CHAIN MANAGEMENT AND MARKETING PERFORMANCE OF THE BANANA INDUSTRY IN ERITREA

by

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ABSTRACT

The current marketing of agricultural products in general, and of bananas in particular, poses special problems for Eritrean farmers. Poor climatic conditions coupled with crude and inefficient agricultural technologies render agricultural output sub-optimal. The major production problems include shortage of capital and scarcity of land; shortage of farming materials; spoilage of bananas during harvesting due to inappropriate harvesting techniques and facilities and lack of technical know how. In addition, the main marketing problems comprise transport problems to stores; general storage problems; lack of information and spoilage during transport.

Taking the above into account it should be noted that current trends towards the increased globalization of markets, trade liberalization, advances in information technology, consumer preferences and improved logistics means that the competitiveness of fruit industries in various regions and countries, as affected by the performance of their supply chains, is becoming increasingly important and will be even more important in the future.

Cognisance should also be taken of the fact that much confusion exists regarding the exact meaning of the term competitiveness. Comparative advantage and competitiveness are related, but are often mistakenly exchanged for one another. Comparative advantage explains how trade benefits nations through more efficient use of their resource base when trade is totally unrestricted. Competitive advantage defines trade patterns as they exist in the real world, including all the barriers to free trade ignored by comparative advantage (Worley, 1996). Vitally

important is to take cognizance of the fact that the establishment of a competitive supply chain is a prerequisite for an industry's competitiveness and success. Based on this analysis, this study proposes what should be done to achieve a workable SCM for the banana industry in Eritrea. In its broader sense, the proposed structure of the SCM involves the introduction of horizontal strategic alliances between existing banana producers and the marketing group and a vertical relationship along the supply chain.

Given that bananas comprise a considerable portion of the international trade makes it significant to this study. Bananas are also symbolic of the wide range of injustices present in international trade today. The Lomé Convention, which placed certain Latin American banana exporting countries at a disadvantage, was the root cause of trade disputes, and the eventual replacement of this Convention will have an impact on the future banana export prospects of ACP countries. Eritrean producers, like those of other ACP countries, therefore have little time to adjust and become competitive against "dollar" bananas on the European market, which at this point enjoy a production cost and quality advantage.

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INTRODUCTION

1.1 INTRODUCTION

Banana is the fourth most important staple crop in the world, and is critical for food security in many tropical countries. World banana production amounts to some 55 million tons per year, concentrated in Africa, Asia, the Caribbean and Latin America. More than 85 countries produce bananas and plantains, but for at least 15 Latin American and Caribbean producer countries, the Cavendish variety of banana is a crucial source of export income. Several million people depend on the banana trade for their livelihood. Only about 20 per cent of the 55 million tons of bananas produced each year enter world trade; in fact Brazil and India, the two biggest banana-producing countries, are hardly involved in the international banana trade at all (Bananalink, 2003).

In Eritrea, banana is one of the cash crops that had been grown for domestic and foreign markets. After 1979 it decreased steadily and, finally, most producing farms ceased operations because of drought, the worsening political situation and the progress of the armed struggle for liberation (Goitom, 1997). After liberation, circumstances changed a great deal and an extensive revitalization program for the farms has been instituted by the Ministry of Agriculture (MOA). As a result production and consumption has increased rapidly.

Nonetheless, the current marketing of agricultural products in general, and of bananas in particular, poses special problems for Eritrean farmers and the existing structure needs reorganization. It is worth mentioning, however, that there are increasing attempts to study the marketing of agricultural products and the findings of the MOA's marketing group and some researchers shows promise.

1.2 BACKGROUND

Eritrea lies in the horn of Africa, bordered by the Sudan, Ethiopia, Djibouti and the Red Sea. The country consists of arid and semi arid lands made up of rugged

mountains, plateau and hot and dry lowlands. The altitude ranges from sea level to more than 3 000 meters. Nearly 85 per cent of the area lies below 1 500 meters; of this about 33 per cent is arid or semi arid with an elevation of less than 600m. The relief is largely rugged with deep valleys and steep slopes (MOA, 1999).

The climate ranges from hot and arid (adjacent to the Red Sea), to temperate sub-humid in isolated micro-catchments within the eastern escarpment of the highlands. Altitude is the major factor determining temperature (MOA, 1999). The climate throughout much of the lowlands of Eritrea is harsh, with high temperatures (up to 48^{o}C) and low rainfall (200 mm or less). The highlands (1 500 m+) are more moderate with temperatures not generally exceeding 35^{o}C and rainfall ranging from 400mm to more than 700mm. About 72 per cent of the country is classified as very hot while not more than 14 per cent is classified as mild or cool with an annual temperature below 21.5^{o}C (MOA, 1999). Total annual rainfall tends to increase from north to south, from less than 200mm at the northern border with the Sudan to more than 700mm in a restricted area on the southern border with Ethiopia. A small area in the eastern escarpment known as the “Green Belt” receives on average more than 900mm annually (MOA, 1999)

The total population numbers about 3.9 million people, of whom approximately 65 per cent live in the highland areas. The Eritrean economy is largely based on agriculture, which employs 80 per cent of the population but currently may contribute as little as 22 percent to the GDP. Eritrean farmers produce staple crops, livestock, fruits and vegetables, primarily for subsistence use. (USDS, 2001; GOE, 1998; MOA, 1999).

Poor climatic conditions coupled with crude and inefficient agricultural technologies render agricultural output sub-optimal. Yields are generally well below potential level (tomatoes 8-9 tons/ha vs. a possible 20-24 tons; onions 7-8 tons/ha vs. a possible 15-20 tons; citrus 7-8 tons/ha vs. a possible 18-20 tons/ha; and bananas 10-14 tons vs. a possible 20 tons), i.e. on average only 40 per cent of the potential (FAO, 1994).

1.3 PROBLEM STATEMENT

An efficient and well-balanced marketing structure is a necessary condition for producers of agricultural products to meet the demands of an increasing

population and transform agriculture from a sector where production is largely for subsistence purposes into a sector that produces marketable surplus. Arnon, (1981) describes developing countries as generally characterized by the inefficiency of their marketing systems; consequently they are faced with a vicious circle: If the farmer does not obtain an economic return from the sale of his surplus production, he will tend to produce at a subsistence level only. On the other hand, a shortage in the supply of a marketable surplus makes the development of an efficient marketing system extremely difficult.

Inefficient marketing of agricultural products is one of the major problems facing Eritrean farmers and the existing structure needs reorganization. The present marketing situation for fruits in general, and bananas in particular, is plagued by inadequate marketing facilities, among which an undeveloped infrastructure, inadequate storage and low efficiency, as exhibited by disorganization. In this regard, Ghebremedhin (1992) noted that few marketing activities in Eritrea have been adequately developed. More specifically, in his research on banana marketing, Goitom (1997) concluded that the banana distribution problem in Eritrea is basically the result of existing weak marketing institutions, poor transportation infrastructure, and poor entrepreneurial capabilities of middlemen. He also noted that the existing marketing channel did not keep track with the increase in the production of banana. Apparently coordination and collaboration between stakeholders in the channel is very loose. In addition, although the importance of marketing research and information is largely recognized as an important factor in the development of agriculture, the reality on the ground reveals that reliable information on this field is inadequate or nonexistent. This is attributable to a shortage of experts in this field, and the previous colonial regimes have hardly worked to bring a solution to the problems that the Eritrean farmers faced.

A study undertaken by the MOA (1998) revealed that commercial agriculture in the mid nineteen seventies had progressed to the extent of satisfying the domestic need as well as exporting to external markets, although peasant agriculture was at a subsistence level. In particular, fruits and vegetables used to be exported to the Middle East and Europe. At present the export markets that Eritrea once had, are non-existent. The same study points out that, during the colonial era, Eritrea exported 80 per cent of its banana crop, whereas the figure has declined to zero. Therefore, creating an outlet and participating in a dynamic international trade pattern will require a huge effort in terms of studying potential

markets and the requirements of qualifying to enter world trade. Quality goods must be produced to restore access to external markets and generate currency (MOA, 1998). It cannot be denied, however, that progress has apparently been made in agricultural development over the past years. As a matter of fact, Eritrea is making a concerted effort to diversify and expand its exports and to penetrate new markets. Efforts are underway to increase exports of agricultural products (e.g. vegetables, fruits, flowers, and livestock), fish and fish products, salt and other marine products and light manufactured goods, and to increase the competitiveness of Eritrean products in the international market. By 1999 these efforts had begun to bear fruit (Eritrea profile, 1999).

1.4 MOTIVATION

The problems stated above clearly indicate that it is timely to undertake a study into the marketing situation of bananas in Eritrea, with the aim of exploring the major bottlenecks existing in Eritrea's agricultural marketing industry at present, and investigating possible outlooks for the future. Current trends towards increased globalization of markets, trade liberalization, advances in information technology, consumer preferences and improved logistics means that the competitiveness of fruit industries in various regions and countries, as affected by the performance of their supply chains, is becoming increasingly important and will be even more important in the future. Contrary to this trend, in Eritrea bananas are distributed and marketed in a traditional way resulting in higher transaction costs and insufficient returns. This being the case, defining the different roles and potential of bananas in the agricultural development process in Eritrea is critical for motivating and targeting investment in research and development activities for the crop and seeking a better way to market bananas. These conditions create the need to think critically about the role of supply chain management (SCM) - its concepts and techniques - can play in enhancing the competitiveness of the banana industry in Eritrea.

1.5 OBJECTIVES

The objectives of the study are:

- To study the present production and marketing situation in the banana industry in Eritrea.

- To investigate world banana trade patterns and its implications to banana marketing in Eritrea.
- To evaluate the role of banana supply chain management as a means to enhance the competitiveness of the banana industry in Eritrea.

1.6 METHODOLOGY

In accordance with the above objectives, this study focuses on the concept of SCM, discussing the theory and its relevance to banana distribution and marketing. In general, the banana supply chain in Eritrea has traditionally been fragmented and structural change is inevitable. As suggested by Collins (1999) SCM principles may provide guidance in enhancing the performance of the banana industry, although the application of SCM has, to date, been almost exclusively limited to established industries.

A SCM analysis of the banana industry, based on the dimensions of supply chain management, will be conducted for the purpose of this study. The objective is to provide a roadmap to achieve operating efficiency and strategic effectiveness in the banana industry by focusing on capabilities and core competencies.

Supply chains are commonly analyzed according to the following dimensions: flows of product, flows of information, flows of money, and the existence of relationships (governance) and incentives (Doyer,2003; Spekman, 1998). This study will adopt this approach to analyze the Eritrean banana industry. An attempt will be made to discuss each role player's involvement and impact in the supply chain by referring to each dimension specifically.

This study will lead to an increased understanding of SCM and the proposed building of partnerships and alliances in the banana business, for both domestic and international orientation. More specifically this study will:

- Enable a clear understanding of SCM.
- Provide international perspectives in SCM.
- Conduct an analysis of the banana business in Eritrea.
- Investigate the implications for each of the partners in the supply chain.

Thus, this study attempts to set out a framework by which supply chain management's role in enhancing the competitiveness of the banana industry can

be evaluated, by drawing on the limited amount of socio-economic research that has been done on the crop. A participatory survey of all the types of marketing agents involved in the marketing chain was conducted. By interviewing all types of marketing agents, it will be easier to follow the marketing process from its origin to its final destination. The result of this study will contribute valuable input to presently incomplete data, with the purpose of finding satisfactory answers for the objectives as stated above.

1.7 OUTLINE OF THE STUDY

The rest of the study will be divided into the following chapters:

Chapter 2: In this chapter a description of the domestic banana marketing system in Eritrea is given.

Chapter 3: Due to the fact that, in general, confusion exists regarding the exact meaning and application of the terms comparative advantage and competitiveness and its relevance to this study this chapter presents a literature review that will properly define these concepts. In addition a short overview of supply chain management is provided to bring it in context with the concept of competitiveness.

Chapter 4: This chapter is devoted to the international performance of bananas. The analysis is partly based on the results obtained from the TradeMap. In addition relevant trade agreements is discussed.

Chapter 5: This chapter is devoted to investigating the pivotal role of supply chain management in enhancing the competitiveness of the banana industry in Eritrea.

Chapter 6: This chapter contains conclusions and recommendations.

CHAPTER 2

ERITREA'S DOMESTIC BANANA MARKET

2.1 INTRODUCTION

The diversity of agro-climatic conditions in Eritrea allows cultivation of almost every fruit and vegetable of both Mediterranean and Tropical type (DARHRD, 1999). Bananas, with higher coverage in hectares than any other fruit crop, is one of the most important fruit crops grown in Eritrea and is harvested virtually all year round.

In the late 1950's bananas were grown for domestic and foreign markets, although current production is only for domestic consumption. This may be attributed, according to Goitom (1997), to the eventual decline of banana production due to drought, the worsening political situation and the progress of the armed struggle for liberation. It may also be due to the substandard quality of bananas produced and an inability to compete with major banana producing countries.

Compared to other fruits, banana has the highest per capita consumption in Eritrea. After liberation in 1991, there was an increase in the number of farmers and the retail price of bananas decreased, resulting in increased consumption.

The purpose of this chapter is to review the banana market in Eritrea. Marketing practices presently used and the main marketing channels functioning in the market are discussed. This chapter also highlights main production and marketing problems.

2.2. PRODUCTION

The major banana growing areas in Eritrea are located along the lower part of the river basin of Anseba, Barka and Mereb-Gash (DARHRD, 1999) and Debub and Semenawi Keyih Bahri (MOA, 1998). According to the latest horticultural production survey conducted in the country (MOA, 1997/1998), 906 ha are under bananas in Eritrea (Table 2.1). Zoba Gash Barka has the largest hectarage under

production, where bananas are grown mainly in Tesseney, Dighe and Akordat Sub-Zobas. These areas have the best natural conditions, climate and availability of water for banana cultivation. In fact, the land potentially available for banana production in Zoba could be as high as 9 390 ha (Goitom, 1997). Nonetheless, specific information pertaining to the exact production potential, most suitable varieties and production systems, pests and diseases, are lacking.

Table 2.1 also shows the bananas yield to be approximately 18 tons per hectare although an earlier study by the FAO (1994) recorded much lower yields. According to FAO (1994), yields of up to 20 tons per hectare can be achieved, which indicates that, on average, banana production has not yet reached its full potential. It is imperative to ask why this potential production has not been realized? The following sections will address this issue.

Table 2.1: Area coverage & production of fruits at national level, 1998.

Fruits	Area (ha)	Yield (ton/ha)
Bananas	906	17.9
Grapefruit	4	10.1
Mangoes	33	8.9
Guavas	171	6
Caste apples	1	5.8
Mandarins	8	5.5
Papayas	113	3
Grape vines	1	3
Oranges	527	1.7
Lemons	38	1.1
Others	3	0.1

Source: MOA, 1997/1998

The production trend of bananas during the previous colonial regimes is shown in Table 2.2. It is clear that the area under banana cultivation and the amount marketed locally and exported increased until 1967 and then declined gradually. Although not shown in Table 2.2, after 1979 the trend continued to decline and eventually most farms ceased production. As mentioned, Goitom (1997) attributes this trend to drought, the worsening political situation at that time and the progress of the armed struggle for liberation. On average, 1927 tons were consumed on the local market, whilst 7708 tons were exported between 1965 and 1974. Although data from 1974 to 1991 is not available, area planted

continued to decrease until independence in 1991. After independence area planted rebounded to 600 ha and continued to increase to around 900 ha. However, the existing production system remains underdeveloped. Farmers still have little knowledge about proper handling of the fruit and other operations. As a result the yield per hectare is below its potential. The same applies to quality. An improvement in the quality of bananas produced and more efficient production systems are essential if Eritrea is to enter the world market (Asghedom and Ghebremeskel, 1999).

Table 2.2: Banana production in Eritrea

Year	Area under production (hectares)	Marketed locally (tons)	Exported (tons)
1965	740	2218	8 874
1966	870	2612	10 448
1967	941	2823	11 292
1968	762	2287	9 148
1969	692	2077	8 307
1970	635	1906	7 625
1971	445	1334	5 338
1972	637	1912	7 647
1973	440	1322	5 289
1974	260	779	3 118
1992	600	9000	NA
1997/1998	906	NA	NA

Source: Goitom (1997).

2.3. CONSUMPTION OF BANANAS

In Eritrea bananas are commonly consumed fresh. Apart from fresh consumption, bananas and its by-products, such as leaves and pseudostem, are seldom utilized for other uses (Asghedom and Ghebremeskel, 1999). Although there is no official statistics pertaining to the per capita consumption of bananas in Eritrea, it is estimated that in Asmara, the capital city of Eritrea, it is about 2 kg/month for about 80 per cent of the population (DARHRD, 1999) and it may be as high as 4,5 kg per capita (Goitom, 1997) for the whole population of Eritrea.

2.4 MARKETING OF BANANAS IN ERITREA

Asghedom and Ghebremeskel (1999) observed that small-scale farmers experience problems in transporting their surplus produce to towns where it can be sold. As cooperative societies are not actively working to assist the working of the open markets in Eritrea, even large-scale farmers experience difficulties in selling their bananas. A farmers' cooperative does exist, but it is not very active and has done little to influence the market situation. This cooperative is engaged in selling bananas to both wholesalers and retailers. However, managerial and organizational problems have always constrained its efficient operation. The marketing system as a whole is traditional and there is no commercially legal system for enforcing contracts.

Middlemen play a major role in providing products and services to final consumers. Goitom (1997) defines the term middleman in the context of the Eritrean banana market as an independent business concern standing between the farmer and the final consumer. Middlemen render services related to the purchase and sale of fruit as it moves from the producer to the consumer. There are four types of middlemen in the Eritrean banana market: agent middlemen, wholesalers, retailers and commission agents. Agent middlemen facilitate the buying and selling of bananas between the farmer and wholesaler. Bananas are sold to retailers with the help of commission agents (brokers) employed by wholesalers. Goitom (1997) describes the Eritrean banana market as having three types of wholesalers: Private wholesalers, fruit export private limited companies and producers' cooperatives. Wholesalers are the main actors in the banana market. Retailers play a major role in providing consumers with bananas at a convenient location and time.

The market has several structural characteristics. So far numerous producers, middlemen, and buyers handle the bananas market. The Eritrean banana market is characterized by role players that are concerned for their own self-interest and pursue exchange agreements that are short-term, opportunistic, limited with regard to information sharing, flexible, and preserving actors' independence. There are not specialized entry barriers in the banana market apart from the existence of ripening facilities of the Eritrean fruit company with a long-term objective to export bananas (Goitom, 1997). Another important factor in the banana market structure is product differentiation, which is yet not employed as a means of competition in the banana market. To date marketing institutions have

not been able to provide customers with product alternatives, nor have customers shown any interest in product varieties.

Advertising and promotion contributes to raising consumers' awareness and could lead to an increase in domestic banana consumption. Currently neither wholesalers nor retailers are active in advertising or promoting bananas. Advertising and promotion of bananas is in a preliminary stage and it will require organized efforts to effect change in this area.

2.5. MARKETING CHANNELS AND MARKETING MARGIN

Currently four well-known marketing channels operate in the Eritrean banana market (Goitom, 1997). The first channel is the farmer-agent-middlemen-retailer-consumer channel. The second marketing channel comprises farmer-wholesaler-retailer-consumer. Farmers rent cars and bring bananas to Asmara, where it is sold to wholesalers. The third and fourth channels involve direct sales by farmers to retailers and consumers, respectively. A producers' cooperative (share company) is engaged in selling bananas to both retailers and wholesalers. These four marketing channels are shown Figure 2.1.

In evaluating the performance of the Eritrean banana market, Goitom (1997) concluded that banana distribution in Eritrea must be improved. He states that the high marketing cost of bananas poses a problem. It results from the high transportation cost, high rate of spoilage and poor ripening facilities. This raises the marketing cost of bananas and ultimately reduces the net profit realized by middlemen and producers.

In general, the system of marketing of bananas is inefficient when evaluated against the criteria of the quality of produce offered, the degree of competition at the wholesale level, the nature of the physical distribution of bananas, the bargaining power of producers and consumers, the storage facilities available to balance supply seasonality and price fluctuations, if any, and the magnitude of trade margins. Banana marketing calls for accomplished preparation for its cutting, transportation and storage. These activities require proper marketing organizations and marketing facilities (Samson, 1986).

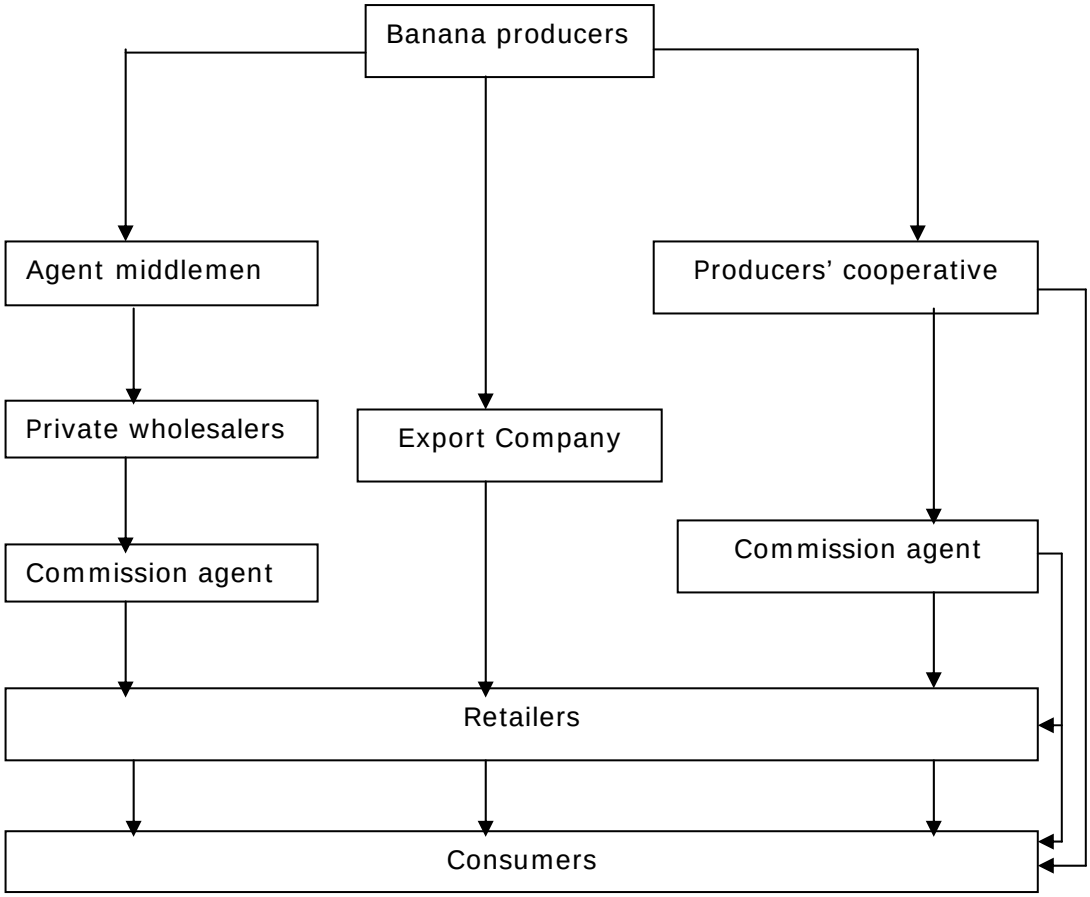

Figure 2.1: Marketing channels in the Eritrean banana market
Source: Goitom, 1997

2.6 PRICE FORMATION AND PRICING STRATEGY

According to Goitom (1997), the pricing strategies of banana producers, wholesalers and retailers are almost totally dependent on the market. The Eritrean government follows a free market policy and no price control applies to bananas. However, some doubt exists whether the market structure allows for prices being determined by demand and supply alone. Wholesalers could use the fact that bananas have to pass through them on their way to the market, and farmers' inability to sell large volumes of bananas directly to retailers and consumers, to reach tacit agreements among themselves about prices. Nevertheless other factors also affect the pricing strategy of farmers and middlemen, among which competitors' prices, cost price, freshness, climate, quantity of produce in stock, fixed profit margins, existing market prices and factors on the day bananas are marketed.

Goitom (1997) noted that no matter what the price of banana, consumers choose the good quality product, provided that there is a difference in the quality of the bananas. However, according to MOA (1999), consumers bring no pressure to bear for better quality. Price is still the most important factor for them. Actually, there is very little difference in the price of higher and lower quality bananas, if any. These findings indicate that the behaviour of consumers is not yet clearly understood and that producers and other role players have not realized what the advantages could be to use either price or quality as a marketing strategy.

2.7 PROBLEMS CURRENTLY FACING THE ERITREAN BANANA MARKET

- **Production problems**

Producers face major problems in producing bananas. In the first place, they experience a shortage of capital and a scarcity of land, which may be related to the unavailability of easy access to credit and the land policy. Related to this problem is a shortage of farming materials, apparently limiting production levels. Farmers keep their production costs at a minimum by using meager amounts of agricultural inputs. Farmers also experience spoilage of bananas during harvesting, basically due to inappropriate harvesting techniques and lack of technical know-how and facilities. Farmers located near the Aligidir Project also experience excessive flooding.

Farmers also face minor production constraints, such as shortages of pesticides, wind that sometimes uproots plants, sunstroke that damages plants, loose soil, disease, frost, soil salinity and lack of selected seed.

- **Marketing problems**

The main problems caused by inadequate marketing and facilities include the following:

Transport problems to stores: An effective and efficient transport system is very important for banana production. The government is striving to reconstruct damaged roads, bridges, irrigation and other infrastructure as quickly as possible to enable farmers to obtain the inputs they need to cultivate their crops and ship the products to the market.

Spoilage during transport: The marketing and production problems discussed earlier cause high spoilage of produce during transport. For instance, bad roads from the production sites to the marketing outlets bruises the produce, degrading its quality and at the same time shortening its shelf life. Loading and unloading activities and the lack of crates also contribute to further spoilage.

Storage problems: The perishable nature of bananas makes organized marketing essential. Bananas have to be sold as soon as possible after harvesting. Consequently stores are mainly used as ripening facilities. Poor storage facilities may account for the high post-harvest losses of bananas that are experienced. In Eritrea post-harvest handling is done according to traditional methods and, with the exception of ripening the bananas, few procedures exist. Until recently little attention was paid to maintaining the quality of horticultural products (MOA, 1999).

Information: Market and production information is indispensable for a perishable product like bananas. Market information is crucial to enable banana producers and traders to make informed decisions about what to produce and when to do so. Market information enables producers to plan their production according to market demand, schedule their harvests at the most profitable times and decide to which markets they should send their produce. In the banana industry, and Eritrea as a whole, the market information system for farmers and marketing agents alike is inadequate. Marketing participants use simple information facilities for communication, such as telephone calls, if available, and contacting friends to obtain information.

Other marketing problems include lack of buyers, price fluctuations and problems with brokers.

2.8. GOVERNMENT POLICY

The policy issues that must be addressed urgently to enhance the production and marketing of bananas are:

1. The question of land reform;
2. Education and research about bananas, extension services for producers, storage and marketing of bananas;
3. Banking services and bank loans for domestic investors;

4. Domestic and foreign trade policies relating to bananas; and
5. Price and tax incentives that also apply to small-scale banana growers (DARHRD, 1999).

2.10. SUMMARY AND CONCLUSION

The climatic diversity of Eritrea and the versatility of the banana crop means that it is a potentially attractive crop. Bananas has the largest area coverage and production compared to the rest of fruits grown in Eritrea seem to be superior. Compared to other fruits, bananas also has the highest per capita consumption.

This chapter described production and consumption statistics and the potential yield and usage of the banana crop. An attempt is also made to describe the structure-conduct-performance (SCP) of the industrial organization of the banana market using mainly the work done by Goitom (1997). Boehlje (2002) is, however, of the opinion that concepts of industrial organization are only partially helpful in assisting understanding of the relationships between stage structure and performance but do little to explain the dynamics of firm behavior and the interactions between and among firms at different stages within the production and distribution system.

In addition, the chapter made an attempt to highlight the main production and marketing problems currently encountered in the Eritrean banana market. The major production problems include shortage of capital and scarcity of land; shortage of farming materials; spoilage of bananas during harvesting due to inappropriate harvesting techniques and facilities and lack of technical know how and excessive flooding experienced mainly by those farmers located near the Aligidir Project. On the other hand, the main marketing problems are transport problems to stores; general storage problems; lack of information; spoilage during transport; lack of buyers; shortage of crates; price fluctuations and broker problems.

The policy issues that need to be addressed as a matter of urgency to enhance the production and marketing of bananas are the issue of land reform; education, research, extension, production, storing and marketing of bananas; banking services and bank loans for domestic investors; domestic and foreign trade policies applicable to bananas and price and tax incentives that apply to small-scale banana growers as well.

The following chapters are dedicated to drawing attention to the importance of competitiveness in domestic and foreign markets and how this can be achieved. An attempt will be made to set out a framework by which the role of supply chain management (SCM) can be evaluated, to enhance the competitiveness of the banana industry.

CHAPTER 3

COMPETITIVENESS OF THE AGRICULTURE INDUSTRY AND SUPPLY CHAIN MANAGEMENT

3.1 INTRODUCTION

Current trends towards increased globalization of markets, trade liberalization, advances in information technology, consumer preferences and improved logistics are exerting pressure on fruit industries worldwide to become more competitive, and competitiveness will largely be influence by the performance of supply chains. However, cognizance should be taken of the fact that much confusion exists regarding the exact meaning of the term competitiveness. For example, the interchangeable use of the terms comparative and competitive advantage by many are a source of great confusion and needs clarification. Furthermore, the definition of competitiveness is not adequate in itself; rather its significance and the various approaches used to measure it are also essential for understanding the scope and nature of competitiveness.

Closely linked to the concept of competitiveness is the efficiency of the supply chain. Hence, before any conclusions can be drawn about the banana market in Eritrea it is necessary to explore and clarify the nature and scope of competitiveness and the role of supply chain management (SCM).

This study does not attempt to measure the competitiveness of the agriculture sector as a whole, nor of the bananas industry, because the necessary data to do so are not available. Instead, the question of competitiveness is discussed with regard to concepts and applications in the agricultural sector and the banana industry.

3.2 COMPETITIVENESS: DEFINITIONS AND CONCEPTS

Banse, Gorton, Hartell, Hughes, Kockler, Mollman, and Munch (1999) argue that no single measure or definition of competitiveness has gained the universal acceptance of either economists or management theorists. The profusion of definitions has been assisted by the concepts of competitiveness being applied to different organizational and spatial entities (firm, sector/industry, region and state).

There are several authors who argue that the role of competitiveness should not be viewed only at a national level. For example, Porter (1990) states that the only meaningful concept at the national level is national productivity. Likewise, Krugman (1994) questions the usefulness of the concept at a national level. In this regard, while countries do not compete, they do provide national platforms upon which producers, firms and industry clusters compete. In this context, competitiveness focuses on a sustained increase in productivity in the agribusiness sector as a result of better business strategies and improved microeconomic and macroeconomic conditions (Murphy, 2001). This implies that the concept of competitiveness has to be seen from a national and international perspective because when a firm/industry/sector is competitive in the international arena, it will also be competitive in the domestic market.

Oustapassidis, Ntafis and Moutran (1993) define competitiveness as the effort of a firm to sustain or increase its market share, through appropriate pricing strategies, product quality improvement, the use of adaptable marketing strategies, etc. They state that competitiveness is influenced by the market structure (economies of scale, barriers to entry, product diversification, product differentiation, market shares, advertising to sales ratio and market concentration), factors which in turn influence the conduct and the performance of the industry.

In another study done on competitiveness in 1990, Canada's Agro-Food Competitiveness Task Force defined the word, and suggested the definition could be applied to an individual company, an industry, an industrial sector or a national economy. They defined competitiveness as the sustained ability to profitably gain or maintain market share (Martin and Stiefelmeyer, 2001).

In expanding on the definition, the Task Force indicated that the following considerations should be associated with it:

- It has three measurable elements – profits, market share and (sustained) time. So, competitiveness is attained if one is profitable with steady or increasing market share over time.
- The word "profitability" implies that profitability is attained from the market place, not from unfair competition, public policy that confers unfair advantage, or subsidies.

- The fact that profitability is used in the definition of competitiveness instead of cost, explicitly recognizes that there are alternative competitive strategies and that various stages in the supply chain must be profitable.
- Underlying the definition is the expectation that, as a result of its actions in the market, a company, industry, sector, or national economy that has maximum competitiveness will be able to attract resources of production, i.e. labour, capital and new ideas.
- The term focuses on results (profitability, market share), not on behaviour. So, the distinction between a sector that is competitive and one that has high degree of competitiveness is that the first displays competitive behaviour, while the second shows results. The two are not necessarily the same. The second sector's competitiveness may have resulted from his or her ability to cooperate.

The last distinction is important because it implies that an analysis of competitiveness begins with the end, i.e. has an industry shown a high degree of profitability and an ability to gain market share? If so, or if not, something about the industry's degree of competitiveness is revealed. This leads to the next step, namely why does it have whatever degree of competitiveness it has? This is the diagnostic step that allows one to make prescriptions about changes in private business strategy or its application, and/or about public policy as it affects the industry. According to this definition and approach it is essential to know how well an industry is doing; without this knowledge it is useless knowing why and an analyst cannot determine how to effect improvements or maintain its competitiveness (Martin and Stiefelmeyer, 2001).

3.3 MEASURING COMPETITIVENESS AND COMPARATIVE ADVANTAGE

The concepts of comparative advantage and competitiveness are important for understanding the nature of international trade. These concepts illuminate the underlying factors responsible for current trade patterns. The potential for ongoing trade negotiations to alter established world trade patterns can be more readily understood by thinking in terms of comparative and competitive advantage. It is, however, imperative to distinguish between these two concepts. Comparative advantage and competitiveness are related, but are often mistakenly exchanged for one another. Comparative advantage explains how trade benefits nations through more efficient use of their resource base when trade is totally unrestricted. Competitive advantage defines trading patterns as

they exist in the real world, including all the barriers to free trade ignored by comparative advantage (Worley, 1996). That is why Khemani (1997) emphasizes that comparative advantage does not mean competitive advantage. Countries that have low labour costs may have a comparative advantage, but many of these countries are caught in a cycle of poverty and slow development, and that does not necessarily mean they are competitive.

Various researchers and authors assert that the key to an appreciation of comparative advantage lies in its explanation of gains from trade even if one nation can produce all commodities at lower cost than every other nation. The gains arise from increased supplies of all goods when each nation makes more efficient use of its abundant factors in the production of commodities for which the resources are best suited (Sodersten and Reed, 1980; Houck, 1986; Worley, 1996; Salvatore, 1998).

Khemani (1997) remarks that whereas comparative advantage does not lead to competitive advantage, it can be the basis on which to build competitive advantage. Trade is complicated by many variations in policies and marketing practices that violate conditions necessary for trade based solely on comparative advantage. Competitive advantage encompasses these factors and, when all these additional factors are considered, better describes trade patterns. Competitive advantage characterizes trade patterns resulting from comparative advantage coupled with policy effects, product quality differences and industry marketing skills (Worley, 1996).

The difference between comparative advantage and competitive advantage can also be explained by considering the way it is measured. Comparative advantage evaluates economic efficiency of alternative productive uses of scarce land, labour, capital and water resources. The option that generates the highest social gains from the use of domestic resources is considered the most efficient user of these resources (Masters, 1995; Hassan, Fairbanks, Magagula and Faki, 1999). A common indicator of comparative advantage (Hassan et al., 1999) is the domestic resource cost (DRC) ratio, which indicates how much foreign exchange is saved by producing a good domestically instead of importing it. The concept of DRC relates to a measure of real opportunity cost in terms of total domestic resources of producing (or saving) a net marginal unit of foreign exchange (Bruno, 1967). It is also described as a measure used to compare the opportunity costs of domestic production to the value added it generates (Tsakok,

1990). Hassen et al. (1999) state that, for any production option to be the most efficient user of the country's resources, two conditions must be met:

- Firstly, the foreign exchange cost of the domestically generated product must be less than its import price, i.e. it must cost less to produce locally.
- In addition, the net foreign exchange gain from producing that product must exceed the net economic gain forgone by using the same amount of domestic resources to produce alternative products (or the same product under a different technology or production system), which is referred to as the opportunity cost of domestic productive resources.

Measures of economic efficiency include net social profitability (NSP), value added (VA), DRC and resource cost ratio (RCR) (Mucavele, 2000; Hassan et al, 1999). NSP indicates the net contribution of each production alternative to national income, measured in terms of social net returns to the land (Nakhumwa, Ng'ong'ola, Minde, Lungu and Mapemba, 1999). NSP measures can only be used to compare similar types of activities, such as alternative agricultural product projects competing for a given fixed resource (Mucavele, 2000). RCRs provide an explicit indication of the efficiency with which production alternatives use domestic resources to generate or save foreign exchange, thus serving as a relative indicator of the degree of economic efficiency. Since both measures capture the ability of production alternatives to contribute to the national income, comparison of social profitability and/or RCRs provides an empirical measure of the underlying pattern of comparative advantage (Nakhumwa et al., 1999).

On the other hand, trade shares are frequently used to compare competitive advantage among regions or nations. If a region is expanding its share of trade in a given product then it is said to be gaining competitiveness in world markets. Market share can be changed by manipulating the many competitive factors in control of governments, commodity groups and managers of industry (Worley, 1996). However, the measurement of competitive advantage goes further than the mere measurement of trade shares.

Oustapassidis et al. (1993) have attempted to estimate competitiveness of marketing cooperatives in Greece based on industrial organization analysis and financial ratio analysis. Industrial organization analysis included the estimation of the following factors: minimum efficient size of a firm in order to be effective in all technical, managerial and marketing aspects of its activity, barriers to entry,

including concentration in the industry, product diversification as a strategy for a faster and stable growth; and advertising expenditure and its influence on a firm's growth. Financial analysis indicated the financial conditions of the cooperatives, identifying cooperative liquidity, activity, profitability, financial structure and viability. The financial condition of the cooperatives was compared to the private firms' average financial condition in the industry. In their study, Oustapassidis et al. (1993) also attempted to assess the role of rural cooperatives of Crete (Greece) in some agricultural markets (olive oil and wine) of the region. One of the main effects of the cooperatives was found to be the improvement of market performance and the promotion of social welfare values of both farmers and consumers. A necessary condition for this achievement is the competitiveness of the cooperatives.

Porter's approach to competitiveness analysis has been used widely to determine and analyze the competitiveness and the factors influencing the competitiveness of agro-food and fiber complex in South Africa (Esterhuisen, Van Rooyen and Haaese, 2001; Van Rooyen and Esterhuisen, 2001; Van Rooyen, Esterhuisen, and Doyer, 2003). These authors concluded that the competitiveness of the South African agro-food and fiber complex depends upon a number of factors; technological, socio-political and economic. Porter's approach to competitiveness not only evaluates the competitiveness of the farmer, but also that of all the participants in the supply chain. This method allows identification and analysis of the structure of a sector and identifies strengths and weaknesses. Critical success factors to which participants in a chain have to pay special attention in order to develop and sustain competitive advantage as successfully as possible in the years to come can also be identified (Van Rooyen and Esterhuisen, 2001).

More often than not productivity-based indices are widely used in the assessment of competitiveness. According to Porter (1990) productivity is the most useful concept for determining international competitiveness. The best productivity index that reflects this advantage is total factor productivity (TFP). According to this index a country is competitive if its industries have an average level of TFP greater than its trading competitors. TFP is a measure of growth and of the overall efficiency (API, 2003).

Competitiveness is also assessed by a host of indices that reflect trade performance and exchange rate management. For the latter, the real effective exchange rate or the purchasing power parity (PPP) of a national currency are

the preferred tools of competitiveness assessment by economists and financial analysts. However, trade performance indicators do not lend themselves to measuring competitiveness, but to reveal the structure and characteristics of foreign trade. These indices include structure (commodity and destination) of exports and commodity growth and dynamics, as well as intra-trade, concentration, intra-regional trade, intensity and revealed comparative advantage (API, 2003).

The fact that competitiveness is a multi-faced phenomenon makes it difficult to summarize in a single index. This led some institutions to using composite indices to apprehend this concept. The annual report of World Economic Forum (WEF) and International Management Development (IMD) use a large set of variables (quantitative and qualitative) to measure competitiveness. This mass of data is usually organized in a hierarchy (factors, sub-factors, indicators) that permits a summary of competitiveness in one index. The global index is traditionally divided into a small number of factors that are thought to affect competitiveness, such as economic performance, infrastructure and technology, human resources, etc. In turn each factor is divided into an array of sub-factors that add information regarding what this factor should embrace (API, 2003).

The sub-factors are also divided into many indicators that define each sub-factor. This index is used to classify countries from most competitive to less competitive. It is also used to track the competitiveness record of countries. Given the wide coverage of factors that affect competitiveness, these are usually classified as different indices that concentrate on different aspects, such as the classification used by WEF, namely current and growth competitiveness. These indices, despite their wide coverage of the phenomena, are severely criticized for their heterogeneity, lack of focus and difficulty of interpretation, and are accused of providing ad hoc measures of competitiveness. It is difficult to interpret the meaning of every indicator and its direct contribution to competitiveness (API, 2003).

Having distinguished the concepts of comparative and competitive advantage, the focus of this study is mainly on competitive advantage. Subsequent discussions and analysis pertain to this concept.

3.4 FACTORS INFLUENCING COMPETITIVENESS

Salvacruz (1996) noted that there is a growing notion that sustained economic growth and development can only come about if the country is competitive in the world food market. As a result of this line of thinking, agricultural economists are increasingly concerning themselves with the question of agricultural competitiveness, exploring its true meaning and determinants.

A number of factors influence competitiveness. These factors can be grouped into two categories: those that affect the firm's relative cost of production and those that affect the quality, or perceived quality, of its product or business enterprise. As countries or firms gain advantage through the various sources of competitiveness, relative market share and profits increase. In situations where they are able to decrease production costs or improve their products relative to other firms in the industry, market share will increase (LSU AgCenter, 2003). This applies to both the domestic and international markets.

With reference to international competitiveness, Porter (1990) lists two main factors underlying international competitiveness. The ability to compete in international markets depends on price competitiveness or on product quality. For the former, competitive advantage over the long term depends on securing a lower comparative cost structure. A differential strategy based on product quality will be successful if customers are willing to pay a premium for higher or more uniform quality, branding or service.

Porter (1990) argues that a nation can also create new advanced factor endowments such as skilled labour, a strong technology and knowledge base, government support, and culture. He uses a diamond shaped diagram as the basis of a framework to illustrate the determinants of national competitive advantage. This diamond represents the national playing fields that countries establish for their industries (see Figure 3.1). A firm's operating practices and strategies, as well as, the business inputs, infrastructure, institutions and policies constitute a firm's environment. All these factors are interrelated and have a bearing on the competitiveness of a firm and its ability to move to a more sophisticated way of competing (Siddiqi, 2000).

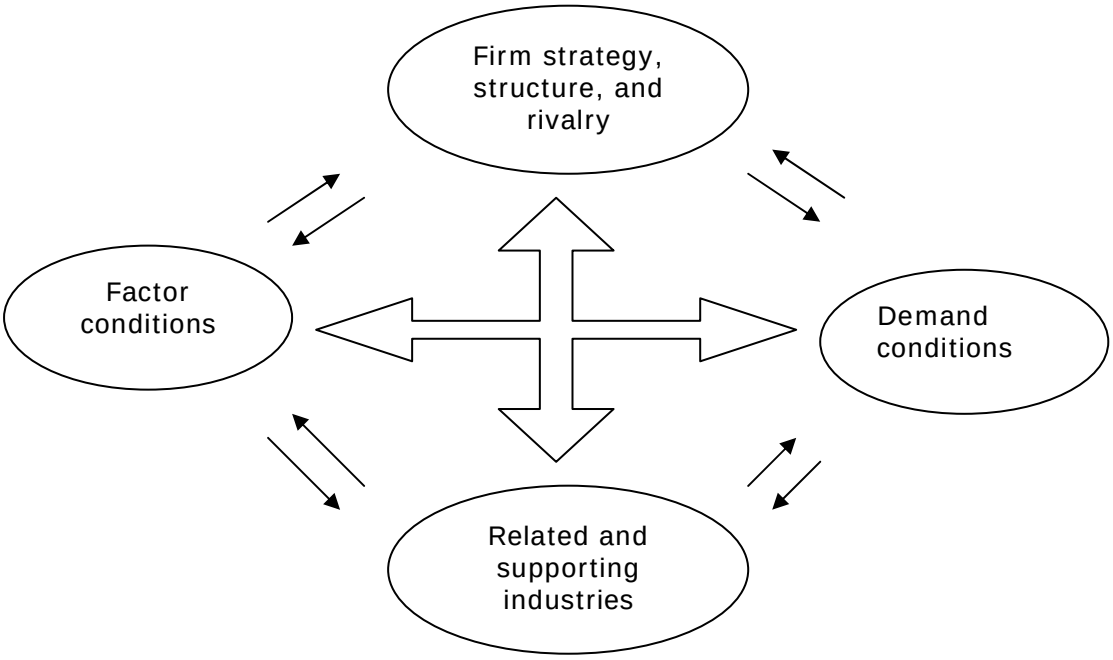

Figure 3.1: Porter's diamond of national competitive advantage
Source: QuickMBA (2003)

The individual points on Porter's diamond and the diamond as a whole affect four ingredients that lead to a national competitive advantage. These ingredients are:

- The availability of resources and skills,
- Information that firms use to decide which opportunities to pursue with those resources and skills,
- The goals of individuals in companies, and
- The pressure on companies to innovate and invest.

The individual points of Porter's diamond can be described as follows.

- Factor conditions

  This relates to the nation's position regarding factors of production, natural resources, level of production costs , such as the price of labour, diesel, pesticides, etc, human resources, capital resources, physical infrastructure, administrative, information infrastructure, scientific and technological infrastructure necessary to compete in a given industry (Siddiqi, 2000; Esterhuisen et al., 2001). However, in many instances the

aforementioned factor conditions are non-existent or very poorly developed, which could put a firm or sector at a competitive disadvantage. Such disadvantages in factors of production should encourage innovation. Adverse conditions, such as labour shortages or scarce raw materials force firms to develop new methods, and this innovation often leads to a national competitive advantage (QuickMBA, 2003).

In line with the above, sequential removal of constraints is critical. When the increase in production associated with a reform or change in circumstance reaches a plateau another reform/series of reforms is required to unleash further potential and thus remain competitive. Sustained growth is only possible if new constraints are alleviated by further reforms. There also needs to be a dynamic ability for technology, resource use, institutions, knowledge and markets to be adapted to deal with successive bottlenecks or constraints affecting particular commodity systems, to respond to problems of natural resource exhaustion or degradation, and to diversify to take advantage of new opportunities (FAO, 2001).

Research has shown that in addition to domestic terms of trade for agriculture, the content of capital inputs are key determinants of agricultural productivity and competitiveness (FAO, 2001). Important in this respect are rural infrastructure development; strengthening research and extension services; enhancing human capital in rural areas through health, education, and access to productive resources; and preserving the capacity of the natural resource and environment to sustain productivity achievements.

- Demand conditions

This refers to the sophistication of home demand and pressure from local buyers to upgrade and the ability to record this demand (Siddiqi, 2000). For example, home demand composition, demand size and internationalization of domestic demand plays an important role in establishing a competitive sector (Esterhuisen et al., 2001). When the market for a particular product is larger locally than foreign markets, local firms devote more attention to that product than do foreign firms, leading

- Firm strategy, structure, and rivalry

  This refers to the conditions in the nation governing how companies are created, organized and managed, and the nature of domestic rivalry. According to Siddiqi (2000) this governance determines the level of corporate investment, the types of strategies employed and the intensity of local rivalry. Porter (1985) states that low rivalry makes an industry attractive. While at a single point in time a firm prefers less rivalry, over the long run more local rivalry is better since it exerts pressure on firms to innovate and improve. In fact, high local rivalry results in less global rivalry. Local rivalry forces firms to move beyond basic advantages that the home country may enjoy, such as low factor costs.

  Other issues that affect firm strategy are intellectual property protection, irregular payments, tariff liberalization, negotiation of cross-border ventures, extent of locally based competitors, effectiveness of anti-trust policy, legal barriers to entry and decentralization of corporate activity.

  In addition to the four core elements of Porter's diamond, he also emphasizes that the role of government and role of chance should be accounted for when evaluating competitiveness.

- The role of government

  It goes without saying that the overall success of any firm/industry/sector is dependent on the conditions that the government creates regarding its domestic and international issues. Government can influence each of the above determinants either positively or negatively through policy and operational capacity. That is why government as a determinant of competitiveness must be viewed separately from the four determinants (Van Rooyen and Esterhuisen, 2001).

  The role of government, according to Porter's model, is to encourage companies to raise their performance by, for example, enforcing strict product standards; stimulating early demand for advanced products; focusing on specialized factor creation; stimulating local rivalry by limiting direct cooperation and enforcing anti-trust regulations (QuickMBA, 2003).

A study undertaken by the FAO (2001) aimed at addressing the implications of governments of Least Developed Countries (LDCs), emphasizes that policy makers must understand and promote processes supportive of agricultural growth and competitiveness. Agricultural research to address the problems facing farmers also requires increased emphasis. There are strong arguments for seeking a more nuanced role for the state in promoting efficient and effective institutional arrangements in support of farmers' access to seasonal finance and to input and output markets. Continued attempts to reform world trade rules that impede the fuller participation of LDCs in world markets are also needed.

- The role of chance

Chance events are occurrences that have little to do with circumstances in a nation and are often largely outside the power of firms (and often the national government) to influence. Events such as wars, political decisions by foreign governments, large increases in demand, shifts in world financial markets and exchange rates, discontinuity of technology and input demand can be described as chance events (Esterhuisen et al., 2001).

When the diamond is viewed as a system it is clear that the effect of one point depends on the others. For example, factor disadvantages will not lead firms to innovate unless there is sufficient rivalry. Furthermore, the diamond is a self-reinforcing system. For example, a high level of rivalry often leads to the formation of unique specialized factors.

A flow chart (taken from LSU AgCenter, 2003) depicting the factors influencing competitiveness and their impact on cost and demand structure and ultimately profits and market share is shown in Figure 3.2. It shows that competitiveness is the result of interaction of microeconomic and macroeconomic variables.

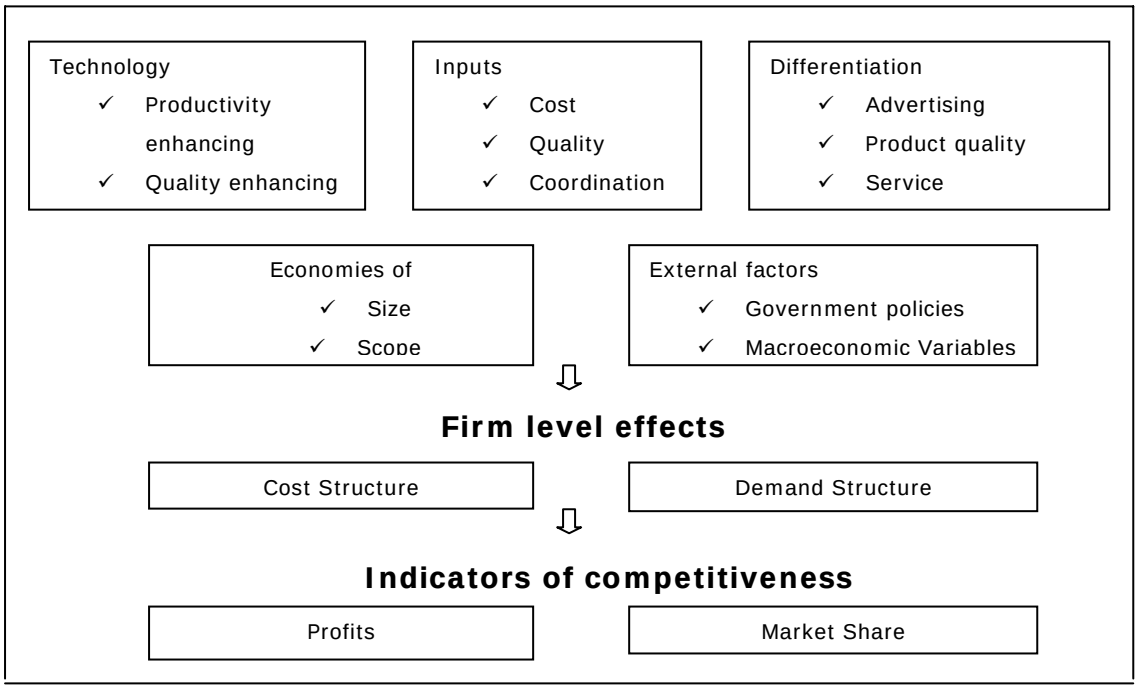

Figure 3.2: Sources and indicators of competitiveness

Source: LSU AgCenter (2003)

3.5 THE ROLE OF SUPPLY CHAIN MANAGEMENT IN COMPETITIVENESS

Until the early 1990s, efforts to improve supply chains were generally interpreted as a zero sum game, which would result in farmers loosing at the expense of processors and retailers. Changes in the international trade environment along with other factors external to the agro-food sector have convinced many participants in the agro-food sector that supply chain management offers opportunities for a win–win situation. Today, there is greater recognition that both parties can benefit, and that participation by farmers in supporting value-added products is essential to the future of the food sector (Van Duren and Sparling, 1998).

This being the case, then it can be said that the competitiveness of agricultural products is heavily influenced by the strength and efficiency of the marketing chain, and by the availability and smooth functioning of the complete system of transport and communication. The number and intricacy of transactions related to contracts, export finance, insurance and guarantees intimately affect the competitiveness of products. Current trends towards increased globalization of markets, trade liberalization, advances in information technology and improved logistics mean that the competitiveness of fruit industries in various regions and

countries, as affected by the performance of their supply chains, are becoming increasingly important and will be even more important in the future. In fact, the establishment of competitive supply chains is a prerequisite for an industry's competitiveness and success.

3.5.1 Supply Chain Management

A supply chain encompasses all the facilities, functions and activities involved in producing and delivering a product or service from various suppliers to the final customer (Russell and Taylor, 1998 cited in Duren and Sparling, 1998).

More specifically, the concept of SCM can be defined as collaboration among actors in a supply system, from the primary producer to the final retailer, to better satisfy consumer wants and needs at lower costs. It is a process of bringing order to the system of producing, processing and distributing food and agricultural products to consumers. SCM focuses on improving efficiency and effectiveness in the system to deliver a wide range of safe and desirable agricultural products in a cost effective manner. Collaboration is an integrative approach in the supply chain to plan and control the flow of materials from the producers to the consumers by breaking down the barriers that exist between each of the links in the supply chain. SCM is an integration of these activities through proven supply chain relationships, to achieve a sustainable competitive advantage (Doyer, 2003). The objective of SCM is to remove time and cost from supply chains, improving profitability and/or competitiveness (Schotzko and Hinson, 2000).

SCM is about honoring and valuing the linkages between buyers and sellers, beginning on the farm and ending on the fork. Its purpose is self-serving yet community-based: lower cost or increased value to increased return for all stakeholders. It is not an either/or strategy but an alternative to more traditional market-driven strategies typical of commodity agriculture and commodity processing (Beurskens, 2002). SCM encompasses the disciplines of economics, marketing, logistics and organizational behaviour in a study how supply chains are organized and how these institutional arrangements influence industry efficiency, competitiveness and profitability (Hobbs, 1996 cited in Kennet et al., 1998). SCM is the term used to encompass those activities associated with achieving efficiency and effectiveness in a supply chain.

According to Copacino (1996) the greatest benefit of SCM is that when all of the channel members, including suppliers, manufacturers, distributors and customers, behave as if they are part of the same company, they can enhance performance significantly across the board.

However, seasonality, perishability and the time lag between planting and harvest associated with crop production complicate the application of SCM to fresh produce. In addition, weather affects yields and causes quantity supplied to deviate from optimal levels (Schotzko and Hinson, 2000). Agricultural products have unique characteristics that necessitate coordination to ensure that high quality produce end up on the consumers' table (Doyer, 2003). These are:

- Perishability of agricultural products;
- Variability in quality and quantity caused by genetic variation, seasonal changes, climatological differences, etc.;
- Variations in production rates of production processes between producers and processors;
- Variation in scale efficiencies in the different stages of the production-marketing process, which makes vertical integration very difficult;
- Complementary agricultural raw materials which fix the output ratio of different products;
- Stabilization of the consumption of agricultural products;
- Consumers' increasing awareness of product, production methods, health, safety and environmental impact;
- Intrinsic value of especially fresh produce that is the highest at the moment it is harvested; and
- Demand for capital that creates a measure of dependency.

Studies indicate that much of the work on SCM in agriculture has focused on the livestock sector (Kennett et al., 1998). Verbeke, Doyer and Visser (2002) studied the role of SCM and traceability in the Belgian and South African pork industries. On the other hand, Splinter, Dekker, Jonkman, and Van Uffelen (2000) applied

the SCM concept to the development and implementation of chain quality management systems to Dutch potted plants, cut flowers and glasshouse vegetables. Schotzko and Hinson (2000) discussed specific applications of SCM in the US fresh produce industry, emphasizing factors such as perishability and production variability. In a similar study, with the use of specific examples from US fruit industries, Ricks et al. (2000) discussed how SCM of agricultural commodity industries could lead to performance enhancing industry efforts which can improve the overall competitiveness and economic viability of the industries. Kennett et al. (1998) also studied SCM in the US grain industry by investigating the effects of wheat quality on marketing arrangements between wheat producers, grain handling companies and processors. They concluded that the inadequacy of the US grading system in guaranteeing functional quality provides some processors with an incentive to manage the supply chain for milling wheat to their own advantage. The recent focus on the importance of supply chain pays testimony to both the benefits and necessity of efficient SCM (Rodin, 1999).

The main theme of this study originates from the fact that, as described by Beurskens (2002), traditional commodity markets serve the community well by assuring large volumes of homogenous products at low cost. The very benefits of the commodity system - homogeneity and anonymity - are not aligned with the consumer's need for product differentiation, innovation and customization. Commodity markets lack the necessary feedback and information flows required for learning, growth and evolution. Accordingly, an SCM perspective to reach the objectives as stated above, is the viable option to traditional commodity markets.

3.6 SUMMARY AND CONCLUSION

This chapter attempted to capture the definition of competitiveness with the intention to apply it to the Eritrean banana industry. In a nutshell, competitiveness is defined as the ability of a country to increase its share of domestic and export markets for a product when it can produce it at a lower opportunity cost than other countries.

The chapter also outlined the difference between comparative and competitive advantage, terms that are regularly used wrongly. Comparative advantage explains how trade benefits nations through more efficient use of the their resource base when trade is totally unrestricted, while competitive advantage

defines trading patterns as they exist in the real world, including all the barriers to free trade ignored by comparative advantage.

Finally, this chapter shows the importance of SCM as a vehicle to attain domestic and international competitiveness. This issue will be explained in more detail in chapter 5.

CHAPTER 4

INTERNATIONAL BANANA TRADE PERFORMANCE

4.1 INTRODUCTION

Fruit imports and exports in general, and bananas in particular, comprise a significant portion of world trade. In some countries, such as Ecuador, Costa Rica and Honduras, bananas represent a very important source of income. Bananas provide important export revenue for the Caribbean region and make up almost half of all export earnings in the Windward Islands (Bananalink, 2003).

All African countries produce a significant amount of bananas, but only a few actually export them. Virtually all exports are to the European market. Under the Lomé Convention, the EU guarantees market access to certain African, Caribbean and Pacific (ACP) countries. In Caribbean countries bananas tend to be grown on small family farms, under more sustainable conditions than dollar bananas grown on sprawling plantations in Latin America (Bananalink, 2003).

An introductory note on banana production and consumption and the regions involved in supplying bananas to the world is provided in this chapter, followed by information on the trade policies of Eritrea in the light of international trade. To this end, controversial banana trade disputes call attention to the countries involved in the business and could have a significant effect on the future prospects of the trading countries. Hence banana trade disputes are also discussed in this chapter.

4.2 WORLD PRODUCTION, CONSUMPTION AND TRADE IN BANANAS

4.2.1 Production of bananas

Banana trade rates fifth in terms of world trade in agricultural produce after cereals, sugar, coffee and cocoa (EBSCO, 1999). As indicated in Chapter One, bananas is the fourth most important staple crop in the world, critical for food security in many tropical countries (Bananalink, 2003). World banana production amounts to some 55 million tons per year, concentrated in Africa, Asia, the Caribbean and Latin America, because of favorable climatic conditions (Bananalink, 2003).

In 2000, a total of 123 countries produced bananas. However, production and exports and imports of bananas are highly concentrated in a few countries. The 10 major banana-producing countries accounted for more than 73 per cent of total banana production in 2000 (See Figure 4.1.) India, Ecuador, Brazil and China alone produced half of the world's total banana crop (UNCTAD, 2003). In 2000, about 4 million hectares were planted with bananas and nearly 5 million hectares were planted with plantain. The average world yield was 15 tons per hectare for banana and about 6 tons per hectare for plantain. Highest yields of both banana and plantain were achieved in the Caribbean region, in Nicaragua and Honduras respectively (IITA, 2003).

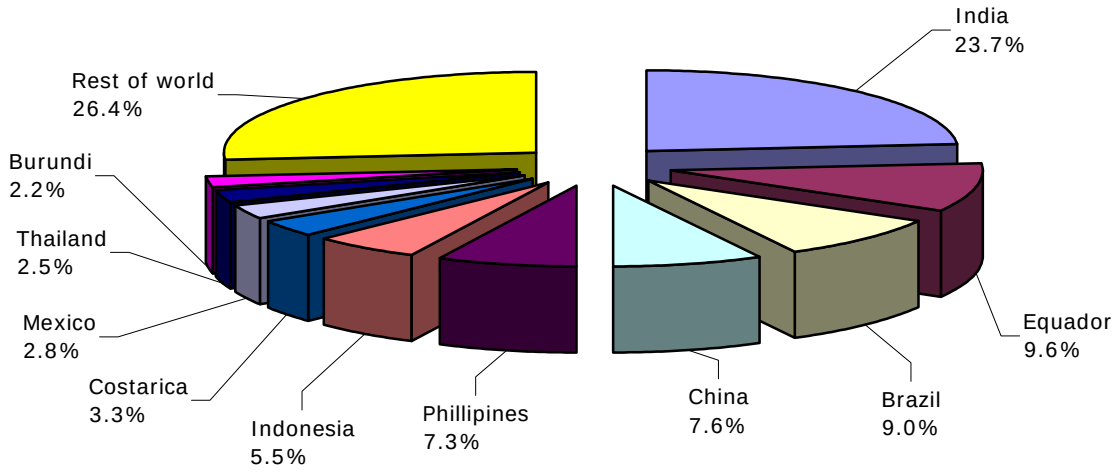

Figure 4.1: World banana production in 2000

Source: FAO, 2003

4.2.2 Consumption of banana

After grapes, bananas are the world's most widely consumed fruit. when considering that bananas, unlike grapes, are not used to make wine, it is, in effect, the most widely consumed fruit of all (Wilson, 2002).

As a staple food crop, banana reaches its greatest importance in Eastern Africa. Bananas are eaten daily throughout the Great Lakes region comprising Uganda, Burundi, Rwanda and parts of Kenya and Tanzania. For instance, the consumption of bananas is the highest in Uganda where, on average, each person eats around 250 kg of banana annually (INIBAP, 2002). In Uganda bananas are produced solely for local consumption. The crop is also grown by millions of small-scale

farmers in Africa, South Asia and Northern Latin America for household consumption and or/local markets (Bananalink, 2003).

4.2.3 Regional trade in bananas

The international banana market shows a highly regional character that originates in the following four regions: Latin America, Caribbean/Windward Islands, European Union and African countries. Tables 4.1 to 4.4 show that during the late 1990s, more than 80 per cent of the world's banana originated from Latin American countries; the rest was supplied by European, Caribbean, and African countries, approximately 7 per cent, 4 per cent and 3 per cent respectively (UNCTAD, 2003).

African countries

All African countries produce a significant amount of banana, but only a few actually export it. Virtually all exports are to the European market. The main African exporting countries are shown in the Table 4.1.

Table 4.1: African countries exporting bananas

Country	Banana trade (tons)	
	1997	**1998**
Ivory Coast	190 500	199 700
Cameroon*	179 400	132 000
Somalia	21 600	7 100
Ghana	NA	5 100
Cape Verde	1 000	1 000
World Total	**NA**	**11 387 800**

* Cameroon'S exports in 1998 were abnormally low because of drought.

Source: Bananalink, 2003.

European Union

The main banana producing areas in the European Union are Spain (Canary Islands), Martinique, Guadeloupe, Portugal (Madeira) and Greece (Crete). The amount of banana produced in this region is provided in Table 4.2.

Table 4.2 European Union banana producing countries

Country	Banana trade in tons 1998
Spain (Canary Islands)*	418 000
Martinique**	277 000 (1997)
Guadeloupe**	98 000 (1997)
Portugal (Madeira)	34 000
Greece (Crete)	3 000
World Total	**11 387 800**

*The Canaries, located off the North West coast of Africa, are an autonomously governed region within Spain.

**Martinique and Guadeloupe, located next to the Windward Islands in the West Indies, are both French territory. Administratively they are both overseas "departments".

Source: Bananalink, 2003.

Latin America

Latin American countries mainly export to the United States, Canada, Europe and the Asia-Pacific region. They are called "dollar" countries because they traditionally belong to the zones of influence of the US Dollar, but also because their banana industry is mostly associated with US multinational companies that, directly or indirectly, control 60 per cent of banana exports. The main Latin American banana exporting countries are presented in Table 4.3.

Table 4.3: Latin American banana exporting countries

Country	Banana exports (tons)	
	1999	2000(preliminary)
Ecuador	3 865 000	3 932 000
Costa Rica	2 113 000	1 814 000
Colombia	1 650 000	1 506 000
Guatemala	680 000	527 000
Panama	593 000	538 000
Mexico	174 000	NA
Honduras	109 000	150 000
Venezuela	86 000	NA
Nicaragua	57 000	45 000
World Total	**11 718 000**	

Source: Bananalink, 2003

Caribbean / Windward Islands

Caribbean countries are heavily dependent on banana exports. For instance, for St Lucia, St Vincent and Dominica bananas represent over half their export earnings. The Caribbean countries exporting banana are shown in Table 4.4.

Table 4.4: Caribbean countries exporting bananas

Country	Banana trade (tons) 1998
Jamaica	63 400
Dominican Republic	65 100
Windward Islands	138 000
St. Lucia	70 800
St Vincent and the Grenadines	38 900
Dominica	28 100
Grenada	100
Belize	53000
Suriname	23300
World Total	**11 387 800**

Source: Bananalink, 2003.

4.3 APPLICATION OF TRADEMAPS TO TRADE IN BANANA

Various researchers have used TradeMAPs to analyze market potential and as a research tool to provide market information on new and existing markets. For instance, Meyer and Breitenbach (2002) employed TradeMaps to analyze the South African market potential for deciduous fruit, more specifically apples. In a similar fashion, Carsalade, Diaz and Soto (1998) applied the Competitive Analysis of Nations (CAN) method to obtain a bi-dimensional vision of competitive evolution, determined by “market attractiveness” and “market share“. The result of their study is similar to that of TradeMaps. The TradeMaps technique is used for this particular study to investigate bananas export performance.

The fact that Eritrea does not participate in the world banana trade makes it difficult to refer to Eritrea specifically, but analysis with and description of the TradeMap is worth discussing.

4.3.1 Interpretation Of TradeMaps

TradeMaps are presented as charts, pictograms and tables. Figure 4.2 shows the international trade performance of developing countries (DCs) in terms of their fruit and vegetable exports at a disaggregated level. Developing countries' export growth (horizontal axis) is compared with the growth of international demand of fruit and vegetables (vertical axis). The bubbles of varying sizes indicate the export values of the fruit and vegetable cluster.

The diagonal and horizontal reference lines are of particular interest from a trade development perspective, since they divide the chart into four quadrants, each with different characteristics. For ease of reference, each of these quadrants has been named.

Champions - winners in growth markets (upper right, first quadrant). Included in this quadrant are products such as grapes, seeds and vegetables not elsewhere specified (nes) for sowing and fruits (fresh nes). They are particularly dynamic products, where export growth of DCs are growing faster than world trade in general, and hence increasing their market share. Therefore it can be concluded that exporters of these products from DCs proved their international competitiveness in the late 1990s. As can be expected, trade promotion efforts for these products are less risky; and hence promotional efforts should aim at broadening the supply capacity.

Underachievers – losers in growth markets (upper left, second quadrant). These products present particular challenges for trade promotion efforts. This quadrant entails that international demand has been growing at above-average rates, exports have either declined or have grown less dynamically than world trade. As a result, countries have been losing international market share. In general, the bottleneck is not international demand, but supply. For these products, it is essential to identify and remove the bottlenecks to allow a more dynamic expansion of exports. Interestingly enough, there are no fruit and vegetables from DCs in the underachiever's quadrant.

Losers in declining markets (lower left, third quadrant). Products like tomatoes and mandarins fall in this quadrant. The export prospects for these products tend to be bleak. World imports of these products have increased at a below-average rate or actually declined, whilst at the same time exporting countries' market

share has gone down. Trade promotion efforts for products in this quadrant face an uphill task. They need to adopt an integrated approach to take into account bottlenecks on both the supply and the demand side.

Achievers in adversity - winners in declining markets (lower right, fourth quadrant). For these products, DCs are increasing their share in world import markets, which are actually declining or growing below average. From a trade promotion perspective, niche-marketing strategies are required to isolate positive trade performance from the overall decline in these markets. Bananas, lemons and limes, cucumbers and gherkins fall in this quadrant.

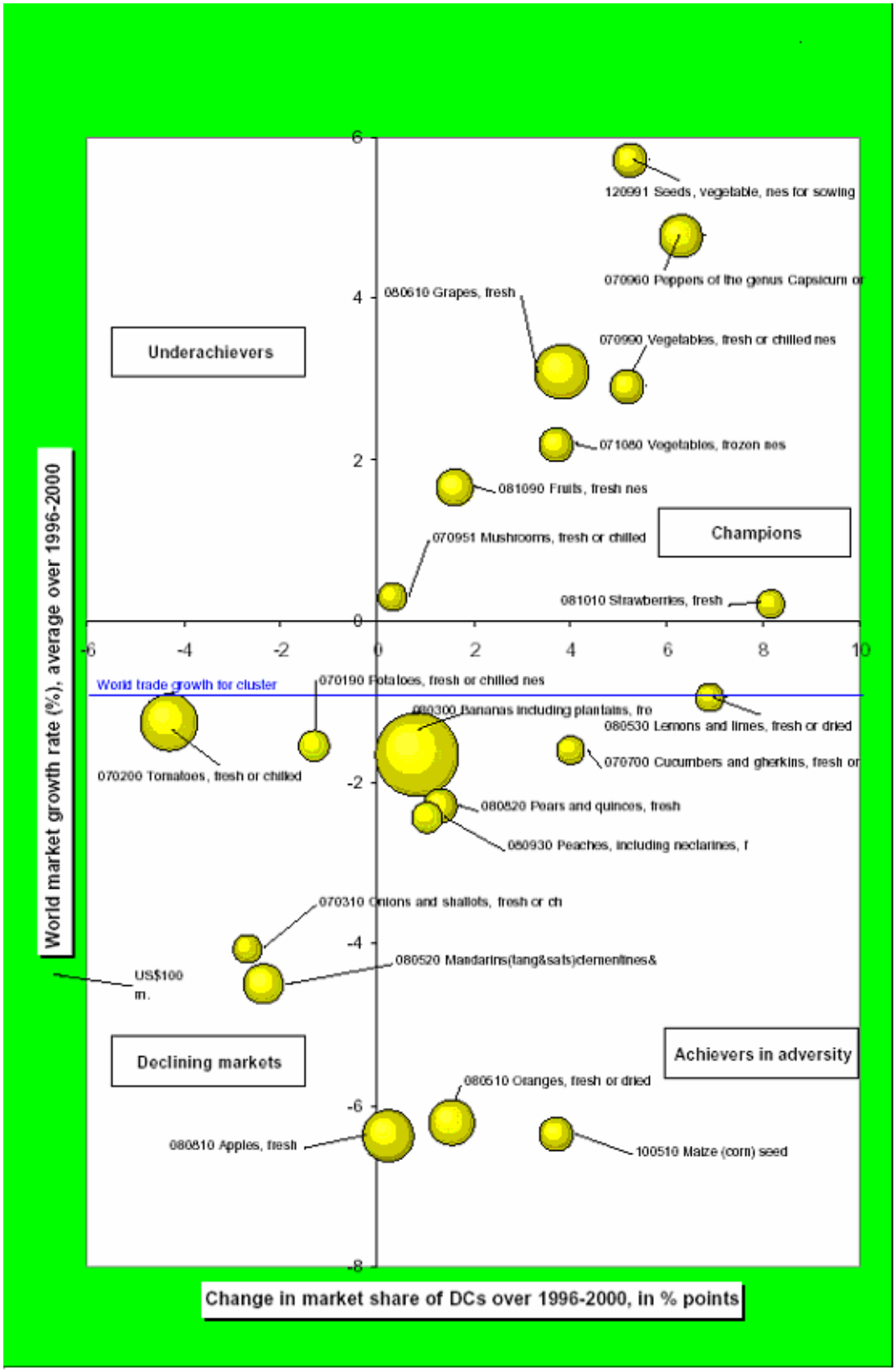

Figure 4.2 Product champions of developing countries (DCs) in the world market cluster for fruit and vegetables

Source: ITC, 2003.

4.3.2. Trade Performance of Bananas Internationally

Figure 4.2 shows that most of the export items are in the "Champions" and "Achievers in adversity" quadrant, implying that DCs have been gaining market share. Naturally, the distribution of product items into the four quadrants is likely to vary for individual countries and differ from that of DCs as a group. Hence, care must be taken when interpreting for specific countries.

Bananas is the leading traded item and includes plantains, fresh or dried, representing 11.2 per cent of fruit and vegetables traded worldwide (See Figure 4.2 and Table 4.5). Tomatoes and grapes follow, with 5.7 per cent and 5.4 per cent share in the fruit and vegetables cluster, respectively.

In value terms, there has been a decline of 3 per cent annually over the period 1997-2001 for bananas. Considering world volume trends, the picture is slightly different-the volume of trade increased with 0.7 per cent annually. This has increased DCs market share in banana trade even further.

World exports of bananas show a high level of concentration, with developing countries accounting for the bulk of exports. For example, Latin America and the Caribbean supplied more than 80 per cent of total exports in 2001. The five leading banana exporting countries in 2001 (Ecuador, Costa Rica, Philippines and Colombia) accounted almost half of world exports. Nevertheless, the participation of Latin American and the Caribbean supply declined slightly during the nineties, while participation of Asian exports has increased. In terms of banana exports, Ecuador gained sizeable market share in 1997-2001. Ecuador is the leading exporter of bananas from the developing world and is ranked first world-wide, with a 19 per cent market share, followed by Belgium-Luxemburg with 15 per cent. The first 19 leading exporting countries comprise more than 90 per cent of the world share.

World imports of banana are estimated at around US$6 billion in 2001. Amongst the leading markets, import demand in the US, Germany and Belgium-Luxemburg is almost steady. These countries have shown declining annual growth over the period 1997-2001. Demand in the smallest markets, such as Cyprus, Paraguay and Guatemala, is also growing very rapidly. For example, demand in Cyprus has grown by 1 146 per cent annually from 1997 to 2001. The countries importing least are Portugal, Tunisia and Yugoslavia. Greenland has also witnessed the

largest decline in annual percentage growth of 20 per cent followed by TfyrMacedna and Nicaragua with 18 per cent and 15 per cent respectively.

Although geographical concentration of imports remains high, an analysis of import data shows a tendency towards diversification of destination markets for bananas. Emerging markets, such as the Russian Federation, China and Easter European countries are becoming more and more important export destinations for countries like Ecuador and Colombia.

In conclusion, it is important to understand the trade patterns of bananas in the international trading arena. Due to the importance of the different banana import regimes in consuming countries, the banana world trade exhibits a clear regional character. This has led to differentiation among preferential markets and open markets for bananas, although this picture changed somewhat in the 1990s. Transportation costs and time as it relates to distribution also play a role in the regional fragmentation of the banana market.

Table 4.5 World imports, in value and volume terms, of fruit and vegetable cluster and performance of developing countries

PRODUCTS (items)			WORLD IMPORTS, value in million USD (Share in World Imports of Products from Developing Countries in %)							Performance of Developing Countries	
CODE (HS)	DESCRIPTION	% of CLUSTER	1997	1998	1999	2000	2001	Annual change in value terms over 1997-2001	Annual change in volume terms over 1997-2001	% change in market share over 1997-2001	Performance quadrant
80300	Banana including plantains, fresh or dried	11.2	6575 -87.70%	6602 -86.30%	6544 -88.80%	6017 -89.90%	5909 -90.50%	-3	0.7	1	Achiever in Adversity
70200	Tomatoes, fresh or chilled	5.7	3093 -29.20%	3240 -30.40%	2985 -29.60%	3070 -24.60%	3016 -28.20%	-1	0.6	-2.8	Declining Market
80610	Grapes, fresh	5.4	2586 -49.20%	2628 -51.90%	2739 -55.80%	2772 -56.10%	2836 -55.90%	2.4	3.5	3.5	Product Champion
80810	Apples, fresh	4.9	2784 -32.50%	2606 -35%	2684 -33.50%	2351 -30.50%	2587 -34.80%	-2.5	1.2	0	Declining Market
80510	Oranges, fresh or dried	4.1	2355 -29%	2263 -28.40%	2147 -36%	1898 -28.10%	2180 -33.20%	-3.1	1.3	2.3	Achiever in Adversity
70960	Peppers of the genus Capsicum or of the genus Pimenta,fresh or chilled	3.4	1498 -22.40%	1639 -24.20%	1531 -23%	1693 -27.50%	1821 -27.80%	4.3	3.2	6	Product Champion
Total cluster		100%	53179 -43.10%	54046 -42.90%	53961 -44.40%	50883 -44.80%	52835 -45.80%				

Continued

Table 4.5: World imports, in value and volume terms, of fruit and vegetable cluster and performance of developing countries.

			(Share in World Imports of Products from Developing Countries in %)								
CODE (HS)	DESCRIPTION	% of CLUSTER	1997	1998	1999	2000	2001	Annual change in value terms over 1997-2001	Annual change in volume terms over 1997-2001	% change in market share over 1997-2001	Performance quadrant
80520	Mandarins (tang&sats) clementines&wilkgs &sim citrus hybrids, fresh/drid	2.7	1620 -26.50%	1549 -25.70%	1494 -26.60%	1469 -25.30%	1451 -28.30%	-2.7	0.5	1.1	Achiever in Adversity
81090	Fruits, fresh nes	2.5	1321 -36.50%	1312 -32.20%	1365 -34.90%	1332 -40.60%	1329 -40.60%	0.3	5.5	4.5	Product Champion
71080	Vegetables, frozen nes	2.4	1092 -44.60%	1177 -44.40%	1223 -47.90%	1129 -50.20%	1268 -50.50%	2.6	4.1	3.9	Product Champion
80710	Melons (including watermelons), fresh	2.4	1254 -47.70%	1304 -48.90%	1299 -51%	1191 -51.40%	1265 -50.60%	-0.7	-0.1	1.7	Achiever in Adversity
70990	Vegetables, fresh or chilled nes	2.4	944 -42.80%	1003 -44%	1055 -44.30%	1061 -48.70%	1253 -49.80%	6.4	7.7	4.4	Product Champion
70190	Potatoes, fresh or chilled nes	2.2	1044 -17.30%	1346 -17.80%	1355 -18.50%	981 -17.30%	1147 -16.30%	-1.3	1.9	-1.5	Declining Market
Total cluster		100%	53179 -43.10%	54046 -42.90%	53961 -44.40%	50883 -44.80%	52835 -45.80%				

Continued

Table 4.5: World imports, in value and volume terms, of fruit and vegetable cluster and performance of developing countries

PRODUCTS (items)			WORLD IMPORTS, value in million USD (Share in World Imports of Products from Developing Countries in %)							Performance of Developing Countries	
CODE (HS)	DESCRIPTION	% of CLUSTER	1997	1998	1999	2000	2001	Annual change in value terms over 1997-2001	Annual change in volume terms over 1997-2001	% change in market share over 1997-2001	Performance quadrant
100510	Maize (corn) seed	2.1	1236 -50.40%	1053 -45.70%	1022 -44.90%	1014 -53.30%	1090 -59.50%	-2.8	2.6	4.8	Achiever in Adversity
120991	Seeds, vegetable, nes for sowing	2	914 -16.90%	1036 -16.60%	1098 -16.50%	1062 -18%	1058 -17.80%	3.2	3	2	Product Champion
80820	Pears and quinces, fresh	2	1118 -46.30%	1096 -45.90%	1125 -47.50%	1002 -47.70%	1047 -46.30%	-2.2	0.4	0.4	Achiever in Adversity
80930	Peaches, including nectarines, fresh	1.8	941 -15.20%	1001 -12%	910 -16.20%	857 -15.80%	965 -16.60%	-1	4.6	4.5	Achiever in Adversity
70310	Onions and shallots, fresh or chilled	1.8	1022 -47.20%	1202 -42.70%	949 -46.50%	808 -45%	955 -45%	-5.2	-0.1	-0.4	Declining Market
70700	Cucumbers and gherkins, fresh or chilled	1.6	803 -21.70%	882 -25.30%	794 -24.70%	833 -26.80%	841 -29.10%	0.4	0.3	6.7	Product Champion
70951	Mushrooms, fresh or chilled	1.6	834 -35.40%	768 -40.50%	791 -36.60%	799 -42.50%	834 -42.60%	0.4	6.6	4.3	Product Champion
80530	Lemons and limes, fresh or dried	1.5	815 -31.80%	811 -34.30%	857 -39.50%	786 -39.90%	811 -43.60%	-0.4	1.4	8.1	Achiever in Adversity
Total cluster		100%	53179 -43.10%	54046 -42.90%	53961 -44.40%	50883 -44.80%	52835 -45.80%				

4.3.3 Potential Exports of Bananas From Eritrea

Eritrea's potential participation in the world banana trade and possible market opportunities are outlined according to regions. In the first place, Saudi Arabia and the United Arab Emirates (UAE) are located in close proximity to Eritrea. In 2001 Saudi Arabia imported bananas from Ecuador (49%), Philippines (30%), Yemen (12%), Colombia (7%) and India (1%), whilst UAE imported bananas from the Philippines (96%), Malaysia (3%) and the rest from Guatemala, Lebanon, South Africa (SACU) and Sri Lanka (COMTRADE Statistics, 2002). The question arises whether it would be possible for Eritrea to compete with these exporting countries to export bananas to Saudi Arabia and UAE. It may be difficult, because of the trade performance of these countries and the current situation of the Eritrean banana industry. Except for Yemen, all these countries are further from Saudi Arabia than Eritrea. But the issue is not only the proximity to Saudi Arabia but the overall competitiveness of the Eritrean banana industry. In general, the proximity of Eritrea to the Middle East and Europe and its strategic location on the Red Sea could create favorable marketing possibilities. Bananas can reach Massawa Port within a day from virtually anywhere in Eritrea. Thus, spoilage or damage to bananas will be minimal provided other facilities such as overall infrastructure, storage facilities, packaging and quality control, efficient management and coordination in the banana supply chain are in place beforehand. These are the issues that should be addressed before trying to export to any other country.

Other important potential export destination are African countries. In 2001, more than 10 African countries imported bananas from all over the world. In total these countries imported 0.03 per cent of the total world banana trade. Most of these countries are in the north west of Africa. Interestingly enough, some African countries, Liberia for instance, imports bananas from the Asia Pacific region, particularly from the Philippines, the 5th largest exporter of bananas in 2001. Liberia could have imported from Cote d' Ivoire, which is a neighboring country. Hence apart from time, cost and proximity, other factors also play a role in decisions regarding where to import from.

An equally important market opportunity that must be considered is the EU, which is the world's 5th largest banana importer. Traditionally, banana imports to the E.U. have originated from three different sources. Firstly, national production from Spain (Canary Islands), France (Guadeloupe and Martinique), Greece and

Portugal; secondly, ACP (African, Caribbean and Pacific) countries, which have been granted preferential access to the European market under the Lomé Convention and later the Cotonou Agreement; and thirdly, Central and South America that exported mainly to free (or open) market countries such as Germany. However, during the nineties the EU pattern of trade for bananas has suffered from uncertainties arising from the introduction of the EU banana regime and the modifications that resulted from the banana dispute at the WTO as discussed in subsequent section. It is important to note that, in this case, Eritrea must be watchful regarding future challenges that could come from competitive Latin American exporting countries and even from the national E.U. exporting countries. Lapse of the Cotonou Agreement in 2008 may turn out to be advantageous to competitive Latin American suppliers provided they do not face a tariff so high it prohibits trade.

Finally, Asian markets also present export opportunities where, for instance Japan, is the 4th largest import market. The Philippines (5th largest exporter of bananas in 2001) is the major provider of bananas to Japan, although Ecuador (the leading exporter of bananas in 2001) has increased exports to this market in the last years in response to the uncertainties following the EU banana regime. Comparatively, the Japanese banana import market is quite concentrated, with two countries providing more than 90 per cent of bananas. This gives an indication of how strong the Eritrean banana industry should be in order to partake in this market opportunity and hence it is not foreseen that Eritrea will be able to target these markets in the near future.

Last but not least, the export opportunities to the US, which is the world's leading banana importing nation, with 24 per cent of the total world banana trade, could be considered. North American banana imports come mainly from Central and South America on an open market basis, that is, with no tariffs or quantitative restrictions. This is even a more competitive trade arena for Eritrea as all the factors, such as time, cost, proximity and trade relationships between the US and Latin American countries, make this market opportunity a fiercely competed one.

4.4 ERITREAN TRADE POLICY

Eritrea inherited a devastated economy from a succession of colonial administrations over the past decades. The Ethiopian regime was characterized by a command economy with restricted private participation; overwhelming

escalation in the cost of production; shortages of spare parts, accessories, raw materials and shortages of exportable products and thus of foreign exchange. Like the rest of the economy, Eritrea's once growing and promising export sector was crippled while under Ethiopian control. Exports were limited to basic commodities and consumer products that did not generate the foreign exchange needed to import machinery, equipment and production inputs. Jobs were scarce and poverty was widespread and growing among both rural and urban residents. The private sector, which was once dynamic and dominated in the economy, was severely repressed. It had limited capacity to invest, lead economic recovery and lay the foundations for long-term growth and development (GOE, 2001). In this regard the FAO (2001) mentions that the ability of the private sector to develop and to take over activities previously carried out by government bodies is constrained by poor and often conflicting policy, or by good policy which is ineffectively implemented.

The new government pursued policies, strategies and investments to promote rapid, widely shared economic growth led by the private sector. It limited its own role to mainly creating an enabling environment and investing in infrastructure and strategic industries. It adopted an investment code that opened the entire economy to private investors, and acted to rehabilitate, upgrade and expand transportation, communication, power, and water supply facilities; improve the capacity of the health care, education and financial systems to deliver services and restore the productive capacity of the economy, particularly in agriculture and fisheries, tourism, construction, mining and manufacturing (GOE, 2001).

According to WTO (2003), countries with heavy government intervention and strict trade barriers are less likely to be successful in promoting economic development .In this respect, Eritrea is committed to pursuing an open and liberal trading policy and regional economic cooperation. To encourage rapid expansion of trade and free mobility of capital and people, the government has eliminated or substantially reduced trade barriers. To promote competitiveness in domestic production, nearly all quantitative restrictions and prohibitions on imports have been eliminated (GOE, 1998). The number of import tariff rates has been reduced from twelve to three and the maximum tariff rate cut, from 200 per cent to 25 per cent. Capital goods are subject to a 2 per cent tariff rate, raw materials and essential goods to 10 percent, and non-essential consumer goods and luxury items to 25 per cent. The 2 per cent duty on the value of imports not financed by a letter of credit has been abolished. Excise duties on textiles have been

removed. To compensate for the loss of revenue from customs duties, an excise duty has been placed on gasoline at a rate of 40 per cent and on diesel fuel at a rate of 25 per cent (GOE, 2001).

Customs administration has been streamlined by reducing and simplifying the steps and procedures required of importers to obtain clearance. As for exporters, procedures have been simplified and all taxes have been eliminated. Exports of goods and services are encouraged through the maintenance of sound exchange rates and a liberal foreign exchange earnings retention scheme. Additional actions taken or planned for 2001 and 2002 include enacting a new customs tariff code based on the harmonized system and ensuring that all petroleum products are cleared through customs; requiring all custom clearance and forwarding agents to pass a written examination, post security, establish offices and be financially solvent; introducing a post-audit system; and vigorously enforcing the provisions of the Customs Proclamation at all customs stations (GOE, 2001).

In addition to these unilateral steps that have been taken or are planned, Eritrea is working with countries in eastern and southern Africa to enhance free movement of goods and services in the region. Eritrea is a member of both the Intergovernmental Authority on Development (IGAD) and the Common Market for Eastern and Southern Africa (COMESA) (COMESA will be discussed in the next section), which seek to create free trade areas for member countries. Both IGAD and COMESA countries have agreed to enact laws to eliminate all trade barriers between them as soon as possible, and are working through their respective secretariats to encourage member states to undertake the necessary policy and administrative measures to implement the agreement (GOE, 2001). In addition to the African countries, Eritrea has enhanced its trade and diplomatic ties with countries of the Middle East, Europe, Asia and North America during the past few years (GOE, 1998).

4.4.1 Economic Integration

Today no one country in the world depends only on its domestic production of goods and commodities. Countries have become interdependent and exchange goods and services to their best interest. On many occasions economic integration has brought countries together on a regional or international level. This results from joint interest of countries who wish to cooperate, and help each other by signing agreements. By doing so they promote free movement of goods

and services to and from their territories. This manifests in increased imports and exports from the member countries as a result of the removal of trade barriers, such as tariffs and other technical non-trade barriers. These economic groupings have the common goals of economic transformation and development, implicitly hoping to eradicate or reduce poverty in the process. In other words, economic cooperation and integration are not ends in themselves, but a means towards sustainable economic development. The following sub-sections provide an over view of Eritrea's involvement in economic cooperation and integration.

4.4.1.1 World Trade Organization (WTO)

Eritrea is not yet a member country in the WTO (at April 2002), but she has been participating as an observer (in the process of accession) in numerous meetings of the WTO. Government officials have also attended courses on various issues such as WTO trade policies. Eritrea needs to understand and apply the rules and regulations of the WTO and other economic integration blocs for better outcomes in its trade endeavours. Notwithstanding the fact that Eritrea does not currently export or import bananas, the future prospects of the banana industry makes it essential that Eritrea complies with ongoing trade relations. In this regard proposals and negotiations pertaining to a Development Box are important.

A Development Box was proposed as a means of implementing the WTO agreement on agriculture (AoA) relating to the importance of special and differential (S&D) treatment of developing countries as a way of positive discrimination. It would be a package of exemptions from WTO rules and designed specifically to allow developing country governments to protect their poorest farmers.

The Development Box is based on three underlying principles. Firstly, it will only apply to developing countries. Secondly, the Development Box is targeted at small farmers in developing countries. Thirdly, this will give governments flexibility to protect key "food security crops". These crops, consisting mainly of staple foods, are grown by small farmers, and are vital to the way these countries feed themselves. Hence, the liberalization commitments of developing countries could be based on this flexibility (CAFOD, 2003).

4.4.1.2 COMESA

As mentioned above, Eritrea is a member of both the Intergovernmental Authority on Development (IGAD) and the Common Market for Eastern and Southern Africa (COMESA), which seek to create free trade areas for member countries. In this section, COMESA will be discussed in more detail owing to its importance to Eritrea and the whole region.

The Treaty establishing COMESA was signed on 5 November 1993 in Kampala, Uganda, and was ratified a year later in Lilongwe, Malawi, on 8 December 1994. Member countries are Angola, Burundi, Comoros, Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Namibia, Rwanda, Seychelles, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

COMESA's role in sustainable economic development involves taking full account of the general move away from state-controlled economies towards more liberalized, market-determined economies, and by recognizing the vital role the private sector has to play in the social and economic development of the region. COMESA is uniquely positioned to assist with the process of regional integration and the Cross Border Initiative (CBI) process. The main role of the COMESA Secretariat, within the framework of the COMESA Treaty, is to take the lead in its member states, through promotion of regional integration, to make the adjustments necessary for them to become part of the global economy within the framework of WTO regulations and a post- Lomé situation, which may include a cessation of preferential access to the markets of the European Union through Economic Partnership Agreements (EPAs).

COMESA is strongly in favour of trade liberalization and advocates the adoption of the following measures:

- Elimination of tariff and non-tariff barriers to trade;
- The free movement of capital, labour and goods;
- Establishment of standardized technical specifications;
- Elimination of restrictions on the movement of goods and individuals;
- Standardizing tax rates (including value added tax and excise duties);

- Promotion of the adoption of a single currency and the establishment of monetary union; and

- The adoption of a Common External Tariff (CET).

Over the short term, the success of COMESA following this new outward oriented approach might be measured by the extent to which trade within the trading bloc increases. Over the longer term the benefits of regional co-operation should result in increased economic development.

4.4.1.3 The Lomé Convention

The Lomé Convention was signed in the capital of Togo, Lomé, in 1975 and involves a series of agreements between the EU and 71 LDCs in Africa, the Caribbean and the Pacific (the so called ACP states) about trade relations between the signatories of the Convention.

Since its creation, the Convention has closed four agreements. The most recent Lomé IV agreement signed in 1990 for ten years improved access to European markets for some agricultural goods as well as providing foreign aid through the European Development Fund and loans through the European Investment Bank. Like the arrangement with the IMF and the World Bank, this agreement linked financial assistance with broad Structural Adjustment Programmes.

As will be seen in the following sections, the Lomé Convention was not an all-inclusive agreement to the banana trading countries in the world. It lacks integrity, especially in the case of Latin American countries, of who some almost entirely rely on banana trade, such as Ecuador. The preferential market access given to ACP countries puts the non-ACP banana trading countries at risk and at the same time contradicts the rules and regulations of the WTO.

4.5 CONTROVERSIAL TRADE DISPUTES RELATING TO BANANAS AND IMPLICATIONS TO ERITREA

Bananas are symbolic of the wide range of injustices present in international trade today. These include:

- Unacceptable working and living conditions for many of those who grow and harvest bananas;
- Suppression of independent trade unions;
- Environmental devastation caused by toxic chemicals and intensive farming; and
- The disproportionate economic and political power of the handful of multinational corporations which supply bananas to the North.

Bananas have been subject to one of the most controversial trade disputes in the WTO, a dispute that pitted Europe against the US and certain Latin American countries (Bananalink, 2003).

- **EU/US "Trade War"**

Relations between EU states and associated underdeveloped economies (the ACP states) have been governed largely by the Lomé Convention. While bananas from ACP countries are exported to the EU market with zero tariffs, bananas produced by US based transnational corporations in non-ACP Central American countries are charged a tariff by the EU. The liberalization of the banana industry in the European market has been a major trade issue between the US and the EU (Yahoo Finance, 2002).

Article 1 of the Banana Protocol, which forms part of the Fourth Lomé Convention states in respect of its banana exports to the community markets, “that no ACP state shall be placed, regarding access to its traditional markets and its advantages on those markets, in a less favorable situation than in the past or present”.

This article clearly favors ACP countries (of which Eritrea is one) even though ACP bananas could not *compete* internationally with "dollar" bananas (banana produced in Latin America). Bananas from these countries were only found in the European markets by virtue of the various schemes of preferential licensing. The same applied to EU produced bananas, which were even more uncompetitive since it was not included in the Common Agricultural Policy (CAP) of the EU. A common market for bananas (which is not the same as a free market for

bananas) would, therefore, clearly have to maintain differential treatment of some sort for ACP-produced and EU produced bananas, compared to those from Latin America (Sutton, 1997).

In May and September 1997, and again in April 1999, the European regulation was condemned by the WTO. This followed more than five years' "banana war" between the EU and the US. Since the EU banana regime was set up in July 1993, the US government (under pressure from the company Chiquita) and certain Latin American exporting countries challenged the system on the grounds that it discriminated against them, in favour of fruit from former colonies (ACP countries). The WTO agreed that the ACP banana-exporting countries could have preferential market access to EU markets in accordance with the terms of the Lomé Convention. It also agreed that the tariffs and quotas were compatible with WTO rules. However, it ruled that the import-licensing system clearly contravened WTO rules, because it unfairly discriminated against some of the companies importing and marketing Latin American bananas (Bananalink, 2003).

In an effort to allow the "dollar" and ACP bananas to coexist in a single market, the EU established its banana import regime, and laid out its modus operandi in Regulation 404/93. Through a complex system of quotas and licenses, "dollar" and ACP bananas (and indeed European bananas) could in principle compete in the single market on fairly equal terms. The new regulation allowed the interests of the ACP states to be partially protected, as the "dollar" bananas were subject to volume restrictions - quotas - and to an import duty – tariffs (Bananalink, 2003).

This regime was again criticised (Phillips and Bahree, 1999; Barshefsky, 2000) and consequently, on 1 January 1999, the EU implemented a reformed import regime in response to the rulings, with four countries being allocated guaranteed shares of the "dollar" banana quota. But Ecuador challenged the regime again, saying that it still did not conform to WTO rules. In April 1999, a new WTO dispute panel ruled in Ecuador's favour, suggesting a variety of ways in which the EU could make its regulation compatible.

Also in April 1999, the WTO authorised economic sanctions by the US against a variety of products from the EU, although the value of the sanctions requested was reduced from US$520 million to US$191 million per year. In May 2000, Ecuador was authorized by the WTO to impose sanctions to the value of over

US$200 million against the EU. Ecuador was the first developing country to be authorized to impose sanctions, but they were never implemented as Ecuador only risked raising the cost of its own imports from the EU.

Later in April 2001, the EU finally reached agreement with both Ecuador and the US, the two main complaining parties in the WTO dispute. A new regime preserving quotas and tariffs was designed. The agreement, which became effective on July 2001, provides for a new distribution of the various quotas, notably a reduction in the ACP quota, and a reduction in the non-ACP countries' tariff. But this tariff preference granted to the ACP will end in 2006, by which time all producers will have free access to the European market (Yahoo Finance, 2002). This would be advantageous to competitive Latin American suppliers provided they do not face a tariff so high it prohibits trade. The implication for Eritrea (if producers start exporting to the EU market) is that Eritrean producers, like those of other ACP countries, have little time to adjust and become competitive against the “dollar” bananas on the European market, which presently enjoy a production cost and quality advantage.

4.8 SUMMARY AND CONCLUSION

This chapter reviewed current production and consumption of bananas worldwide. World banana production amounts to some 55 million tons per year concentrated in Africa, Asia, the Caribbean and Latin America because of favorable climatic conditions for bananas. However, production, as well as exports and imports of banana, are highly concentrated in a few countries. This concentration of banana production has increased over time although it now shows a different regional distribution. In terms of consumption, bananas is the world's most widely consumed fruit after grapes.

Analysis of the TradeMap and corresponding tables revealed many important aspects. The chart shows that most of the export items of DCs in the fruit and vegetable cluster are in the "Champions" and "Achievers in adversity" quadrant, implying that DCs have been gaining market share . Naturally, the distribution of product items into the four quadrants is likely to be different for individual countries than for DCs as a whole. Hence care must be taken when interpreting for specific countries.

Concerning the direction of trade in bananas, it is important to note that, due to the importance of the different banana import regimes in consuming countries, the world banana trade has a clear regional character that has consequences for preferential and open market access for bananas. This matter requires careful attention since it provides insight of how the future pattern of banana trade will be. Transportation cost and time also have a bearing on the regional fragmentation of the banana trade. It is also interesting to note that some African countries import bananas from countries further afield , even though their neighbors produce exportable surplus.

Another matter highlighted in this chapter is economic integration. These economic groupings have the common goals of economic transformation and development, implicitly including eradication or reduction of poverty in the process. In other words, economic cooperation and integration are not an end in themselves, but rather a means towards sustainable economic development.

The Lomé Convention, which placed certain Latin American banana exporting countries at a disadvantage, was the root cause of disputes and the eventual replacement of this Convention will have an impact on the future banana export prospects of ACP countries. Eritrean producers, like those of other ACP countries, therefore have little time to adjust and become competitive against “dollar” bananas on the European market, which at this point enjoy a production cost and quality advantage.

CHAPTER 5

THE BANANA SUPPLY CHAIN IN ERITREA

5.1 INTRODUCTION

The inefficiency and ineffectiveness of the Eritrean banana market is an outcome of the poor production and marketing practices described in Chapter Two. As mentioned, major production problems include: shortage of capital and scarcity of land; shortage of farming materials; spoilage of banana during harvesting due to inappropriate harvesting techniques and facilities and lack of technical know how; and flooding of farms located near the Aligidir Project. On the other hand, the main marketing problems are: Transportation of produce to stores; general storage problems; lack of information; spoilage during transport; lack of buyers in the domestic market; shortage of crates; price fluctuations and broker problems. Even if these problems are solved, there remains a need to reform the management of the supply chain of the Eritrean banana market. This is a result of the major driving forces reviewed in Chapter Three. These are the current trends toward increased globalization of markets, trade liberalization, advances in information technology and improved logistics and changing consumer preferences. These forces will continue to shape the structure of the banana market in Eritrea.

It was stated that the establishment of a competitive supply chain is a prerequisite for an industry's competitiveness and success. This chapter will analyze SCM for the Eritrean banana market by using the available socio-economic data. The major dimensions needed for the analysis of supply chains will be highlighted first. A detailed discussion will follow, with specific reference to the role players in the banana chain in Eritrea.

At this point SCM may seem a nebulous concept that does not form part of daily operations of the marketing of bananas in Eritrea. Nevertheless, in the long run, the drivers of change in the way bananas are marketed warrant reform.

5.2 DIMENSIONS OF SUPPLY CHAIN MANAGEMENT

Supply chains are commonly analyzed according to the following perspectives: flows of product, flows of information, flows of money, and the existence of relationships (governance) and incentives (Spekman, 1998). This study adopts this approach to analyze the Eritrean banana industry. The best way to analyze each dimension is to find the points along the supply chain that merit further improvement and coordination. With this in mind, each role player's involvement and impact in the supply chain is discussed with specific reference to each dimension. Data collected for analysis purposes include primary and secondary data from various sources. As for the primary data, a participatory survey of all types of marketing agents involved in the marketing chain was done.

Producers: For this study a total of 45 producers were interviewed, of whom 20 were from the Akordat area and the rest (25) were from the Tesseney area. These two production areas, located in Zoba Gash Barka, have the best natural conditions, climate and water for banana cultivation.

Wholesalers: In this regard a total of 25 wholesalers were interviewed, all from Asmara, the capital city, where the biggest market for bananas is located.

Retailers: Twenty retailers were interviewed, all from Asmara.

Various surveys have been conducted over the years in an attempt to study the Eritrean banana market and identify the constraints encountered in the production and marketing of bananas (MOA, 1999; Goitom, 1997). Randomly selected role players were interviewed to obtain first hand information. Secondary data was also obtained from various sources of information, such as Ministry of Agriculture (MOA), Department of Agricultural Research and Human Resources Development (DARHRD), and the University of Asmara (UOA) and other institutions.

Prior to the analysis of the supply chain of the banana industry, it is necessary to discuss the objectives of a supply chain and the role that capabilities and competencies play, as these occupy central points in the chain.

5.2.1 Objectives of Supply Chain Management

As with any business process, managing the bananas supply chain requires an understanding of its objectives. Supply chains have many specific objectives, but they may be grouped into two broad categories.

Operating efficiency

The first set of objectives is concerned with the optimization of the current supply chain operations and efficiently performing critical supply chain activities. These objectives, according to Van Duren and Sparling (1998) are concerned with "doing things right" by reducing cost, inventory levels, increasing processing flexibility, while at the same time improving customer service. Although improvements in operating efficiency among the individual stakeholders of the banana industry can still be made by improving processes within their own activities, working with other members of the supply chain expands the scope of variables that can be manipulated/altered. Many improvement opportunities will be lost unless they are addressed by multiple chain organizations working together.

Strategic effectiveness

The second set of objectives involves leveraging the competencies of chain members to attain new competitive advantages through new products, services or markets. Van Duren and Sparling (1998) explain that strategic SCM entails the search for innovative new ways in which chain members can combine capabilities and competencies.

Of significant importance in the banana business is the objective of changing the culture of the industry. This may be a challenging strategic objective, as it involves creating an atmosphere in which supply chain participants trust each other to make mutually beneficial decisions. Achieving this type of supply chain objective requires that all participants in the banana industry realize that the success of the industry depends on effective SCM and that this cannot occur without cooperative efforts. They must view the process as a win-win venture.

5.2.2 The role of capabilities and competencies

An effective supply chain requires that managers think about the role of capabilities and competencies, and determine which of these will be managed internally in the organization and which will be shared and managed jointly with supply chain partners.

Collins (1999) defines capabilities as organizational strengths that require integration or a combination of resources. They may be contained within a functional area of the business (e.g. marketing, operations, logistics) or they span various functions.

Competencies are a specific type of capability. A capability must meet four criteria to be considered as a competency. Specifically, it must be valuable, rare, non-substitutable, and inimitable. A valuable capability is one that can be embedded in products and services that customers find valuable. A rare capability is one that is possessed by few, or no other, actual or potential competitors. A capability is non-substitutable if it cannot be replaced by another type of process or skill. To be inimitable, a capability cannot be developed easily due to historical conditions, because it involves relationships among resources that are casually ambiguous or socially complex (Van Duren and Sparling, 1998).

The above note sets the direction in which participants in the banana supply chain should look and continuously aim to achieve the stated objectives by applying and/or creating capabilities and competencies. As this is the framework that they should adhere to, the following section deals with the analysis of banana SCM in Eritrea.

5.3 EVALUATION OF SUPPLY CHAIN MANAGEMENT IN THE ERITREAN BANANA INDUSTRY

5.3.1 Product flow

The first critical dimension of the banana value chain is the flow of bananas along the chain. Aspects like transportation and logistics ensure that the bananas in the supply chain are delivered to other role players and consumers at the desired quality at competitive prices.

Several characteristics distinguish agricultural products from products in other industries. These include the perishability of the products, non-homogeneity of product quality, unpredictability of supply due to natural seasonal phenomena, uncertainty regarding product availability, and variable product yield. Serving markets with high quality products requires consistent levels of high quality produce at competitive prices. Product quality is extremely important to gain access and retain a competitive edge in markets. The aforementioned characteristics are no different for the banana industry in Eritrea. It is , therefore, necessary to take into account four vitally important aspects related to logistical management in the banana supply chain, namely: location, production, inventory and transportation.

- **Location**

  The geographic placement of production facilities, stocking points, and sourcing points is the natural first step in creating an efficient supply chain. The location of facilities involves commitment of resources to a long-term plan. Once size, number and location are determined, the possible paths by which the product flows through to the final customer are clear. As for the production of bananas, the location is fixed to those areas that are most suitable and relatively little can be done about this.

  Given the current state of affairs government should initially act as a coordinator through extension offices to ensure timely collection of bananas at a central point for downstream players to collect. This could greatly reduce the transaction cost of collecting bananas over a wide geographical area for middlemen. Transaction cost in this instance refers to time spent to collect bananas before selling to consumers, losses in quality (discussed in more detail later), time spent to source information, etc. Such central collection points could also serve as a place where grading can take place and risks associated with quality deterioration can be avoided.

- **Production**

  Bananas are produced throughout the year, although production reaches a peak from March to April, but banana varieties produced by farmers are not uniform and does not necessarily comply with what consumers want.

As far as uniformity is concerned farmers in many cases have mixed plantations, with relatively little being produced per variety. The problem with this is that buyers who prefer one specific variety seldom are able to buy everything they need from one producer. This increases their transaction cost and are discounted in the price they pay producers. Also consumers prefer the spotted yellow banana over the normal yellow banana, but the former is not produced by many producers.

Appearance is used by retailers to lure customers to buying their bananas, although they sometimes use size to attract customers. The quality of the bananas should be determined by size (length of fingers and thickness), evenness of ripening, absence of blemishes and defects and the arrangement of the clusters. For a long-term improvement in the banana business bananas must be of uniform and a known variety.

The non-uniformity of produce and deterioration in quality should serve as an incentive to develop a more effective SCM. There is a limited time period between harvest and the start of quality deterioration, making the efficient movement of the product essential. In most local market situations, bunches of banana are harvested near to maturity, and quality can change from 4 to 7 days after harvest, thereby increasing market risk. In this case, post-harvest quality control measures should receive urgent attention. Grade standards both for size and quality should be introduced and should be uniform. Uniform and consistent quality can be channeled throughout the supply chain if there is coordination among the participants of the chain. In this case quality is a function of the various activities that take place across the chain. There must be a quality control point at each level of the supply chain that conforms to a certain standard. Chain participants must cooperate and recognize that their collective work will later be translated into better profits, while at the same time satisfying the end consumers.

This process will make producers more responsive to changes or problems that occur at different links in the supply chain. They will be encouraged to start looking for common long-term objectives and lasting business relationships. One potential problem at this point is the difficulty of persuading producers of the value of quality systems and chain management. Of course, quality management of the supply chain enables

producers to regain control of the supply system to ensure that all links work together to meet customer requirements at the same time as generating profits.

- **Inventory**

It is very difficult to synchronize the time of production and consumption (or sales), at least in the present banana-marketing situation in Eritrea. It is often impossible to determine the exact demand for bananas, which adds to the importance of proper inventory management. In this regard, the issue of packaging and storage of bananas is vitally important, especially from a quality preservation point of view.

Packing during transport is one of the most important actions required for a perishable product like banana. It has a considerable effect on the safety and quality of bananas that reach consumers. The majority of the banana wholesalers interviewed use wooden crates to transport bananas. For this study, the total produce transported averaged 35 quintals per month per wholesaler. Of this, an average of 32 quintals arrived safely and an average of 3 quintals were spoiled on the way. This amounts to a spoilage rate of 9 per cent of the total bananas purchased by wholesalers. Retailers in Asmara, in turn, purchase their bananas from the wholesalers. On average, this amounts to 53 kilograms per month per retailer. Losses average about 5 kg per retailer, which is around 10.5 per cent of the amount sourced. All in all the total loss is nearly 20 per cent before the banana reaches consumers. Other studies have shown that banana loss due to spoilage is from 15 per cent (Goitom, 1997) to as high as 35 per cent (MOA, 1999; Haile et al., 2000).

Clearly the aforementioned necessitates a new approach to managing the flow of bananas from producers to consumers. In this regard, ripening rooms are of paramount importance to prolong the life of bananas. The capacity and ventilation of the rooms influence shelf life of the bananas directly. The interview results reveal that most of the banana wholesalers own ripening rooms with an average of 58 quintals capacity. The main problem comes in with the way the bananas are treated whilst in the ripening process. The temperature of the rooms and placement of the bananas are handled traditionally. There is no controlled temperature in

the room. The bananas are placed one over the other in wooden crates and in piles. This practice of ripening and handling makes it unwieldy for wholesalers to control their ripening in relation to demand by consumers. Bananas take on average 3 - 4 days to ripen after it has been placed in the store. Synchronizing supply and demand poses a particular problem, as a quick market is needed to clear out the produce from the store after ripening. If this is not done wastage increases, but on the other hand the inability to manage the outflow of bananas regularly results in over supply to the market. An obvious option is to slow the ripening process, but current technology in use also limits the ability of wholesalers to slow the ripening process sufficiently. For example, some techniques include ventilating the ripening rooms by opening the doors and windows, but this may not be sufficient to delay the ripening process.

The typical retailer in Asmara, for instance those in general shops and open outlets, rack bananas together with a variety of smaller food and non-food groceries, including other fruit. They hang bananas with a hook or pile it up. In this case, the length of time that bananas can stay unspoiled is related to the handling by retailers and wholesalers alike, because the way wholesalers handle bananas also determines the health of the bananas when retailers purchase it. Retailers have no recourse when bananas get spoiled, and have to dump it at a loss. To compensate for the loss, consumers have to pay a higher price for bananas.

In summary, the marketing system suffers from lack of proper grading, non-availability of and expensive packaging cases and traditional storage and ripening systems. For effective and efficient SCM to evolve in the Eritrean banana industry, modern storage and packaging of the fruit must be instituted. This will ensure consistency in fruit quality; fruit will be fresh and sound at the destination market, and producers will be able to supply bananas all year round in substantial quantities. This can only be achieved by adopting the right practice of correct post harvest handling, coupled with good infrastructure and business environment.

- **Transportation**

The method of transport and available infrastructure affect costs of transport itself, inventory and risk (e.g. product quality deterioration, as

discussed above, and loss due to spoilage). Wholesalers in the banana business use Bedford Lorries and small pick-ups to transport bananas. The kind of vehicles used determines the efficiency and due to economies of scale using big trucks can save time, fuel, energy and thereby reduce overall cost. While this may be an important factor in facilitating the transport of bananas from producers to consumers, its impact is related with infrastructure to a larger extent. The access to suitable roads plays a pivotal role in this regard. For producers and wholesalers this creates a ripple effect along the whole chain. Unsafe and rugged roads in Eritrea causes bruises and damage to the bananas, resulting in higher spoilage and quality deterioration. It also contributes to high costs for fuel and spares for the vehicles used to transport bananas. Another important factor regarding the unavailability of adequate storage facilities in cities like Keren is the additional cost of transport. Keren is located between Asmara and Akordat (one of the production sites), and consequently bananas first reaches wholesalers in Asmara, from where the bananas have to be transported back to wholesalers in Keren again. This results in higher operating costs.

It is clear from the above discussion that the additional costs of transportation provide motivation for changes in the way bananas are channeled to reach each level of the chain. Note that the supply chain as an integrated whole, rather than a series of disjointed functional responsibilities, enables businesses to work together to achieve dramatic cost savings, improved service levels and a sustainable competitive advantage. For this to happen, smooth roads and modern storage and ripening facilities must be available at the major market sites, with priority given to cities.

5.3.2 Information flow

The second important dimension of the chain concerns the flow of information along the chain. Information is necessary to control primary business processes in chains, to generate management information to assist in decision-making and provide statistics for regulatory bodies.

In this modern information era, where information is a powerful tool in any business enterprise, information provision is the weakest link in the Eritrean

banana industry. This warrants a more detailed discussion with respect to agriculture as a whole and the banana industry in particular.

Information sharing among the members of a supply chain will always be a fundamental requirement for the success of any supply chain. Information empowers managers to take decisions across functions and enterprises to improve the efficiency of the supply chain. Information is also fundamental in fulfilling the need of consumers for certification and quality assurance. Information systems should enable enterprises to trace, verify and certify the food production process and thereby ensure the health of consumers. Supply chain management initiatives are unlikely to succeed without the appropriate information, information systems and the technology needed to support them.

More specifically, market information is crucial to enable banana producers and traders to make informed decisions about what to produce and when to do so. Market information enables producers to plan their production according to market demand, to schedule their harvests at the most profitable times and to decide to which markets they should send their produce. Lack of market data on current market prices, crop prospects and prospective changes in demand poses a major problem in the banana industry in Eritrea. The current recording system for banana production, prices, sales and consumption is incomplete. One can hardly analyze demand and supply conditions of the current banana industry. On the other hand, structural data such as household income and expenditure, which are presently nonexistent, are essential for a clear understanding of consumers' role in the banana chain.

In an ideal setting, a detailed understanding of the prices, as well as appropriate cost data for bananas should be available. Unfortunately, such data are most often incomplete and sometimes nonexistent. Most available cost estimates are based on average units at a certain time and are hence not appropriate for estimating an industry supply curve that is based on marginal cost. One must frequently turn to aggregate data, if available, for commodities to draw economic inferences about competitiveness.

Another problem that arises from lack of information is the weak link between producers, middlemen and consumers. This causes the participants to work independently without paying attention what is happening along the chain and

without being aware of the major driving forces likely to shape their relationships in the future. Lack of communication among these chain partners leads to poor performance in production, delivering the product along the chain and even displaying it for consumers. At each level and cycle of the supply chain data need to be recorded for further use to correct for past failures and make decisions for the future.

The discussion above explains the current situation of data and information in the Eritrean banana industry and its implications for SCM. There is an urgent need for data and information in agriculture. The success of information systems in agriculture depends on how well it meets the information needs of users, i.e. public and private decision makers with an interest in and responsibility for food and agriculture (FAO, 1986; USDA, 1987). Therefore the design and implementation of such a system must be based on understanding and appreciation of those needs in the context of the information system of which it forms part (FAO, 1986).

Various users along the supply chain require agricultural information. These include farmers and extension officers, researchers, agricultural service industries and policy makers (Plaunt, 1967; Russell, 1983 and USDA, 1987). An integrated information system is also required along the supply chain within and between chain participants. As explained above, farmers use market information to make informed decisions about what to produce, and when to do so. However, the ability of the producer to meet the dynamic changes in the market place successfully hinges on the interpretation of the data received on market prices, production trends and cycles (Riemenschneider and Bonnen, 1979). It is indicated that improvement of the information exchange along the distribution chain, and of course the correct interpretation of that information, is a prerequisite for monitoring and assuring product quality and searching for opportunities to improve the quality of the fruit .The responsible bodies for information, such as the National Statistics and Evaluation office and Ministry of Agriculture, should make a concerted effort to provide farmers with information and integrate it within the SCM. In a highly competitive market agricultural service industries have to have rapid access to data on market trends, production estimates and prospects concerning agricultural industries .The satisfactory analysis of the agricultural sector requires data that are pertinent, reliable, impartial, accurate, and timely (Linder, 1998).

Without information no meaningful progress can be realized. Actions must be instigated by the government to improve existing, or to establish new data collection methodologies that satisfy the needs of the whole banana supply chain.

5.3.3 Governance

The third critical dimension of the supply chain is the governance/coordination system. Alternative governance systems for the banana industry may include open-access markets, various forms of contracts (such as the contracts entered into with wholesalers) and producers' cooperatives. Table 5.1 shows where producers interviewed channel their produce. Of all the interviewed producers, 27 per cent sell to both wholesalers at the farm gate and wholesalers in Asmara, and 27 per cent sell only to wholesalers in Asmara. Another 18 per cent of interviewed producers sell only to wholesalers at the farm gate and 16 per cent to wholesalers at places other than Asmara. A small proportion of the interviewed producers sell to both wholesalers in Asmara and places other than Asmara, amounting to 7 per cent of the total number of farmers interviewed. A very small proportion also sell to wholesalers at the farm gate and wholesalers other than those in Asmara; to all wholesalers at the farm gate, in Asmara and other places; and to retailers outside Asmara each with 2 per cent.

The existence of various outlets for bananas as shown in Table 5.1 implies that chain participants are not bound to a definite governance structure. Instead there is a mixture of alternative governance systems, including open-access markets and contracts with wholesalers. In relation to the objective of this study, reform is critical in terms of the governance system for efficient management and coordination of growers and marketers along the supply chain. In this case the choice of a governance/coordination system will have a significant impact on the distribution of power and control in the supply chain. The introduction of horizontal strategic alliances between the producers, and vertical ownership along the supply chain with retailers and consumers will give better results. The numerous existing producers in all the production sites can be organized to work together in a group. The producers will have to abandon their traditional competitive positions towards each other in favor of cooperation in order to compete more effectively. This producer group can then be linked to a marketing group in a vertical alliance with retailers and consumers throughout the chain. At the same time the numerous retailers with small capacity should be reduced to a few large grocery retailers linked vertically to the marketing group of the supply

chain. By doing so organization and communication across the banana supply chain can be enhanced greatly. In the long run, chain participants can focus beyond the industry to involve non-organizational members external to the banana industry, such as international retailers and consumers.

Table 5.1: Producers and destination of their banana produce

Destination of produce	Number of producers	% of total producers
1*	8	18
2*	12	27
3*	7	16
4*	1	2
1 & 2	12	27
1 & 3	1	2
2 & 3	3	7
1, 2, & 3	1	2
Total	45	100

1* to wholesalers at the farm gate
2* to wholesalers in Asmara
3* to wholesalers other than Asmara
4* to retailers other than Asmara

A continuum of governance structures is available to participants in supply chains. This coordination continuum is presented in Figure 5.1, which shows that the spot market and vertical integration are at the extremes of the coordination continuum. The spot market constitutes the open market ideal of Adam Smith, where the "invisible hand" coordinates market transactions. Individuals are assumed to act only as a result of self-interest and pursue exchange agreements that are short-term, opportunistic, limited with regard to information sharing, flexible, and preserving actors' independence. The Eritrean banana market, where all the market participants act independently, where there are numerous producers and middlemen, and limited information sharing among them, exhibits more or less this type of market system.

At the other end of the continuum coordination is managed on the basis of mutual interest, for the exchange partners who pursue exchange agreements that are long-term, benefit sharing, open regarding information flow, stable and supportive of interdependence. As a matter of fact the trend of the Eritrean banana market should be directed towards this end of the continuum. As strategies are considered from left to right, coordination evolves from being dominated by invisible-hand characteristics through a changing mix of invisible hand/managed characteristics to being dominated by managed characteristics.

However, vertical integration and open market transactions do not represent the only choices of vertical coordination available to participants in the banana industry. The third portion of the continuum in Figure 5.1 represents strategic alliances as facilitators of market coordination. The strategic alliance may be defined as a relationship in which the firms involved share risks and benefits emanating from mutually identified objectives (Peterson and Wysocki, 1997). In this case, a strategic alliance may be formed among the banana supply chain partners that retain their individual and separate identities. These partners work together to attain their common objectives, meanwhile finding methods to resolve differences, distribute captured profits, and equitably share risks. Hence, the suggested model for the Eritrean banana industry would lie below the diagonal line in figure 5.1.

Figure 5.1: Alternative governance structures for managing produce marketing

	Spot/ cash market	Specifications contract	Strategic Alliance	Formal Co-operation	Vertical Integration	
Characteristics of "Invisible Hand" coordination						**Characteristics of "Managed" coordination**
Self Interest						Mutual interest
Short-term Relationship						Long-term Relationship
Opportunism						Shared Benefits
Limited Information Sharing						Open Information Sharing
Flexibility						Stability
Independence						Interdependence

NOTE: The diagonal line represents the mix of invisible-hand and managed coordination characteristics found in each of the five alternative strategies for vertical coordination. The area above the diagonal indicates the relative level of invisible-hand characteristics and the area below the diagonal indicates the relative level of managed characteristics.

Source: Peterson and Wysocki (1997)

5.4 TRANSACTION COSTS

Transaction costs are costs associated with each of the stages in a marketing exchange process and involve the whole array of costs associated with buying, selling and transferring of ownership of goods and services. These costs are incurred when gathering information, when identifying and screening potential trade opportunities, outlets and partners, when negotiating trading agreements, transferring goods, services and ownership rights, and when monitoring the conditions that were negotiated.

Supply chains can avoid transaction costs through better coordination and through long-term relationships with trustworthy partners. These long-term supply chain relationships reduce unnecessary costs when a firm has to re-establish relationships with new partners. Long-term supply chain relationships also reduce costs associated with monitoring and enforcing the stipulations of the agreements necessary to conduct business successfully.

By establishing the kind of governance structure through SCM as proposed in the above discussion, the following practical transaction costs in the banana marketing system can be reduced or avoided. These include:

- Search costs: Including costs due to a lack of knowledge about products, prices, demand and supply.
- Screening costs: Costs that result from uncertainties about the reliability of suppliers/buyers, or from uncertainties about the actual quality of bananas.
- Bargaining costs: These are costs that may result from conflicting interests between producers and middlemen or uncertainty about the willingness of producers/middlemen in the case of contracts.
- Transfer costs: Costs involved in handling and/or storage and transport.

5.4 TRUST

By now it should be clear that a very high level of trust is part and parcel of a successful supply chain. Trust is the glue that keeps relationships together.

Partners in supply chains depend on each other in terms of the investments they make and the common strategic goals that underscore their mutual interdependence. Trust is not easy to define, identify or to measure. The elements of trust will vary according to specific situations.

Trust implies that the risk of opportunistic behavior by one of the partners in the alliance is perceived to be very low. When partners trust each other the importance of control in the relationship is made redundant. The costs associated with control are also reduced. The advantages of trust can be summarized as follows:

- It economizes the specification and monitoring of contracts;
- It provides material incentives for cooperation and reduces uncertainty;
- It provides for flexibility which is advantageous compared to detailed formal contracting that is difficult to modify when conditions change;
- Furthermore, detailed formal contracting starts a contract on a footing of mistrust;
- It reduces costs of search and monitoring (such as the transaction costs shown under the transaction cost section) because trusting people are less secretive;
- Leads to higher efficiency due to better information-sharing between organizations; and
- Partners deliberate and negotiate on a basis of give and take rather than exiting (walking out) when conflict arises.

5.6 CONSTRAINTS THAT MAY HINDER EFFICIENT SCM IN THE BANANA INDUSTRY IN ERITREA

Several types of constraints may hinder the achievement of the stated objectives in the supply chain relationship. These constraints may be controlled by the customer, by the banana industry, by the government, by a combination of these participants in a supply chain or, it may be constraints that chain members cannot control, but may be able to react to more effectively.

- **Product constraints**

Bananas can impose unique constraints on its associated supply chains. All along the supply chain, the need for quality and safe bananas impose stringent constraints on the supply chain processes. The perishable nature of bananas imposes constraints on production, delivery and inventory, but also provides strong incentives for supply chain improvements. This is the area that needs most effort towards improvement by participants in the banana supply chain. These involve:

- The use of improved production methods and superior banana varieties;
- Appropriate packaging and handling;
- Sell banana as quickly as possible by capitalizing on marketing windows;
- Appropriate storage (this includes amongst others, separating the ripe bananas from the unripe bananas since the ripe bananas may facilitate quick ripening of unripe bananas).

- **Technological and informational constraints**

The importance of technology and information has been mentioned several times. It is also highlighted in Chapter Three as one of the factors that influence competitiveness in Porter's diamond of national competitive advantage. Improvements in production and harvesting methods, transporting facilities, packaging, storage and logistical capabilities add mush desired flexibility to the banana supply chains by increasing speed of movement of products and by extending product life. The success of SCM is to a large extent related to the technological and informational facilities available.

- **Industry constraints**

The large number of producers, volume and frequency of marketing, the size of the marketing outlet, the educational level of producers and available facilities all place significant restrictions on the flexibility of the banana industry as well as its ability to respond to changes. Up to now very little has been said about the educational level of farmers. In this respect the interviewed group comprises mainly those that have received formal education, either elementary, junior secondary or even high school education. The rest are illiterate or can merely read and write. The level of education required for participants in the banana

supply chain is of great importance and hold implications for their business ability. For instance, the use and sourcing of appropriate information for the management of the banana supply chain is related to the level of education. It is also directly related to the efficiency of performing activities at all stages of the supply chain. Many of the determinants of competitiveness for the banana industry as described in Chapter Three relate to this factor directly or indirectly.

Experience in the banana industry has a bearing on the effectiveness and efficiency of marketing activities. Respondents have generally been involved in the banana business for between 1 to 28 years, with an average of 7 years of experience. This shows that most of the participants entered the banana business after liberation in 1991. Various factors are related to years of experience in the banana business. An experience curve effect is one of them , i.e the longer they have been in the business, the more experience they accumulate and the more effective they could become.

Another interesting point is the industry's culture. It plays major role in the success of the banana industry. Historical, competitive and adversarial relationships between the various banana chain members may restrict the types of initiatives that may be attempted. In this case, as described under section 5.4, the industry participants must cooperate to work together to attain for a mutual benefits.

- **Natural constraints**

Climate is an uncontrollable variable that can dramatically impact on the production levels of bananas. For instance, farmers located near the Aligidir Project occasionally experience large losses due to flooding. Over flooding of the Gash and Barka Rivers also cause problems, especially during the rainy season. Farmers also face occasional winds that uproot plants, and sunstroke that damages plants. While the climate cannot be controlled, its impact on the chain may be mitigated through proper planning, including distribution of production, alternate production techniques and flexible distribution plans.

- **Government constraints**

After discussing the impact of the above constrains in the banana supply chain it is also essential to secure a workable environment in relation to the government.

The government must create a platform for participants to function at their best. An integrated supply chain relationship in such an encouraging working environment allows participants to lobby for mutually beneficial changes in legislation, instead of changes that benefit some participants at the expense of others.

The Ministry of Agriculture (MOA) gives high priority to commercial farming in the South Western Lowland Zone (SWLZ), with moderate priority to irrigated commercial farming in the North Western Lowland Zone (NWLZ), for which bananas are well suited. Agricultural research has ranked bananas as a high priority crop (GOE, 2001). In addition to these, the government can encourage supply chain participants to raise the quality of banana produce by enforcing strict product standards; giving incentives for successful producers in the form of financial loans; providing accurate information on time; aiding the role players to identify critical success factors in the banana supply chain; and securing improved infrastructure.

In international supply chains, additional time, costs and variability are associated with crossing national borders. Reduction and management of border inefficiencies may require inclusion of government agencies as participants in the supply chain.

5.6 SUMMARY AND CONCLUSION

After having laid the theoretical foundations of marketing systems and competitiveness in previous chapters, this chapter was devoted to an analysis of SCM of the Eritrean banana industry. An attempt was made to analyze the existing banana marketing system in Eritrea with reference to the critical dimensions of SCM. A proposition is made regarding what should be done to effect a workable SCM. In its broader sense, the proposed structure of SCM involves the introduction of horizontal strategic alliances between existing banana producers and the marketing group and a vertical relationship along the supply chain.

The most important points analyzed in this chapter which necessitate better coordination and management include the non-uniformity and deterioration of banana quality, the limited time between harvest and the start of quality deterioration that limits the efficient movement of the product, the high

percentage loss due to spoilage, high transportation costs, lack of information and communication among the participants of the supply chain.

CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.1 INTRODUCTION

Poor climatic conditions coupled with crude and inefficient agricultural technologies render agricultural output sub-optimal in Eritrea. Yields are generally well below potential level (tomatoes 8-9 tons/ha vs. a possible 20-24 tons; onions 7-8 tons/ha vs. a possible 15-20 tons; citrus 7-8 tons/ha vs. a possible 18-20 tons/ha; and bananas 10-14 tons vs. a possible 20 tons), i.e. on average only 40 percent of the potential (FAO, 1994). The current marketing of agricultural products in general, and of bananas in particular, also poses special problems for Eritrean farmers and the existing structure needs reorganization. Goitom (1997) states that the banana distribution problem in Eritrea is basically the result of existing weak marketing institutions, poor transportation infrastructure, and poor entrepreneurial capabilities of middlemen.

Taking the above into account it should be noted that current trends towards the increased globalization of markets, trade liberalization, advances in information technology, consumer preferences and improved logistics means that the competitiveness of fruit industries in various regions and countries, as affected by the performance of their supply chains, is becoming increasingly important and will be even more important in the future. It is therefore vitally important that the banana industry in Eritrea regains its former stature, i.e. producing enough in an efficient manner to supply the domestic, as well as international market. This study aimed at identifying those factors that currently constrains the Eritrean banana industry and provides possible solutions to these problems within the SCM framework.

6.2 ERITREA'S DOMESTIC BANANA MARKET (PRODUCTION, CONSUMPTION AND ROLE PLAYERS)

Bananas, with higher coverage in hectares than any other fruit crop, is one of the most important fruit crops grown in Eritrea and is harvested virtually all year round. According to the latest horticultural production survey conducted in the

country (MOA, 1997/1998), 906 ha are under bananas in Eritrea. The area under banana cultivation and the amount marketed locally and exported increased until 1967 and then declined gradually to reach a situation where no exports realised and many producers left the industry. Goitom (1997) attributes this trend to drought, the worsening political situation at that time and the progress of the armed struggle for liberation. After independence area planted rebounded to 600 ha and continued to increase to around 900 ha. This is far from the potential that exists in Eritrea for banana production, e.g. potential area available for the production of banamas in Zoba Gash Barka could be as high as 9 390 ha.

Production problems experienced by farmers include:

- A shortage of capital and a scarcity of land;
- A shortage of farming materials limiting production levels;
- A high level of spoilage during harvesting, basically due to inappropriate harvesting techniques and lack of technical know-how and facilities;
- A shortage of pesticides,
- Adverse climatic conditions (wind that sometimes uproots plants, sunstroke that damages plants, loose soil, disease, frost, soil salinity); and
- A lack of selected seed.

Although there is no official statistics regading the per capita consumption of bananas in Eritrea, it is estimated that in Asmara, the capital city of Eritrea, it is about 2 kg/month for about 80 per cent of the population (DARHRD, 1999) and it may be as high as 4,5 kg per capita (Goitom, 1997) for the whole population of Eritrea.

Currently four well-known marketing channels operate in the Eritrean banana market (Goitom, 1997). The first channel is the farmer-agent-middleman-retailer-consumer channel. The second marketing channel comprises farmer-wholesaler-retailer-consumer. The third and fourth channels involve direct sales by farmers to retailers and consumers, respectively.

Prices for bananas are mainly determined in the open market in Eritrea. Nevertheless, there is some doubt whether the market structure allows for prices being set by demand and supply alone. Wholesalers could use the fact that bananas have to pass through them on their way to the market, and farmers'

inability to sell produce directly to retailers and consumers, to reach tacit agreements among themselves about prices.

Marketing problems experienced by role players include:

- Transport problems from the farm to the downstream role players;
- Spoilage during transport;
- Storage problems;
- Lack of production and marketing Information;
- Volatile prices; and
- Problems with brokers in the supply chain.

6.3 COMPARATIVE ADVANTAGE VS. COMPETITIVENESS

Cognizance should be taken of the fact that much confusion exists regarding the exact meaning of the term competitiveness. For example, the interchangeable use of the terms comparative and competitive advantage by many are a source of great confusion and needs clarification. Comparative advantage explains how trade benefits nations through more efficient use of their resource base when trade is totally unrestricted. Competitive advantage defines trading patterns as they exist in the real world, including all the barriers to free trade ignored by comparative advantage (Worley, 1996). That is why Khemani (1997) emphasizes that comparative advantage does not mean competitive advantage. Countries that have low labour costs may have a comparative advantage, but many of these countries are caught in a cycle of poverty and slow development, and that does not necessarily mean they are competitive. Khemani (1997) also remarks that whereas comparative advantage does not lead to competitive advantage, it can be the basis on which to build competitive advantage.

The difference between comparative advantage and competitive advantage can also be explained by considering the way it is measured. Comparative advantage evaluates economic efficiency of alternative productive uses of the scarce land, labour, capital and water resources. On the other hand, trade shares are frequently used to compare competitive advantage among regions or nations, however, the measurement of competitive advantage goes further than the mere measurement of trade shares. It also encompasses industrial organization analysis and financial ratio analysis. For example, industrial organization analysis includes the estimation of minimum efficient size of a firm in order to be effective in all technical, managerial and marketing aspects of its activity, barriers to entry,

including concentration in the industry, product diversification as a strategy for a faster and stable growth; and advertising expenditure and its influence on a firm's growth. Financial analysis on the other hand indicates the financial conditions of the cooperatives, identifying cooperative liquidity, activity, profitability, financial structure and viability. Porter's approach to competitiveness, which is used widely, not only evaluates the competitiveness of the business, but also that of all the participants in the supply chain. This method allows identification and analysis of the structure of a sector and identifies strengths and weaknesses.

Vitally important is to take cognizance of the fact that the establishment of a competitive supply chain is a prerequisite for an industry's competitiveness and success.

6.4 INTERNATIONAL BANANA TRADE

Fruit imports and exports in general, and bananas in particular, comprise a significant portion of world trade. For example, banana trade rates fifth in terms of world trade in agricultural produce after cereals, sugar, coffee and cocoa (EBSCO, 1999). During the late 1990s, more than 80 per cent of the world's bananas originated from Latin American countries; the rest was supplied by European, Caribbean, and African countries, approximately 7 per cent, 4 per cent and 3 per cent respectively (UNCTAD, 2003).

World banana production amounts to some 55 million tons per year, concentrated in Africa, Asia, the Caribbean and Latin America, because of favorable climatic conditions (Bananalink, 2003). In 2000, about 4 million hectares were planted with bananas and nearly 5 million hectares were planted with plantains. The average world yield was 15 tons per hectare for bananas and about 6 tons per hectare for plantains.

After grapes, bananas are the world's most widely consumed fruit. Indeed, considering that bananas, unlike grapes, are not used to make wine, it is, in effect, the most widely consumed fruit of all (Wilson, 2002). As a staple food crop, banana reaches its greatest importance in Eastern Africa where bananas are eaten daily throughout the Great Lakes region comprising Uganda, Burundi, Rwanda and parts of Kenya and Tanzania.

6.4.1 ERITREA TRADE POLICY

Pursuant to a free economy, the government of Eritrea pursued policies, strategies and investments to promote rapid, widely shared economic growth led by the private sector. It limited its own role to mainly creating an enabling environment and investing in infrastructure and strategic industries. It adopted an investment code that opened the entire economy to private investors, and acted to rehabilitate, upgrade and expand transportation, communication, power, and water supply facilities; improve the capacity of the health care, education and financial systems to deliver services and restore the productive capacity of the economy, particularly in agriculture and fisheries, tourism, construction, mining and manufacturing (GOE, 2001). To promote competitiveness in domestic production, nearly all quantitative restrictions and prohibitions on imports have been eliminated (GOE, 1998). As for exporters, procedures have been simplified and all taxes have been eliminated. Exports of goods and services are encouraged through the maintenance of sound exchange rates and a liberal foreign exchange earnings retention scheme.

6.4.2 RELEVANCE OF THE BANANA TRADE DISPUTE

Bananas are symbolic of the wide range of injustices present in international trade today. These include:

- Unacceptable working and living conditions for many of those who grow and harvest bananas;
- Suppression of independent trade unions;
- Environmental devastation caused by toxic chemicals and intensive farming; and
- The disproportionate economic and political power of the handful of multinational corporations, which supply bananas to the North.

Bananas have been subject to one of the most controversial trade disputes in the WTO, a dispute that pitted Europe against the US and certain Latin American countries (Bananalink, 2003). The Lomé Convention, which placed certain Latin American banana exporting countries at a disadvantage, was the root cause of trade disputes and the eventual replacement of this Convention will have an impact on the future banana export prospects of ACP countries. Eritrean

producers, like those of other ACP countries, therefore have little time to adjust and become competitive against “dollar” bananas on the European market, which at this point enjoy a production cost and quality advantage.

6.5 SUPPLY CHAIN MANAGEMENT IN THE ERITRIAN BANANA INDUSTRY

Supply chains are commonly analyzed according to the following dimensions: flows of product, flows of information, flows of money and the existence of relationships (governance) and incentives (Doyer, 2003; Spekman, 1998). The analysis was done by focusing on the situation in the Eritrean banana supply chain and identifying points along this chain which require better coordination and management The most important points analyzed that necessitate better coordination and management include non-uniformity of and deterioration in banana quality, the limited time period between harvest and the start of quality deterioration that limits the efficient movement of the product, the high percentage loss due to spoilage, high transportation costs, lack of information and communication among the participants of the supply chain. Each of these can be managed and coordinated better when stakeholders in the supply chain work together, trusting each other and cooperating to achieve mutual goals The objective should be to achieve operating efficiency and strategic effectiveness in the banana industry by focusing on capabilities and core competencies in order to provide quality bananas at a competitive price. Based on this analysis a proposition is made regarding what should be done to obtain a workable SCM for the banana industry in Eritrea. In its broader sense, the proposed structure of the SCM involves the introduction of horizontal strategic alliances between existing banana producers and the marketing group and a vertical relationship along the supply chain.

6.6 RECOMMENDATIONS

Based on the findings of this study the following recommendations are made to the Eritrean banana industry.

- Given that banana is one of the most important fruit crops grown in Eritrea, it is necessary to start implementing actions towards addressing the problems encountered in the production and marketing of bananas. Priority can be given to insuring uniform banana varieties all over the

production sites; introducing modern farming techniques; securing improved infrastructure; and making information available to all role players.

- Policy issues that need to be addressed as a matter of urgency to enhance the production and marketing of bananas include land reform; education, research, extension, production, storing and marketing of bananas; banking and bank loans for domestic investors; domestic and foreign trade policies for bananas; and price and tax incentives that also apply to small-scale banana growers.

- Domestic and foreign trade policies relating to bananas should emphasize and encourage private investment and create conditions for a competitive banana industry. To protect the interests of national producers, the government could consider establishing a minimum guaranteed price for banana producers. Or on the other hand, the introduction of multinational companies, a situation practiced in many banana-exporting countries, may also offer an option should appropriate policies be in place.

- The study laid out a roadmap to the understanding of SCM and building of partnerships and alliances in the banana business, for both domestic and international orientation. In its broader sense, the proposed structure of the SCM involves the introduction of horizontal strategic alliances between existing banana producers and the marketing group and a vertical relationship along the supply chain.

6.7 RECOMMENDATIONS FOR FURTHER RESEARCH

This study attempted to provide a framework by which to evaluate and understand the existing banana supply chain in Eritrea. This study needs to be extended and utilized in support of ongoing biological and agronomic research on the crop. The findings of this study and propositions made accordingly must be substantiated with additional data.

Further research on the following specific aspects is also necessary:

- *Constraints and quantification of their impact*: having all the production and marketing constraints encountered in the banana industry in Eritrea, it

is necessary to work on the specific constraints and quantify their impact on the marketing of banana. In addition to this, risk management strategies could be studied with respect to marketing of bananas.

- *Pre and Post harvest handling and management of banana*: Pre harvest management systems that are market driven and meet the needs of the market place should be researched. In addition, post harvest handling is a vitally important activity that links the banana in the field to the consumer, which might be thousands of miles away. In the Eritrean context this area needs much more attention from the researchers since it could address quality deterioration after harvesting and could also be a source of much needed information throughout the supply chain.

- *Comparative and competitive advantage*: empirical measurement of these two concepts is vital for a clear understanding of their relationship. Hence further study can be done to explore this point in the banana industry in Eritrea.

- *Value of supply chain management from the customers' perspective*: a study is also required to investigate whether consumers are interested in and paying more for enhanced product attributes as a result of efficient SCM. In this regard a hedonic prices model could be a starting point to better understand what consumers are willing to pay for.

- *Policy issues*: The relationship between agricultural policy and supply chain effectiveness, efficiency and constraints is also an interesting and important issue for further research.

BIBLIOGRAPHY

ARNON, R. (1981) IN FRAZER, G.C.G. (1991). **Agricultural marketing in less developed countries with special reference to Ciskei**. M.Sc. thesis Stellenbosch: University of Stellenbosch.

ASGHEDOM, S. & GHEBREMESKEL, T. (1999). **Present production and research needs of bananas in Eritrea**. Research report, Asmara, University of Asmara.

API (2003). Available online @ **http://www.arab-api.org/ecac/comp_e.htm**

BAIN, J.S. (1968). IN SCOTT, G.J. (1995). **Prices, products, and people: Analysing agricultural markets in developing countries**. Colorado: Lynne Rienner Publishers.

BANSE, M., GORTON, M., HARTELL, J., HUGHES, G, KOCKLER, J., MOLLMAN, T. AND MUNCH, W. (1999). **The evolution of competitiveness in Hungarian agriculture: from transition to accession**. Paper presented to the 9th European Congress of Agricultural Economists, Warsaw, Poland.

BANANALINK (2003). Available online at **ww.bananalink.org.uk/trade/btrade.html**. 1 March 2003

BARSHEFSKY, C. (2000). Still bananas. **Economist**, 356:8180, p. 71.

BEGHIN J.C. AND FANG, C. (2000). **Competitiveness and protection of Chinese agriculture**. Available online at **www.card.iastate.edu/iowa_ag_review/fall_00/competitiveness.html.** 28 March 2002.

BEURSKENS, F. (2002). Value of supply chain management issues from the customer's perspective. **Corn Utilization and Technology Conference**. Available online at **www.agribiz.com/fbfiles/bio/cutc2002.htm**. 20 March 2003.

BOEHLJE, M. (2002). **U.S. Agriculture in an increasingly competitive global market.** Available online at **http://agecon.lib.umn.edu/cgi**. 20 March 2003.

BRUNO, M. (1967). **The optimal selection of export promotion and import substituting projects. In Planning the external sector: Techniques, problems and policies.** Report on the first Inter-regional Seminar on Development Planning, Ankara, Turkey, 6-17 September 1965,New York.

CAFOD. (2003). **An introduction to the Development Box** .A joint paper by CAFOD, Action Aid, Oxfam and IATP. Available online at **www.cafod.org.uk/policy/devbox_02.shtml**. 28 March 2003.

CARSALADE, J., DIAZ, J. AND SOTO, D. (1998). Competitiveness of Chilean pear exports. **ActaHort**. 475. p.p. 77-88.

CHADWICK, J.B. (1984). **Demand and policy analysis of aspects of banana and avocado production in South Africa**. M.Sc. thesis, Pietermaritzburg: University of Natal.

COLLINS, R. (1999). **Developing supply chains in new agricultural industries: A social system approach**. A paper presented at the Conference of the Agricultural Economics Association of South Africa, Langebaan.

COMTRADE database. (2002). Available online @ **http://www.p-maps.org/pmaps/**

DARHRD. (1999). **Banana production in Eritrea and its potential. Annual Report, Asmara:** MOA

EBSCO HOST database. (1999). Bananas - the facts. **New Internationalist**, 317. p. 18.

ERITREA PROFILE. (1999). Available online at **www.eritrea.org/EIB/EritreaProfileVol06/07/EP060704249906.htm.** 29 November 2001

ESTERHUISEN, D., VAN ROOYEN, C.J. & HAESE, D.L. (2001). **Determinants of competitiveness in the South African agro-food and fiber complex**. Pretoria: University of Pretoria.

FAO (1994). **Agricultural sector review and project identification**. Volume 1. Rome: FAO.

FAO. (2001) Available online @ **www.fao.org/waicent/faoinfo/agricult/ags/AGSM/policy.htm**. March 20th 2003

FAO, (2001). **The role of agriculture in the development of LDCs and their integration into the world economy**. Paper prepared for the Third United Nations Conference on Least Developed Countries. Brussels.

FAO. (2003). Available online @ **http://www.fao.org**

GEBREMEDHIN, T.G. (1992). **Agricultural development in Eritrea: Economic and policy analysis. Asmara: Eritrea.**

GOE. (1998). **National economic policy framework and program for 1998-2000.** Asmara: GEO

GOE. (2001). **National economic policy framework and program for 2001-2002.** Asmara: GEO.

GOITOM, T. (1997). **Marketing of fruits in Eritrea: A case study of banana distribution**. M.Sc. thesis. The Netherlands. University of Groningen.

GOE. (2001). **Transitional economic growth and poverty reduction strategy, 2001-2002**. Asmara: Publisher.

HAILE, A, ASEFAW, M & ANDEMARIAM, Z. (2000). **Survey of harvesting and handling of banana in Eritrea.** B.Sc. thesis, Asmara: UOA.

HASSAN, R.M., FAIRBANKS, D.H.K., MAGAGULA, G., & FAKI, H. (1999). **Analyzing comparative advantage of agricultural production and trade options in southern Africa: guidelines for a unified approach**. US agency for international development: AMEX International.

HOUCK, J.P. (1986). **Elements of agricultural trade policies**. Illinois. Waveland Press.

IITA. (2003). Available online at **www.iita.org/crop/plantain.htm**. 7 March 2003.

INIBAP. (2001). Available online at **www.inibap.org/publications/inibap-factsheets_eng/esa.pdf.** 5 March 2003.

ITC. (2002) Available online at **www/193.194.138.121/docman/PRSR1498.pdf.** 16 April 2003.

IAFRICA.COM (2002). Available online at **http://africa.iafrica.com/countryinfo/eritrea/economy**/. 5 March 2003.

KENNETT J., FULTON, M., BROOKS, H., & MOLDER, P. (1998). Supply chain management in cereal grains: A case study from the U.S. milling wheat industry. **Canadian Journal of Agricultural Economics**, 46. p.p. 549-558.

KHEMANI, R.S. (1997). Fostering competitiveness. Available online @ **http://www.worldbank.org/wbi/mdf/mdf1/product.htm**

KRUGMAN, P. (1994). **Pop Internationalism**, MIT Press

LSU AgCENTER. (2003). Available online at **www.lsuagcenter.com/Inst/International/pdf/CompRpt.pdf**.

MARTIN, L. & STIEFELMEYER, K. (2001) **A comparative analysis of productivity and competitiveness in agro-food processing in Canada and the United States**. Available online at **www.georgemorris.org/CanadaVsUS0201.pdf.** 28 February 2003.

MASTERS, W.E. (1995). **Guidelines on national comparative advantage on agricultural trade. APAP III methods and guidelines**. No 4001. A paper for the Agricultural Policy Analysis Project. USAID Contact No. LAG-4201-C-00-3052-00.

MEYER, N.G. & BREITENBACH, M.C. (2002). **The market potential of the South African deciduous fruit industry: Strategies and options**. Paper

submitted for the Annual Conference of the Agricultural Economics Association of South Africa, 2002. Bloemfontein.

MOA. (1998). **Ministry of Agriculture.** Annual report. Asmara: MOA

MOA. (1998). **Eritrean horticultural survey: data collection and analysis,** Asmara: MOA

MOA. (1999). **Preliminary survey on post-harvest handling situation of bananas**. Asmara: MOA

MOA. (1999). **Ministry of Agriculture. Annual report**. Asmara: MOA

MUCAVELE, F.G. (2000). Analysis of comparative advantage and agricultural trade in Mozambique, **Technical Paper** No.107. USID:Amex International.

MURPHY, K.X. (2001). **Agribusiness sector competitiveness: Implementing the right initiatives**. J.E. Austin Associates. Available online at **http://lnweb18.worldbank.org/ESSD/essdext.nsf/26DocByUnid/97E1DE0B835A9C3285256B530050E4FF?Opendocument#1**. 28 February 2003.

NAKHUMWA, T.O., NG'ONG'OLA, D.H., MINDE, I.J., LUNGU, V. & MAPEMBA, H.E. (1999). Comparative economic advantage in agricultural trade and production in Malawi, **Technical Paper** No 93. USAID:Amex International

OUSTAPASSIDIS, K.; NTAFIS, A. MOUTRAN, N. (1993). **Competitiveness and impact of rural co-operatives in Crete**. Available online at **http://ressources.ciheam.org/om/pdf/a23/CI000385.pdf**. 26 February 2003.

PATRICK, W. (1998). LOSING LOMÉ: the potential impact of the commission guidelines on the ACP non-least developed countries. **Review of African Political Economy,** 25(75). p. 47.

PETERSON, H. C. AND WYSOCKI, A. (1997). Available online @ **http://scholar.lib.vt.edu/theses/available/etd-01302001-085302/unrestricted/03Chp1.pdf**

PHILLIPS, M.M. & BAHREE, B. (1999) WTO Supports U.S. in dispute over bananas. **Wall Street Journal Eastern Edition**, 233(67)

POMEROY, R.S & TRINIDAD, A.C. (1995) **Industrial organization and market analysis: Fish marketing**. IN SCOTT, G.J. (1995). Prices, products, and people: **analysing agricultural markets in developing countries**. Colorado. Lynne Rienner Publishers, Inc.

PORTER, M.E. (1990). **The competitive advantage of nations**. London: Macmillan.

PURCELL, D. (1979). **Agricultural marketing: Systems, coordination, cash and futures prices**. Virginia: Reston Publishing Company.

QUICKMBA. (2003). Available online at **www.quickmba.com/strategy/value-chain**. 28 March 2003.

RICKS, D., WOODS, T. & STERNS, J. (2000). Chain management and marketing performance in the fruit industry, **ActaHort,** International Symposium on Horticultural Economics.536. p.p. 661-668.

RUSSELL AND TAYLOR. (1998). Supply chain management and the Canadian agri-food sector. IN VAN DUREN, E. & SPARLING, D. **Canadian Journal of Agricultural Economics.**46. p.p. 479-489.

RODIN, R. (1999) **Outside the confines of one company**. Marshall Industries Electronic News. Available online at **www.e-insite.net/electronicnews/**. 20 March 2003.

SALVACRUZ, J.C. (1996). Competitiveness of the United States and the ASEAN in the international agricultural market. **Journal of Food Distribution Research**, 27(1).

SALVATORE, D. (1998) **International economics**. New Jersey: Simon & Schuster.

SAMSON, J.A. (1986). In DARHRD. (1999). **Banana production in Eritrea and its potential**. Asmara: MOA

SCHERER, F.M. (1980). IN SCOTT, G.J. (1995). **Prices, products, and people: analysing agricultural markets in developing countries**. Colorado: Lynne Rienner Publishers.

SCHOTZKO, R. T. & HINSON, R. A. (2000) Supply chain management in perishables: a produce application, **Journal of Food Distribution Research**, 31:2. P.p 17-25.

SIDDIQI, S. A. (2000). **Competitive not comparative advantage creates wealth**. Available online at **www.dawn.com/2000/05/29/ebr7.htm**. 29 March 2003.

SMITH, E.D. (1972). IN SCOTT, G.J. (1995). Prices, products, and people: analysing agricultural markets in developing countries. Colorado: Lynne Rienner Publishers.

SODERSTEN, B. & REED, G. (1980). **International economics**. 3rd Ed. London: Macmillan.

SPLINTER, G.M., DEKKER, P.A.R., JONKMAN, B. & VAN UFFELEN (2000). A practical chain management system in the Dutch horticulture industry. **ActaHort**, 536. p.p. 669-677.

SUTTON, P. (1997). The banana regime of the European Union, the Caribbean and Latin America, **Journal of Interamerican Studies & World Affairs**. 39(2) p. 5.

TSAKOK, I. (1990). **Agricultural price policy: a practitioner's guide to partial-equilibrium analysis.** Ithaca: Cornell University Press.

TRADE PARTNERS UK. (2002) Available online at **www.tradepartners.gov.uk/eritrea/profile/03_economic/economic.shtml.** 5 March 2003.

USDA. (2001). Available online at **www.state.gov/www/background notes/eritrea 0398 bgn.html**. 29 November 2001.

VAN DUREN, E. & SPARLING, D. 1998. Supply chain management and the Canadian Agro-food Sector. **Canadian Journal of Agricultural Economics.**46. p. 479-589.

VAN ROOYEN, C.J. & ESTERHUISEN, D. (2001). **Business systems for increased competitiveness in the agribusiness sector of South Africa**. Working paper 01-02. Pretoria: University of Pretoria.

VAN ROOYEN C.J., ESTERHUISEN, D. & DOYER, O.T. (2001) .**How competitive is agribusiness in the South African Food Commodity Chain?** Pretoria: University of Pretoria.

VERBEKE, W., DOYER, O.T. & VISSER, D.P. (2002) Supply chain management and traceability in pork chains: The Belgian and South African Case. **Agrekon.** 41(1). p. 97-107.

WILSON, B. (2002). Going bananas. **New Statesman**, 131(4573). p. 47.

WORLD FACT BOOK 2002. (2002) Available online at **www.cia.gov/cia/publications/factbook/index.html**. 5 March 2003.

WORLEY, T. (1996). PNW agricultural trade: Comparative advantage and Competitiveness are Fundamental. Available online at **http://agecon.uwyo.edu/wmmec/WebArticles/MarketingArticles/PNWAgTrade.htm**. 15 March 2003.

WORLD BANK 2003. Available online at **www.worldbank.org/mdf/mdf1/foster.htm**. 4 April 2003.

WTO. (2003). Available online at **www.wto.org/**. 3 May 2003.

YAHOO FINANCE. (2002). Available online at **http://biz.yahoo.com/ifc/cm/**. 5 March 2003.

ZUURBIER, P. (1999). **Supply chain management**. Lecture notes, university of Pretoria and Stellenbosch. Pretoria: Agricultural Business Chamber (ABC). August 1999.