufacturers, most manufacturers are unable to adopt and are ignorant (for example, ISO standards, etc.). But in Sri Lanka, the Sri Lankan Standards Institute, which is a government institution, offers such quality regulations. In the local market, the market share is divided among few big companies, and small-scale manufacturers cannot stand the competition. With the increase in the cost of equipment and machinery used in these processes, the price of the product also increases. Therefore, it is sometimes much easier to import rather than manufacture.
it locally. Further with high production cost and low quality, the access to the export market is limited.

2.10 SUMMARY

It is apparent that positive growth can be seen in both fruit and vegetable export revenue when considering the statistics of year 1999 to 2008. In year 1999 export revenue from fruit was Rs. 437 million and it was escalated to RS. 1508 million in year 2008. Same way export revenue from vegetable was Rs. 250 million and Rs. 2717 million in year 2008. This has shown the growth of Rs. 1071 million in fruit and Rs. 2467 million vegetable for the time period of 8 years which deduce that gross average growth of 17.88% per year in fruit. And average growth of 38.66% per year in vegetable.

Between years 1999 to 2008, Sri Lankan vegetable and fruit export made the volume of 7361 M. ton kg and 6193 M. ton Kg for fruits and vegetables in 1999. And in year 2008 it increased up to 14415 Kg tons and 19398 kg tons for fruit and vegetable respectively.

Therefore in years 1999 to 2008 Sri Lanka exported fresh fruit growth at the rate of 14.58% and exported fresh vegetable market was developed on the rate of 17.06% for volume.

With modern economic structure urbanization has become inevitable outcome. Throughout the world, people are moving from rural areas to urban suburbs. Another reason is the population growth of the globe. With this is population growth another major outcome is the age levels in world populations. (More adult populations in the world) Due these reasons mentioned, fresh food requirement is growing on daily basis hence the fresh food export of Sri Lanka.

Another analysis shows though the total imports of the fresh food to the EU fluctuate frequently year by year, exports of the fresh food from Sri Lanka have been increased gradually. This shows that fluctuation of world fresh food requirement has not affected the growth of fresh food export of Sri Lanka.
When considering about the issues and constraints, main reason is that majority of the farmers are in low economical state to continue with proper pre planned harvesting schedule. Farmers are engaged in the farming with the target of covering their daily family requirements.

Another constraint is the natural reason, which is that certain crops can only be harvested in the proper season. Same way Sri Lankan filed has low yield rate. (Low productivity) hence the production cost would be high by the farmers end. Same way high quality seeds are much expensive, so farmers are tended to use low quality seeds which contributes to low quality harvests. And loss of 30-40% wastage in post harvest is another problem which immediate solution is needed.