

**THE COMPETITIVENESS OF THE SOUTH AFRICAN CITRUS INDUSTRY IN
THE FACE OF THE CHANGING GLOBAL HEALTH AND ENVIRONMENTAL
STANDARDS**

By

PORTIA NDOU

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University of Fort Hare
Together in Excellence

Supervisor: Professor Ajuruchukwu Obi

17 January 2012

DECLARATION

I, Portia Ndou, hereby declare that this is my own work and that, to the best of my knowledge, it contains no material previously published or written by another person nor material which, to a substantial extent has been accepted for the award of any degree or diploma of the university or any other institution of higher learning, except where due acknowledgement has been made in the text.

Dated at University of Fort Hare, on 17th January 2012

.....

Portia Ndou

Supervisor

Prof A Obi

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University of Fort Hare, Alice

17th January 2012

DEDICATION

I dedicate this work to my parents, Mr. J.B and Mrs. T. Ndou. You are the greatest blessing that I would ever cherish. I owe it all to God who had both of you as the combination of parents I should have. In His wisdom He made the best choice. You are a rare and unique pair. I love you!

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Portia Ndou

Degree: PhD

Department: Agricultural Economics

Supervisor: Professor Ajuruchukwu Obi



ABSTRACT

In recent years, concern about food safety linked to health issues has seen a rise in private food safety standards in addition to the regulations set by the Food and Agriculture Organisation (FAO) in collaboration with the World Health Organisation (WHO). These have presented challenges to producers and exporters of agricultural food products especially the producers of fresh fruits and vegetables. In spite of the food safety-linked challenges from the demand side, the vast range of business-environment forces pose equally formidable challenges that negatively impact on the exporting industries' ability to maintain or improve their market shares and their ability to compete in world markets. The objective of this study

was therefore to establish the competitiveness of the South African citrus industry in the international markets within this prevailing scenario.

Due to the diversity of the definitions of competitiveness as a concept, this study formulated the following working definition: *“the ability to create, deliver and maintain value and constant market share through strategic management of the industrial environment or competitiveness drivers”*. This was based on the understanding that the international market shares of an industry are a function of forces in the business environment which range from intra-industry, external and national as well as the international elements. The unit of analysis were the citrus producers engaged in export of their products and the study made use of 151 responses by producers. The study adopted a five-step approach to the analysis of the performance of the South African citrus industry in the global markets, starting with the analysis of the Constant Market Share (CMS) of the South African citrus industry in various world markets, establishing the impact of the business environmental factors upon competitiveness, establishing the costs of compliance with private food safety standards, determining the non-price benefits of compliance with the standards, as well as highlighting the strategies for enhancing long-term competitiveness of the industry in the international markets.

South Africa is one of the top three countries dominating the citrus fruit export market. Since its entry into the citrus fruit exports market in the 1900s, the industry has sustained its activity in the international market. The Constant Market Share Analysis shows that, amidst the challenges on the international market side, and the changes in the business environment, over much of which the industry has limited control and influence, the industry has maintained its competitive advantage in several markets. The CMS shows that South Africa's lemons are competitive in America. Despite a negative trend, the South African grapefruit has been competitive in France, Greece, Italy, the Netherlands and Spain. Oranges have been competitive in the Greece, Italy, Portugal, UK, Asian and Northern Europe markets. Competitiveness in these markets has been due to the inherent competitiveness of the industry. Competitiveness in such markets as the Middle East has been attributed to the relatively rapid growth of these markets.

The South African citrus industry has similarly undergone many major processes of transformation. The business environmental factors influencing its performance have ranged

from the national forces such as the agricultural industry restructuring programme and land reform to the challenges beyond the country's borders. These factors directly and indirectly affect the performance of the industry in the export market. They have influenced the flow of fruits into different international destinations. Of major concern are the food safety and private standards. Challenges in traditional markets as well as opportunities presented by demand from newly emerging citrus consuming nations have seen a diversification in the marketing of the South African citrus.

The intensity of competition in the global market is reflected by the fluctuations in the market shares in different markets as well as the increase and fluctuations of fruit rejection rates in some lucrative markets such as America. A combination of challenging national environmental forces and stringent demand conditions negatively impact on revenues especially from markets characterised by price competitiveness.

This study identified cost of production, foreign market support systems, adaptability, worker skills, challenges of management in an international environment and government policies such as labour and trade policies as some of the most influential obstacles to competitiveness. Some of the most competitiveness-enhancing factors were market availability, market size, market information, market growth and the availability of research institutions. However, compliance with private standards still poses a challenge to the exporters.

The different performance levels of the industry in various markets prove the dissimilarity of the demand conditions in the global market. These are supported by the negative influence associated with the foreign market support regimes as well as the challenges associated with compliance with private food safety standards. While market availability, market growth, market information and size were identified as enhancing competitiveness, the fluctuations and inconsistencies in the competitiveness of the industry in different foreign markets require more than finding markets. Resource allocation by both the government and the industry may need to take into account the off-setting of the national challenges and support of farmers faced with distorted and unfair international playing fields. Otherwise, market availability is not a challenge for the industry save meeting the specifications therewith as well as price competitiveness which is unattainable for the South African citrus producers faced with high production costs.

For the purposes of further study, it is recommended that account should be taken of all the products marketed by the industry (including processed products such as fruit juices) in order to have a whole picture of the competitiveness of the industry in the international market. This study also proffers a new theoretical framework for the analysis of the business environment for the citrus industry and other agro-businesses. This framework takes into account the indispensability of the food safety standards and measures as well as the diversity of the global consumer and the non-negotiability of food trade for the sustenance of the growing population.

Key words: *Competitiveness, environment, citrus industry, constant market share, private standards, food safety*

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ACRONYMS AND ABBREVIATIONS

ARC	Agricultural Research Council
BEE	Black Economic Empowerment
BSI	British Standards Institute
CBS	Citrus Black Spot
CCT	Common Customs Tariff
CFB	Citrus Foundation Block
CGA	Citrus Growers Association
CMS	Constant market Share
CMSA	Constant Market Share Analysis
Codex	Codex Alimentarius Commission
COSATU	Congress of South African Trade Unions
CRI	Citrus Research International
DAFF	Department of Agriculture, Fisheries and Forestry
DFA	Department of Foreign Affairs
DIRCO	Department of International Relations and Cooperation
DTI	Department of Trade & Industry (SA)
EEC	European Economic Community
ET	Ethical Trade
ETI	Ethical Trading Initiative
EU	European Union
EUREPGAP	European Retailers Produce on Good Agricultural Practice
FAO	Food and Agricultural Organisation
FAOSTAT	Food and Agricultural Organisation's Statistical Office
FCOJ	Frozen Concentrated Orange Juice
FFV	Fresh Fruit and Vegetables
FPEF	Fresh Produce Exporters Forum
FTA	Free Trade Agreement
GAP	Good Agricultural Practice
GATT	General Agreement on Tariffs and Trade

GDP	Gross Domestic Product
GFSI	Global Food Safety Initiative
GLOBALGAP	Global Partnership for Good Agricultural Practice
GMO	Genetically Modified Organisms
HACCP	Hazard Analysis and Critical control Points
ICM	Integrated Crop Management
IDC	Independent Development Corporation of South Africa
IFOAM	International Federation of Organic Agriculture Movements
ILO	International Labour Organisation
IMD	International Institute for Management Development
IPAP	Industrial Policy Action Plan
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
LCA	Full-Life Cycle Analysis
LDCs	Less Developed Countries
MRLs	Maximum Residue Limits
NDA	National Department of Agriculture
NFC	Not from Concentrate
NGO	Non-Governmental Organisation
OIE	International Organisation of Epizootics
PPECB	Perishable Products Export Control Board
PUC	Production Unit Code
R&D	Research and Development
SA	South Africa
SACCE	South African Cooperative Citrus Exchange
SACU	South African Customs Union
SA GAP	South African Good Agricultural Practices
SARB	South African Reserve Bank
SPS	Sanitary and Phytosanitary Standards
TBT	Technical Barriers to Trade
UNCTAD	United Nations Conference on Trade and

	Development
UNCTAD /CTF	United Nations Conference on Trade and Development Consultative Taskforce
UNIDO	United Nations Industrial Development Organisation
UK	United Kingdom
USA/ US	United States of America
USDA	United States Department of Agriculture
WEF	World Economic Forum
WTO	World Trade Organisation

1.1 Background and problem statement

Food production and distribution in most parts of the world are undergoing major structural changes caused by changing and diverse consumer demands, new technologies (bio- and information technologies) and new product characteristics. Along with these, more exposure to world markets through the process of globalisation creates opportunities and opens up possibilities to new products and clientele. A growing appreciation of the link between diet and health has contributed to different eating patterns and has influenced food expenditures and purchases within and from the less developed countries. Consumers are demanding much more than option- they also want quality, consistency and value (Drabenstott, 1995).

Consumer demand, especially for fresh food products, has increased dramatically in recent years driven by growing average incomes globally (Von Braun, 2007; Mashinini, 2006; Henson, 2007). The increase is attributed to the increased access to information by today's consumers. Access to information coupled with the process of labelling gives the consumers knowledge about the availability of certain products in markets, their origin and the production processes involved. This applies even to seasonal products like fruits. This development has attracted improvements in quality and rapid evolving of down-stream supply chains (Henson, 2007). Producer in any part of the world can strive to produce and deliver to consumers in any part of the globe. It is estimated that by 2020 the fresh fruit and vegetables (FFV) sales would have grown by 4.2% (Mashinini, 2006). The increase in demand for FFV is presumed to be a result of the demand for health, demand for fresh produce variety, freshness, and year-round availability (Henson, 2007), as well as high quality and nutritious food stuff (Mashinini, 2006). Sedentary life associated with city life has also affected global dietary patterns as more and more people live in cities and have relatively high disposable income (Charles *et al.*, 2010). The urbanites can access a wide range of food including that which may have required more resources, though income levels are more influential than the location of the consumer (Charles *et al.*, 2010). Despite the argument for globalisation of trade being the best strategy for advancing the world's economic

development, its opponents have blamed it for promoting a decline in environmental and health conditions (Ball *et al.*, 2008). There has been a rise in the concerns about its effect on the transmission of human, animal and plant diseases and pests spread across borders (Jha, 2005).

For reasons of political expediency, neither governments nor individual industries can be relied upon to champion, without reservations or misgivings, the food safety issues currently on the global agenda (Spriggs and Grant, 2001). The government may be afraid of the reality and choose not to raise alarm to avoid destroying the industry. For instance, despite knowing for many years, the Ministry of Agriculture, Fisheries and Food (MAFF) in Britain, failed to disclose information about the well known Bovine Spongiform Encephalopathy (BSE) in the late 1980s and early 1990s (Spriggs and Grant, 2001). Food safety scares normally result in a decline in public confidence and trust in safety of food, the food industry and the government's ability to adequately regulate, manage and communicate food risks and governments make every effort to avoid this (Kuznesof and Brennan, 2004). Thus, the global agro-food market has become highly consumer-driven and consumer-centred. Also, individual firms spend less on food safety. The employment of an independent industry body to manage and communicate food risks may lead the firms to weigh the short-run and long-run cost implications on competitiveness of the industry as a consequence of their intervention. Yet, consumers show an increased willingness to pay for an assurance of food safety (Buisson, 1995). This new trend has seen many food product failures in the USA and the UK where 75% - 85% of new food products fail to maintain a retail presence beyond one year.

The high incidence of food-borne diseases and the potentially rapid spread of hazardous materials through global trade have seen the global agro-food industry tightening the food safety standards (Anders and Caswell, 2006). Stringent regulations that govern trade and tight food safety and health standards to safeguard the consumers of traded food items, particularly in the developed countries, have been put in place. The range of risks against which the importing nation can protect itself include contaminants, toxins, additives or disease-causing organisms in foods, feedstuffs and beverages (Jha, 2005).

To be effective and binding the food safety regulations and standards have to be based on international standards. The Agreement on Technical Barriers to Trade (TBT) ensures that

technical standards, regulations and conformity assessment procedures do not create unnecessary obstacles to trade (Jha, 2005). The Agreement recognises each member country's right to define the level of protection that it deems appropriate in these areas (Roberts *et al.*, 1999; Jha, 2005). However, the World Trade Organization (WTO) agreement on the application of the Sanitary and Phytosanitary measures (SPS Agreement) encourages member countries to harmonise national standards with the joint Food and Agriculture Organisation (FAO) and World Health Organisation (WHO) Codex Alimentarius Commission. In cases where a nation's standards are higher than international standards, the former may be used, though nations are not mandated to harmonise the two. Where these may be perceived to cause a greater restriction to trade, the nation may be asked to show scientific justification for the measures. It may also be asked to demonstrate that the international standard would not result in the level of health protection it considers appropriate (Jha, 2005).

Other trade related technical measures spring from externalities associated with the production, distribution and consumption of agricultural products. Some examples are labelling requirements, food quality and compositional standards (Henson *et al.*, 1999). These are a consequence of intense competition resulting from open international markets and changes in consumer preferences (Jha, 2005), and are commonly viewed as non-tariff barriers. These factors present both threats and opportunities that may influence not only the industry's achievement of set goals, profits, and sustainability, but also its long-term competitiveness. Industries need to be on the guard against changes in national and international conditions or run the risk of loss of market shares to competitors.

While these are on the demand side, there also are other changes on the supply side that affect the level of competition. The increased distances between suppliers and consumers associated with international trade have made quality assurance standards directly linked with supply chain management. There are increasingly complex inter-relationships among such key players as suppliers, producers, distributors and retailers. The product characteristics increasingly demanded by consumers include safety, nutritional status and authenticity (Mehotra, 2004). The latter relates to the need for easy traceability of the food product. Thus, paying explicit attention to production processes that promote a safe and sustainable environment cannot be avoided.

The food safety and health standards have scores of notable benefits to both the consumers and producers. The existence of common global food safety standards plays a major role in the promotion of economic efficiency and international trade. Standards form common and widely understood benchmarks that smoothen trade relations and promote efficient markets (Nadvi and Waltring, 2002). They become an effective means of communication reflected in certification and labels (Reardon *et al.*, 2001). Thus, the use of standards reduces market failures and can be an opportunity for competitiveness.

Food safety and food security are inseparable. This is manifest explicitly in the 1996 World Food Summit Plan of Action's definition (FAO, 2003) of food security as a situation when: "... all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". Countries that are able to comply with global food safety standards can increase household food security and income levels through taking advantage of international trade opportunities. The good agricultural and hygienic practices in food production, processing and distribution improve food safety and at the same time reduce food losses. The ultimate result is an increase in food availability and food security at the national and international levels. The incidence of food-borne illnesses that may have serious social and economic consequences is curbed as are losses in income and income-generating capacity.

The key actors in the global market are chiefly the consumers in advanced nations and international non-governmental organisations. They promote safety standards for different motives and interests. Others are driven by genuine concerns such as protection of the vulnerable (consumers and the environment) or halting the race to the bottom (Nadvi and Waltring, 2002). It is however, essential to note that there is a fine line distinguishing genuine concerns from mere elimination excuses. It is not unusual that importing countries may impose stringent measures based on scientific justification, deemed to be of a higher order than international measures to limit or even ban imports (Anders and Caswell, 2006). Measures with a sound intent to protect health can be a very effective protectionist tool that turns out to be hard to challenge because of its technical nature. Tariffs and quotas are better to negotiate than discriminatory rules and complex certification systems projected onto trade in the guise of safeguarding measures. Such stringent measures include issues such as foreign market support regimes for fruits which are non-related to health issues. Some developed

nations have used them as exclusionary devices, as technical barriers to trade, import prohibitions or protective measures for their domestic industries.

When used as prohibitions, the standards may impose negative economic and social burdens and work against rural development objectives (Jha, 2005). Stringent food safety standards may raise food prices impacting negatively on poor consumers. Germany, Netherlands and United Kingdom are very good examples, with respect to the maximum pesticide residues limits they present. Their microbiological standards are fixed so high that compliance, in most cases, may not be feasible even in Europe (Jha, 2005). These measures entail higher costs of analysis, investment in processing units and upgrading competence of technicians. Transaction costs are raised and negatively transferred to end-users in the form of high prices.

Difficulties in the harmonisation of the common standards in the developing regions exist (Jaffee and Henson, 2005; Stephenson, 1997) and compliance is often associated with high implementation costs for poor countries and small industries (Jaffee and Henson, 2005). These transaction costs can only be reduced through improved access to information. However, though there is need to comply with global standards, the developing countries find themselves with little if any choice as they lack participation and have no voice. They also lack the capability to undertake epidemiological surveillance and to conduct rigorous risk assessments which are acceptable to overseas trading partners (Jaffee and Henson, 2004).

In addition to the food safety and health issues, the environment of the industry is composed of diverse kinds of external and internal environment forces. These forces range from the agricultural to the non-agricultural aspects. They also vary from intra-industry to national and international factors (Certo and Peter, 1991; Books, 2004a; 2004b). Examples include the natural environment (climatic conditions, pests and diseases), competitive, legal, socio-cultural, changes in consumer tastes and preferences, economic, technological, political (Jain, Trehan and Trehan, 2006) and financial conditions of trading partners. The environmental factors may directly (Palmer and Hartley, 2006) or indirectly affect production and marketing of the produce (Brooks, 2004b). Different environmental forces impact differently on different businesses at different times (Jain, Trehan and Trehan, 2006). Their influences affect the industry's achievement of set goals, profits, sustainability and its long-term competitiveness. The industry may not have direct control over most of these, especially the

external factors (Jain, Trehan and Trehan, 2006). Nonetheless, the industry has to direct its resources and efforts towards sustaining its competitive advantage and performance.

While the South African citrus industry remains one of the key players in the export market (Symington *et al.*, 2004), the impact of business environmental factors cannot be overestimated. South Africa markets citrus around the world. It rose from third largest citrus exporter position after Spain and the USA (Philp, 2006) to second position currently (CGA, 2008). It is a Southern hemisphere rival of Australia with plantings double those of Australia and producing three times more (60t/ha compared to 30-35t/ha). Nonetheless, Australia has fruit quality advantage (Philp, 2006). The price competitiveness of an industry is not all that matters as it only measures a country's ability to increase its share in world markets by selling at a lower price than its competitors. The prevalence of non-price factors jeopardise an industry's ability to thrive on production within fixed constraints (Porter, 1998). There is need to formulate strategies to improve on the competitiveness of the industry in the light of a dynamic business environment. In order to meet the challenges imposed by the dynamic environmental forces the industry has to investigate how these are impacting on the performance of the business and formulate strategies for a sustainable competitive advantage. Many changes in the South African agro-business industry have taken place over the past few years, with respect to policy issues that clearly have important practical implications for the performance of the industry in the export market.

Many studies have been carried out on the South African citrus industry. These studies have been more inclined toward the impact of the deregulation of the fruit industry. Citrus constitutes a larger proportion of South African agricultural export earnings contributing on average 27% of the total agricultural exports (Symington, *et al.*, 2004). Mather and Greenberg (2003) investigated the impact of market liberalisation on the South African citrus export industry. Former cooperatives were found to be facing problems with using previously inherited resources. An increased differentiation between growers who were able to take advantage of deregulation and those who were not was also noted. Deregulation negatively affected farm and packhouse labour (Mather and Greenberg, 2003). An examination of the organisation and restructuring of the South African citrus exports revealed that the single desk exporter of South African citrus (Outspan International) had exercised considerable market power over citrus production (Mather, 1999). This it did through State regulations and

the control of infrastructure for exports. Outspan International had built a global market strategy while the newly emerging export companies lacked traceability (Mather, 1999).

Several studies have been carried out in South Africa with regard to the competitiveness of several sub-sectors of the agricultural industry. The South African wine industry was found to be highly competitive in the international market (Esterhuizen and Van Rooyen, 2006). Critical success factors were efficient supporting industries, production of affordable high quality products, rigorous regulatory standards in the industry and the availability of internationally competitive local suppliers of quality inputs. The factors impacting negatively on the competitiveness of the industry were exchange rate fluctuations, crime, South African labour policy, the strong Rand, trust in the political support system, competency of personnel in the public sector and the growth and size of the local market.

Van Rooyen, Esterhuizen and Doyer (2000) found that the management of external and macro factors will continue to be important for the competitiveness of the agribusiness industry. Among these are Acquired Immuno Deficiency Syndrome (AIDS), labour policy, technology and capital availability. The high cost of capital was found to be a cause for concern calling for joint ventures with the Research and Development (R&D) and the technology industry. Mashabela and Vink (2008) found that while South African deciduous fruit supply chains were internationally competitive, those of Chile were stronger. This implied that value adding opportunities were generally limited in South Africa (Mashabela and Vink, 2008). Also, South African agricultural food chains were marginally competitive compared to those of Argentina and Australia (Mosoma, 2004). All countries experienced a decrease in competitiveness when moving from primary to processed products in the chains. The implications were limited value adding opportunities for South Africa. The competitiveness of the South African citrus industry has however, not been researched, yet it is one of the key sectors engaged in international trade. The establishment of the influence of the most prevalent and ever-changing business environmental elements, ranging from the internal to the global forces, is inevitable for the industry whose greater bulk of the produce is destined for export. The export oriented South African citrus industry has been on the export market for over a century now and the changes in the business environment are not insignificant to its performance in the global markets with the passing time. Export quantity changes and increases in hectareage under citrus cannot on their own be a confirmation of

sustainable performance especially in the face of low prices linked to fruit oversupply as well as stringent food safety and quality standards associated with the most lucrative markets.

The demand for fresh fruit has been driven by the trend in healthier lifestyles, consumers' willingness to pay higher prices for exotic and out-of-season fruit and technological developments that facilitate the fresh fruit trade (Pongpanich and Phitya-Isarakul, 2008). The ability of the industry to anticipate and respond to the changes in the food safety standards, consumer preferences, food consumption patterns and changes in other business environmental forces is inevitable. While stringent food safety standards are associated with the lucrative markets in the developed countries (Jha, 2005), the South African citrus industry has sustained fruit export flows to these markets. South Africa has also established and served new and emerging markets such as Russia and the Middle East. The South African citrus fruit exports to these emerging markets have shown an exponential growth (CGA, 2009a). Yet one would inquire as to whether South Africa has maintained its market shares in the traditional markets amidst challenges of the stringent market forces and business environment, or else the establishment of new markets is an indication of failure to comply than it is a market diversification strategy. While the global fruit market has also been growing much more rapidly despite the relatively steady world fruit production over the past few years (Pongpanich and Phitya-Isarakul, 2008), it is possible that the industry has enough to offload on the export market, but, chances of the emerging markets used as an alternative market with less demands cannot be ruled out. The investigation into the influence of the business environmental challenges can best inform the best strategies to advance international competitiveness. Regardless of how well the industry might have performed in times past, opting for lesser challenging markets without improvements and innovations to meet the current market forces and prevalent consumer trends will send the industry into a state of stagnation. With the fast globalisation of the agro-food markets, standards might become an inescapable common unit of measurement the world over.

The transition of the South African agricultural industry, and the fruit industry in particular, from a regulated to a deregulated industry, coupled with different land and labour policies developed post apartheid sent shock waves to the export sector (Mather, Greenberg, 2003). These and other home-based challenges have a potential to seriously exacerbate the impact of market-side challenges faced by the industry. An unhealthy home-based diamond cannot promote the competitiveness of an exporting industry whose rivals are heavily supported by

their governments besides their technological advances. Although competitive advantage is created by the industry (Porter, 1990), certain business environmental elements (e.g. political, economic, natural environment) are beyond the scope of the industry management and will nevertheless impinge on its performance. Amidst all these challenges, how has the South African citrus industry performed and what's the prospect for its future in the international market, especially the lucrative importers of its fruit?

1.2 Research Objectives

Broadly, the objective of this study is to assess the competitiveness of the South African citrus industry amidst changes in the global business environment. The specific objectives of the study are;

- a).** To determine the state of export competitiveness and the overall business environment in which the citrus industry operates.
- b).** To determine the major challenges for sustained competitiveness of the South African citrus industry.
- c).** To determine the opportunities for sustained competitiveness of the citrus industry of South Africa.
- d).** To determine the impact of compliance with food health safety and environmental standards on citrus export revenues.
- e).** To make recommendations on the institutional arrangements for the sustainability of the citrus industry.

1.3 Hypotheses

In light of the above stated problem statement and research objectives, the hypotheses of this study are:

- a).** There is a direct correlation between the ever-changing business environmental factors, global health and food safety standards and the competitiveness of the South African citrus industry on the international market.
- b).** Compliance with the health and food safety standards has negative impact on citrus export revenues.

c). Sustained competitiveness of South African Citrus industry in the export market is a function of compliance with health and food safety standards, flexibility of policy regimes and the business environmental forces.

1.4 Delineation and limitation

This study will not attempt to determine or evaluate the quantities and trends of citrus fruits consumed locally. The study focused only on the competitiveness of the citrus industry as a whole (representing South Africa as a nation in the international market). Supporting industries and organisations were only considered for their role in complying and coping with the ever-changing standards and business environment, which might be a major contributory factor for the ultimate performance of the whole industry.

1.5 Assumptions

Data essential for the exploration of the competitiveness of the South African citrus industry were available, though some industries were less forthcoming with information much of which were classified as private and confidential. Such data include the volumes exported between 1987 and 2009 which was sourced from the database of the United Nations' Food and Agricultural Organisation (FAOSTAT), and organisations actively involved in the supply chain of the citrus fruit. Other industries of importance with regard to sourcing data for this study are Citrus Research International (CRI), Citrus Growers Association (CGA), Department of Agriculture, Forestry and Fisheries (DAFF), Perishable Products Export Control Board (PPECB), Fresh Produce Exporters Forum (FPEF), Statistics SA, NDA abstracts and Department of Trade & Industry (SA). It was also assumed that there existed adequate literature surrounding the environmental changes in the South African agriculture which also impact on the performance of the citrus industry.

1.6 Significance or Rationale of the study

This study is relevant in view of the fact that the South African citrus industry is one of the highest value export subsectors (industries) in South Africa (together with sugar, wine, grapes). The industry contributes about 4.5% to the country's agricultural gross value of production (NDA, 2007b). Fifty-four (54%) of the total citrus production is exported, 25%

processed while 21% is consumed locally as fresh fruit. The study of the export competitiveness of such large industries is imperative as it may attract the employment of global strategies which lead to a gain of access to the strengths of other nations by the exporting industries. Information and insights are highly needful for the South African citrus industry to maintain competitiveness and maintain attain potential performance under the new and ever-changing competitive environments. Both the positive and negative forces need to be identified and understood for sound choices and decision making among alternative strategies. The study provides an analysis into the strength of the industry's position in the global market and an understanding of the importance of external factors that may influence that position. Also, the study is of great benefit as it explores the global factors impacting upon the industry and how it fares against its rivals.

Competitiveness has become a major concern for both advanced and developing countries as the world economy is increasingly becoming more open and integrated (Pitts and Traill, 1991). The lowering of trade barriers in the agro-food industry has presented a reality that no country can isolate its internal life from external forces. More attention has recently been paid to the linkages between certain trade regulations, health standards and environmental factors and competitiveness of certain agro-food industries. Many agro-food industries are exposed to more diverse environmental, food safety and health standards which might present new opportunities, uncertainties, impediments, and incentives for the industries, their enterprises and management. It is imperative that both positive and negative effects exerted by external forces be identified, understood for sound choices and decision making among the alternative strategies that may be at the disposal of the industries. Amidst the ever-changing environmental, food safety and health standards, the question can never be whether the South African citrus industry should compete, but rather what the competitive edge of the industry is and how the industry should strategise in the global market.

In recent years, food and health safety and environmental sustainability have become a reality of the international business, making these standards important aspects of management. As a result, there is an increasing need to understand environments, food safety and health standards. This will in turn translate into development of techniques of adapting, institutional arrangements and strategic behaviour to cope with different conditions. The competitiveness of the South African citrus industry therefore, drew on the external environment, including food and health safety and other trade regulations and the internal environment among which

are such crucial issues as the diverse policy changes. The ability to understand the changes in the marketing of citrus fruits among other agricultural products, knowledge of the causes and consequences as well as timely response may result in effective management of the changes. Although the objectives of an industry may remain the same, its strategies, policies, organisation and operating practices may undergo a massive amount of adjustments when marketing is done beyond national borders (Kolde, 1982). The South African export citrus industry needs to cope with these increasing environmental complexities.

1.7 Definition of terms

The two key concepts addressed by the study are competitiveness and industrial environment. Since these terms are also commonly used in everyday language, the special sense in which they are employed in this thesis need to be classified. How these concepts are linked to other concepts used in the thesis are also explained.

1.7.1 Competitiveness

Many definitions have been coined with the attempt to define the term competitiveness. The definitions have been coined based on the different approaches used to analyse competitiveness and unit of analysis. Some authors view competitiveness from the perspective of the firm (Sharples and Milham, 1990; Cook and Bredhal, 1991) while others define the concept from the macro-level perspective (IMD, 1996; WEF, 1996). Other definitions of the term take into account the level at which the organisation has to compete. For instance, Sharples and Milham (1990) and Cook and Bredhal (1991) suggest that competitions can either be in an international or domestic market for products and the domestic market for resources, while organisations such the World Economic Forum (WEF) and International Institute for Management Development (IMD) consider competitiveness at global levels. Competitiveness is also explained in terms of performance indicators. For instance, Westgren, Martin and Van Duren (1991b) suggest two concepts that can be used to measure and monitor competitiveness, namely, profits and market shares. This implies that competitiveness has to be comparative. The definition of competitiveness can also be linked to the identification of the nature of the direct relationship between competitiveness and factors that influence an industry's cost and demand structure (Kennedy *et al.*, 1997). However, Kennedy *et al.* (1997) do not demonstrate a clear linkage between the factors that

influence the cost and demand structure of the firm and possible measures of competitiveness.

D'Cruz and Rugman (1992) identify three elements that contribute to competitiveness, namely, company competitiveness, sector competitiveness and country competitiveness. The company competitiveness is concerned with the ability to design, produce and/or market products superior to those offered by competitors, considering the price and non-price qualities. Sector competitiveness deals with the extent to which a business sector offers potential for growth and attractive returns on investment. Sector competitiveness is a product of the interactions between the non-business infrastructure, the policies and strategies of business firms that develop products and services for the market place in that sector. Country competitiveness is concerned with the extent to which a national environment is conducive or detrimental to business (D'Cruz and Rugman, 1992). The latter refers to the aggregate comparison of the competitiveness of the sectors within a country against the overall competitiveness of the sectors in other countries. The competitiveness of the firms within a nation influences the level and growth of employment and the standard of living in an economy (Landau, 1992). Consequently, the underlying factors influencing the competitiveness of individual industries and firms determine a nation's competitiveness (Landau, 1992).

The most commonly used definitions are stated below.

“Competitiveness is the ability of a national economy to achieve sustained high rates of economic growth, as measured by the annual change in gross domestic product per person (WEF, 1996)”.

“Competitiveness is the ability of a country to create added value and thus increase national wealth (IMD, 1996)”.

“Competitiveness is the sustained ability to profitability gain and maintain market share in domestic or foreign market (Van Duren, Martin, and Westgren, 1991a)”.

“...the ability to deliver goods and services at the right time, place, and form sought by buyers at prices as good as or better than other suppliers while earning at least opportunity costs on resources employed (Sharples and Milham, 1990; Cook and Bredhal, 1991)”.

“Competitiveness is the ability to sustain an acceptable growth rate and real standard of living for the citizenry while efficiently providing employment and maintaining the growth potential and standard of living for future generations (Landau, 1992)”.

“... the ability of companies, industries, regions, nations, and supranational regions to generate, while being and remaining exposed to international competition, relatively high factor income and factor employment levels on a sustainable basis (OECD, 1996a).

“... the ability of an economy to provide its population with high and rising standards of living and a high level of employment for all those willing to work, on a sustainable basis (EU Commission, 2003)

“... the ability of a sector, industry, or firm to compete by trading their products within the global environment while earning at least the opportunity cost of returns on resources employed (Van Rooyen, 2008)”.

Competitiveness is the ability to profitably create and deliver value through cost leadership or product differentiation (Kennedy *et al.*, 1997).

Although viewing competitiveness from the perspective of the industry, Cook and Bredhal’s definition fails to address the sources that give firms the ability to deliver goods and services at competitive prices (Colyer, 200). From an international viewpoint agricultural competitiveness is reflected by the capability to profitably gain and maintain world market share. Increase in competitiveness is characteristically indicated by an increase in market share, while the opposite lack of competitiveness is reflected by a decrease in market share (Colyer, 2000).

For the purposes of this study competitiveness is defined as the ability to create, deliver and maintain value and constant market share through strategic management of the industrial environment (competitiveness drivers). Competitiveness is based on what the industry decides to do in response to the sum of forces surrounding the business. It goes way beyond the traded products. It is more leaned on how the industry uses its resources (human and natural capital). The competitiveness of an industry is ingrained in the quality of business environment and the strategies employed in response to the surrounding environment. Value of the products and the efficiency with which they are produced are an element of productivity (Porter, 2002). This entails the relative concept of the ability to maintain or

increase the market share in the international market, while meeting or achieving the overall food safety and health standards.

1.7.2 Industrial environment

There are several definitions attached to the environment of the industry, firm or business. Stated below is a sample of some of the commonly used definitions of the business environment. All these definitions concur that the environmental factors provide a hub upon which to focus in determining what causes the competitive state of an industry. Environmental factors range from the controllable to the uncontrollable. The most obvious uncontrollable factors are natural environment and climate (Westgren, Martin, and Van Duren, 1991a). Despite the inherent productivity of an industry in terms of volume, the environment can affect the competitiveness in the global market, especially in the face of the ever-changing standards, economic changes, exchange rates and many others.

“Business environment refers to those aspects of the surroundings of business enterprise which have influence on the functioning of the business (Jain, Trehan and Trehan, 2006)”.

“The business environment is a complex of policy, legal, institutional, and regulatory conditions that govern business activities. It is a sub-set of the investment climate and includes the administration and enforcement mechanisms established to implement government policy, as well as the institutional arrangements that influence the way key actors operate (e.g. government agencies, regulatory authorities, and business membership organisations including businesswomen associations, civil society organisations, trade unions) (DCED, 2008)”.

“A business environment comprises of the whole range of phenomena which surrounds a business system (Palmer and Hartley, 2006)”.

“Business environment is a general concept which embraces the totality of external environmental forces which may influence any aspect of organisational activity (Brooks, 2004a)”.

“In looking at the business environment, we are concerned with those things that affect a firm but are not a part of the firm. In effect, we are looking at the business jungle in which firms live. One of the keys to survival in this, as in any other type of jungle, is to learn what threats and opportunities exist within it (Clark, 2000)”.

The business does not function in a vacuum (Jain, Trehan and Trehan, 2006). It is an open system whose environmental elements are difficult to define. Some elements may seem quite inconsequential today, but may nevertheless have potential to critically affect a business organisation in future years (Palmer and Hartley, 2006). Thus, continuous and quick adaptation to the changing environment will grant an industry or business organisation survival and growth. Today's dynamic world which is undergoing a rapid change emanating from new ideas, economic changes, political changes and new technology (Jain, Trehan and Trehan, 2006) demands the ability to read the environment and to understand not only how business systems and their environments work today, but also how they will evolve in the future (Palmer and Hartley, 2006). The constantly changing environmental forces carry with them both opportunities and risks or uncertainties which can make or mar the future of business (Jain, Trehan and Trehan, 2006).

It is important to note that the term environment in this study is loosely used in reference to the business elements within which the industry operates. It is thus interchangeably used with the term 'business environment'. The climatic conditions are simply addressed as 'the natural environment'.

1.8 Thesis Outline

This chapter has provided an overview of the background and problem context, highlighting the objectives and motivation, assumptions and a brief outline of related studies carried in South Africa. Chapter 2 presents an extensive review of the food safety regulations and private standards with special emphasis on both the benefits and negative implications on international trade. The theories behind international trade are discussed in chapter 3. These are reviewed because business environment and productivity are common considerations within the theories of trade. The chapter also discusses some of the common models and indices used to measure competitiveness with special emphasis on the theoretical foundations for the measuring the competitiveness of the South African citrus industry. The conclusions and relevance of the various methodologies and models are reviewed in the light of their significance to current opinion and circumstances. The chapter also provides evidence from literature on the motivation for studying competitiveness in the context of market shares. Chapter 4 focuses on the general overview of the South African citrus industry, highlighting the areas of production and the industry's contribution to the economy. Chapter 5 is a general

review of literature on the performance of the South African citrus industry in the export market and the opportunities and challenges faced by the exporters. The industry's general past, present and future performances are discussed. Chapter 6 gives an outline of the business environmental elements within which an exporting agri-business industry operates. The elements are discussed with emphasis put on how they influence the competitiveness of the South African citrus industry. Chapter 7 provides the framework for analysing the competitiveness of the South African citrus industry. The chapter discusses the models used in the analysis. Chapter 8 presents the results of the estimation of the competitiveness of the South African citrus industry in various international markets. In addition, the business environmental factors affecting competitiveness in the international markets are presented plus the likely benefits obtained from compliance with stringent private standards. The conclusions and recommendations of the thesis are presented in chapter 9.

CHAPTER 2

CONCEPTUAL AND THEORETICAL ISSUES IN FOOD QUALITY ANALYSIS

2.1 Introduction

This is the beginning of the extensive literature review spanning three chapters and every attempt was made to review generally applicable theories and concepts. The prevailing situation in South Africa relates to the on-going efforts to enhance market access and competitiveness and all the reviewed theories are relevant. The chapter is a general overview of the public regulations and private food safety standards that are imposed on agricultural products destined for export. The highly publicised food scares in the high income and developed countries shook the underlying confidence of the consumers in national, regional and international food safety regulatory systems. The food safety regulatory systems and programmes were created in a bid to curb food-borne hazards. The regulations were set to provide appropriate levels of protection, reduce trade distortion and non-discriminatory behaviour. The leeway offered to nations to set their own private standards has seen a rise in diverse array of private standards that are difficult to harmonise. The private standards are characterised by diverse certification bodies for quality assurance. Although these standards are based on scientific justification, they are associated with numerous negative influences upon exporters of agricultural products. Severe controls have been linked to times when the domestic prices of the importing nation were low, thus discouraging imports and further pulling the price downwards (Jha, 2005). The chapter reviews and discusses these issues in some detail.

2.2 Food safety standards

The consumers' consciousness of food-borne diseases and the rise in the need to protect consumers by importing nations, especially the developed, have led to an exponential rise in food safety and health standards. The rise of private standards over and above the public regulations set by the World Health Organisation (WHO) by importing nations have worsened the situation, causing harmonisation difficulty. Many safety control measures, certification bodies and organisations have been set in place in a bid to help the producers and

exporters to comply with strict market specifications as well as giving assurance of the delivery of safe food of high quality. High product quality demands have become an indispensable element of fruit marketing. Product quality has been identified as an important variable for the good of all; the producers as well as the consumers (Steenkamp, 1990). It has become an integral component of many industries' strategic issues. The survival of the citrus industry, like many other agro-based industries, is tied to its ability to improve quality, create and deliver value to consumers in the form of differentiated products.

Food safety covers a lot of aspects among which are products quality as well as animal and plant diseases (UN, 2007a). Table 2.1 below illustrates the core pillars of food safety standards and regulations.

Table 2. 1: The core pillars of food safety standards and regulations

Issue	Details
Food Safety	MRLs Heavy metals Food additives Hygiene requirements Traceability Hazard analysis and critical control points (HACCP)
Plant health	Surveillance Plant quarantine Pest risk assessment Sanitation
Product quality	Grading Freshness Product composition Product cleanliness Labelling requirements Control of nutritional claims
Environment	Control of water and environmental contamination Recycling requirements Organic production requirements Protection of bio-diversity Protection of endangered species
Social	Labour standards Fair trade standards Corporate social responsibility

Source: Adapted from Jaffee, 2005

2.3 Organisations responsible for quality assurance and certification

The food supply chain is very long and complex. It involves multiple players, but chiefly, the health, agriculture and trade sectors. The chain incorporates consumer concerns such as quality and health issues ranging from the production to the product distribution activities (Achterbosch and Van Tongeren, 2002). The need for attaining the highest levels of

consumer protection has justified the active involvement of the health and agriculture sectors, through the World Health Organisation (WHO) and the Food and Agricultural Organisation (FAO) respectively (Schlundt, Van Erk and Vallanjon, 2003). WHO and FAO are responsible for the setting of food safety regulations which are implemented by the Codex Alimentarius Commission (Codex). However, many private organisations have been set in place to offer guidelines to meeting technical specifications governing the safety and quality of both home and imported food products. Private measures are thus referred to as standards while those set by Codex are termed public regulations. National departments are responsible for ensuring production and delivery of high quality products to international markets.

2.3.1 Codex Alimentarius Commission (Codex)

Codex was established in 1963 by FAO and WHO with the objective of achieving the highest attainable levels of consumer protection worldwide, including food safety and quality, ensuring fair trade patterns and promoting coordination of all food standards effort undertaken by global governmental and non-governmental organisations (Codex portal). Codex sets scientific-based food safety regulations used in domestic and international trade that act as the reference point with regards to compliance with the same under the World Trade Organisation (WTO) (Henson and Humphrey, 2009). The integration of food safety, food standards, food production and food trade considerations in an agreed focus on sustainable development will benefit health directly in developing economies through trade in safer food products. The Trust Fund for Participation in Codex is hoped to support effective participation by less developed countries (Schlundt, Van Erk and Vallanjon, 2003).

The WTO encourages the sharing of information and harmonisation of measures through the International Plant Protection Convention (IPPC) and the International Organisation of Epizootics (IOE) for animal health issues. Matters relating to consumer health are referred to the Codex Alimentarius Commission (Codex). Conflicts and disputes over perceived use of technical standards as barriers to trade between trading partners are settled by the WTO's Dispute Settlement Body (Achterbosch and Van Tongeren, 2002).

2.3.2 The International Organisation for Standardisation (ISO)

ISO is a non-governmental organisation (NGO) that develops food safety standards at international levels just akin to Codex (Henson and Humphrey, 2009). The objective of ISO

is chiefly to develop worldwide standardisation that facilitates global exchange of commodities, and developing co-operation in the realms of intellectual, scientific, technological and economic activity. It is an influential part of the global trade governance and global standard setting that is formally recognised by the Technical barriers to Trade (TBT) Agreement.

ISO is also an observer to the SPS Committee in the WTO and Codex. The Committee is comprised of qualified representatives from industry, research institutes, government authorities, consumer bodies and international organisations. However, the international regulations set by ISO are principally voluntary. While Codex provides elaboration of national regulations inclined to food safety, ISO standards cover a wide range of areas and sectors. It establishes international standards in all technical fields save for electrical and electronic engineering. It provides product specifications as well as services and management systems (Henson and Humphrey, 2009). In the sphere of food safety ISO has developed a series of generic guidelines on the operation of standard setting systems, conformity assessment, certification bodies and the operation of inspection. ISO regulations include storage temperatures, sugar content, social responsibility and packaging among others.

2.4 Public food safety regulations

Public food safety standards are the obligatory measures set by Codex with the objective of ensuring attaining the highest possible consumer protection for domestic and international trade. These are scientific-based and are the reference point for compliance with food safety. The public regulations set by Codex include the Sanitary and phytosanitary (SPS) regulation, Food safety regulations, Hazard Analysis and Critical control Points (HACCP) approach to assuring safety, and pesticides regulations. These are discussed below.

2.4.1 Sanitary and Phytosanitary regulations (SPS)

SPS regulations were set with the intention to protect human and animal, or plant life or health from contaminants, toxins, additives and disease-causing organisms (Jha, 2005). They are applied by almost all governments of all countries for the prevention of the introduction and spread of pests into countries where they are not predominant or widely spread (UN, 2007a). The regionalisation confirmation of the 19th of May 2008 emphasises on the need for

a disease and pest-free exporting region or the prevalence of a disease at a lower incidence. This entails the border-straddling zones as well as all or parts of an exporting country (WHO, 2008). Thus any restrictions imposed on affected regions by the importing countries will be raised without any effects on the non-diseased ones.

The SPS regulations serve as the main frame for the regulation of food safety issues (Roberts *et al.*, 1999). In some cases SPS regulations have become a tool for protecting domestic agribusinesses and producers from competition (Erickson *et al.*, 2002). However, it is argued that it is a blunder to focus only on safe food in the context of strengthening the export capacity of less developed countries. Export capacity is to come second to the primary objective of strengthening the less developed countries' protective systems for their own consumers (Byrne, 2004). Nevertheless, the less developed countries suffer from poor compliance, resources including scientific and technical expertise, information and finance (Henson and Loader, 1999).

SPS regulations are anchored on attending to the externalities and lacks of information associated with multilateral and country-specific trade that ultimately affect public health. However, members of the WTO are free to determine additional technical requirements on imports to address specific health or safety risks for as long as they can scientifically justify the need (Roberts *et al.*, 1999). Private standards are usually more stringent than public ones so as to stay abreast with the public regulations (Achterbosch and Van Tongeren, 2002). This is based on the notion that diversity in food safety assurance methods can yield equal health risks safeguards. However, giving the countries a leeway to determine the levels of protection they deem best for their citizens can determine the access of food products from exporting partners.

Compliance with export market SPS regulations can be the means of establishing and maintaining competitive advantage over lower cost competitors (Henson, 2008). Regaining market access that has been lost through non-compliance may be very difficult and very costly. Costs associated with the compliance with SPS regulations include the non-recurring costs of achieving the necessary controls and conformity assessment capacity, in addition to the on-going expenditures that are reflected in high supply costs. SPS can pose absolute barrier to trade (Jaffee *et al.*, 2005). Compliance costs may be very high in the short-run but continued access to markets and growth in revenues may be the resultant long-term pay-offs

(Henson, 2008). The World Bank (2005a) also notes that the perception that SPS compliance exceeds associated benefits discourages essential investments and deters proactive approaches, consequently increasing the likelihood of trade-related problems.

SPS management capacity has not always been enhanced in line with the evolution of export market standards, nor has the establishment and expansion of export supply chain. Established capacity should be maintained and enhanced as market standards continue to evolve (Henson, 2008). Thus, compliance must be seen as an ongoing and even ‘never-ending’ process of upgrading SPS management capacity rather than a discrete or ‘once-off’ response to export market requirements. Capacity has been focused on specific commodities with little spill-over to supply chain directed at domestic markets. Capacity require enhancement with a focus on both the export and domestic markets and within the broader context of competitiveness (Jaffee *et al.*, 2005). Much of the process of compliance with SPS regulations is dependent on the conduct of private actors through the export commodities supply chain. Thus, the capacity of the private sector need to be enhanced to complement the weaknesses of the public sector controls which, conventionally has been associated with the safeguard of SPS management (Henson, 2008).

2.4.2 Food safety regulations

These entail ‘farm to table’ integrated approach to food safety. The assurance is affirmed through the science-based risk assessment carried out by independent bodies. The approach encompasses all supply chain stages that should comply with traceability requirements. Exporting countries are consequently faced with greater regulatory accountability in ensuring safe food of good quality (UN, 2007a).

2.4.3 Implementation of the Hazard Analysis and Critical control Points (HACCP)

HACCP is a mandatory system used to ensure safety management for both animal and non-animal food products. HACCP is also mandatory for exporting countries that pre-pack, semi-process or process their fruits and vegetables (UN, 2007a). HACCP identifies and controls any hazard which has the potential to cause harm to the consumer. It is thus, a preventive measure focusing on the identification of potential points at which hazards can occur and then sets strategies in place to prevent the hazards from occurring.

HACCP is principally used in the processing of safe food. However, it can also be used to ensure the delivery of safe raw materials by suppliers. This helps exhibit effective food safety management throughout the whole supply chain (Mortimore and Wallace, 1998). A process-flow diagram is made, starting from the raw material supply to the finished products. From the list of critical points within the flow, an identification of critical hazards and the points at which they can occur, critical control points and control measures along with critical limits is made. These are accompanied by a specification of monitoring actions along with monitoring frequencies and responsibility. Control is maintained in accordance with the monitoring of results (Mortimore and Wallace, 1998) and the corrective actions, procedures and responsibilities are specified in advance. The effectiveness of the system makes verification inevitable. HACCP system necessitates documentation of all the procedures to ensure proper operations control with appropriate corrective actions put in place.

2.4.4 Developments in pesticides regulations

Codex recommends the maximum concentration of a pesticide residue (expressed as mg/kg) that has to be legally permitted in or on food commodities and animal feeds (Codex, 2011). Maximum Residue Limits (MRL) is based on GAP data and foods derived from commodities that comply with the respective MRLs are intended to be toxicologically acceptable. The freedom for countries to identify their own standards that they deem best suitable to provide safety requirements for their citizens (UN, 2007a) has led to a diverse array of standards that by different interest groups. These are so difficult to harmonise and pose a challenge to exporters of fresh produce. Despite MRL levels set by Codex, and the general export tolerances, the consumer still remains in control. From one piece of land, subjected to the same agricultural practices and management, the farmer is faced with different levels of MRL amidst other private standards. This makes restrictions from the supplier side a necessity in order to comply with MRLs of the importing nations. This is driven by the need for the producer to comply with quality requirements or run the risk of losing customer loyalty and ultimate competitiveness in the market.

2.4.5 Technical Barriers to Trade (TBT)

Technical Barriers to Trade (TBT) are measures imposed by most countries to restrict imports of commodities that fail to comply with certain health, safety and environmental

standards. TBT focus on standards, regulations and conformity aimed at non-discrimination, non-restriction to trade. ‘Technical regulations’ are the class that is considered mandatory while the ‘standards’ are voluntary (Jha, 2005). TBT are aimed at addressing the externalities that would otherwise occur with the production, distribution or consumption of imported goods (Achterbosch and Van Tongeren, 2002).

The technical regulations refer to the processes and production methods that render a product its characteristics i.e. affecting the quality of the product. Nations are required to use the international standards. However, the allowance given for each state to set private measures may not necessarily be entitled to harmonise with the international regulations (Jha, 2005). Such differentiation may be a result of technological and geographical environments unique to the nation in question. A trading partner may accept an equivalent technical regulation on the conditions that it serves a similar objective. In cases of disputes over technical regulations that may be perceived as barriers to trade, expert-group scientific evidence may be sought. While the TBT Agreement promotes non-discriminatory labelling, it however, does not discourage any methods that would give domestically produced goods an unfair advantage (Shah, 2008).

2.5 Private standards

The private standards are an addition to the public regulations (UN, 2007a). Private standards are set by a differing combination of private, public and non-governmental organisations (NGOs) that in turn participate in the governance of these standards in differing proportions (Henson and Humphrey, 2009). Thus, they are mostly distinguished by the bodies that formed them. The major three types are the individual company, collective national and collective international standards. Individual company standards are set mainly by large retailers and adopted across their supply chains. They are communicated to consumers through private label products. Collective national standards are set by collective organisations (mainly comprising of retailers, processors and producers), industry associations and NGOs that operate within a nation. While these are national standards, they may also have an international reach as some are specifically designed to establish claims regarding food from particular countries and regions. They are communicated through labels and trademarks. The collective international standards are set by organisations with an international representation e.g. GLOBALGAP. The scope of this study will not go into

deeper detail of the wide range within these classes but will endeavour to consider a few prominent ones like the GLOBALGAP.

Compliance with a vast array of protocols is characterised by process documentation, food safety requirements and logistical requirements. Private standards are applied on all exporters irrespective of their geographic location and the origin of the product under consideration. They are collective or importing retailer specific. Good examples of the collective private standards are the GLOBALGAP and the Global Food Safety Initiative (GFSI). European supermarkets such as Tesco and Marks and Spencer are examples of retailer specific private standards setters. The main principles for the supermarket chain established standards are ensuring sustainable and environmentally responsible production and produce handling (UN, 2007a).

Stringency of private standards has been increased by retailers' desire to minimise risks, food scares and scandals in developed countries coupled with sophisticated technologies in the detection and testing methods (UN, 2007a). Private food safety standards have been adopted as an answer to the concerns relating to lack of knowledge on the origin of the food and its safety for consumption (Henson and Humphrey, 2009). Thus, they are a means to address differences in production systems, the need to bridge the 'quality perception gap' between producers and consumers (Steenkamp, 1990), and disloyalty in some players in the food value chain especially that which is associated with protectionism by exporting industries and governments. Private standards are a means for the provision of assurance of the food systems' ability to meet the required public regulations (Henson and Humphrey, 2009). In other terms, the private standards go a step beyond the requirements of the public requirements.

The willingness of consumers to pay more for better quality has seen unrelenting efforts by private organisations, governments and consumers through retailers and supermarkets in the setting of quality assurance mechanisms in every step of the movement of the product in the value chain. Competitiveness in the global market is thus tied closely to consumers' perceptions of product quality (Steenkamp, 1990).

There are three ways in which private standards pose additional requirements to public regulations (Henson and Humphrey, 2009). Firstly, they cover particular products attributes

that are focused at risk management. These are usually seen in the extension of requirements to ethical trade, environmental impact and social accountability. Secondly, they dictate elaborations on how the whole process in food production and trade should be conducted in order to achieve set goals and specific levels of safety. Lastly, private standards are an extension of the controls along the value chain which extends beyond the scope of the public regulations. Private standards are extended to input suppliers, requiring them to meet voluntary standards linked to environmental impact and social responsibility. The last two are deemed as a safeguard against non-conformance with the set requirements. However, the sets of expected outcomes, prescribed production processes and rules plus the governance structure of the certification and enforcement associated with private standards evolve over time (Henson and Humphrey, 2009).

In general, attributes such as blemishes, absence of residues, hygiene and presentation, seediness of fruit, shape of fruit, consistency, maturity, disease and environment protection plus purity and freshness of the citrus juice are some of the highly esteemed requirements citrus fruits and products have to comply with (UNCTAD, 2010). Maturity is based on minimum juice content, minimum total soluble content (TSS), i.e. minimum sugar content and colouring. Oranges meant for juice production are tested for total soluble solids (brix)/acid ratio, which give flavour to the juice. Generally, the citrus fruit must be intact, free of bruising and / or extensive healed over-cuts, sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded, clean, practically free of any visible foreign matter, practically free from pests, practically free from damage caused by pests, free of signs of internal shrivelling, free of damage caused by low temperature or frost, free of all abnormal external moisture and free of any foreign smell and/ or taste (FAO, 2008a).

2.5.1 Global Partnership for Good Agricultural Practice (GLOBALGAP)

GLOBALGAP (formally known as Euro-Retailer Produce Working Group for Good Agricultural Practice (EurepGAP)) was launched by a group of leading European food retailers in 1999 in order to increase environment awareness in the EU (UNCTAD, 2010). GLOBALGAP is a private sector body that sets voluntary standards for the certification of agricultural fresh fruit and vegetables (EUREPGAP portal) by promoting food safety, sustainable use of natural resources and more environmentally friendly production. The

GLOBALGAP Technical Standards Committee develops guidance notes to notify farmers and growers of the Maximum Residue Limits (MRLs) in operation in the markets where the products will be sold. Exporters should thus, demonstrate that their produce meets the MRL requirements of the country of destination should these differ from those of the country of production (UNCTAD, 2010).

GLOBALGAP is a pre-farm-gate standard that covers all production processes from before the seed is planted until it leaves the farm. The producers' awareness of effective crop husbandry is established (EUREPGAP portal). The harvesting, post harvesting, packing and storage of fruits is also important. The principal concerns of GLOBALGAP are the application and use of chemicals, fumigants, pesticides and the minimisation of detrimental environmental impact of the farming operations. It also aims at maintaining consumer confidence in food quality and safety and ensuring a responsible approach to worker health and safety (Henson and Humphrey, 2009). Hygiene is not only limited to the handling of the fruit, but personal hygiene as well e.g. provision of sanitary facilities for the workers within the unit (EUREPGAP portal). Inspection process is documented for proof of compliance with set standards. Cleansing agents used for handling and storage of produce and the dosages at which they are applied should be documented. Temperatures and humidity under which the produce is stored need documentation for quality control purposes.

A flexible application of the GLOBALGAP principles to suit specific national conditions is under consideration (UN, 2007a). This has seen the development of such schemes as ChileGAP, Mexico Supreme-Quality GAP, ChinaGAP and KenyaGAP, with the former two already recognised as equivalent to the GLOBALGAP standard for FFVs while the other are awaiting benchmarking (UN, 2007a).

While GLOBALGAP was formed by European retailers, its membership is now international (Henson and Humphrey, 2009). GLOBALGAP has evolved to cover the fundamentals of environmental protection in conjunction with the principal focus on food safety. While the focus on food safety is largely biased towards regulatory compliance, the environmental impact is outside the realm of regulatory requirements (Henson and Humphrey, 2009). GLOBALGAP is a business-to-business label and thus is not directly visible for the consumers.

GLOBALGAP demands that the buildings and equipments be rodent and bird proof whenever practically possible. Detailed records of pest control need to be set in place. Post harvest handling include washing in suitably competent sources of water as well as suitable treatments with biocides, waxes and plant protection products used on harvested crop destined for sale in the EU. Record-keeping should bear up-to-date use of protection products stating the batch numbers, lot, crop identity on which they have been used, quantities used and date applied (EUREPGAP portal).

The paper-based monitoring of processes and product flows and cost of certification does not favour small farmers in the LDCs. This is partly due to the initial investment requirements for training and equipment. The increased costs associated with compliance hamper small farmers' access to markets, save if they work in collaboration with large-scale producers (UN, 2007a).

2.5.2 The Global Food Safety Initiative (GFSI).

Launched in May 2000, GFSI aims at enhancing food safety, ensuring consumer protection, strengthening consumer confidence, setting requirements for food safety schemes and improving cost efficiency throughout the food supply chain (UNCTAD, 2010). The initiative holds as its key priorities, the implementation of a scheme for benchmarking food safety standards worldwide, the building and implementation of an international early warning system. It also aims at encouraging cooperation between the worldwide food sector and national and pan-national governments and authorities. The communication of the initiative to all concerned parties is believed to enhance consumer education (UNCTAD, 2010).

2.5.3 Externalities associated with production, distribution and consumption of agricultural products

There are several separate but closely-related, if not overlapping issues linked to food safety and its traceability. At the peak of the agenda is the argument of sustainable production, packaging, distribution, consumption and disposal of packaging material and other related residues, green marketing, carbon footprints and ethical production. Some of the main aspects are discussed below.

2.5.3.1 Ethical production and Trade

Ethical trade is concerned with the responsibility taken by producers, retailers, brands and their suppliers to improve the working conditions of employees within the supply chain (ET portal). Ethical trade has as its origin, labour practices and the rights of employees of supplier companies around the world, many of whom are based in LDCs where laws designed to protect workers' rights are inadequate or not enforced. However, it is commonly used to refer to other business practices such as treating customers and vendors fairly, providing transparency of financial practices, environmental (Golodner, 2007) and more social responsibility.

The labour and supply chains are challenging in nature. The modern global supply chain makes the aspects more complex and cannot be addressed by individual companies singlehandedly (ET portal). The Ethical Trading Initiative (ETI) brings together NGOs, trade unions, and corporations in a unique alliance to collectively tackle these issues (Golodner, 2007). The main purpose of ETI is the development of internationally recognised code for labour practice founded on the conventions of the International Labour Organisation (ILO) for the global improvement of poor working people's lives. ETI Base Codes were developed to address the exploitation of workers through such conducts as physical abuse, extreme form of intimidation and forced, bonded or involuntary prison labour and reflects the most relevant international standards on labour practices. ETI promotes, improves implementation and encourages adoption of corporate codes of practice covering supply chain working conditions. The labour practice codes, which include wages that are enough to meet basic needs, working hours that are not excessive, health and safety and the right to join free trade unions, have continued increasing since their introduction in the early 1990s (Barrientos and Smith, 2007). Other issues inclusive in ETI are ban of child labour, non-discriminating hiring, compensation, access to training, promotion, termination or retirement based on race, caste, national origin, religion, age, disability, gender, marital status, sexual orientation, union membership or political affiliation and avoidance of harsh and inhumane treatment. The codes are adopted by companies committed to ethical trade.

The implementation of the ethical codes has numerous challenges in addition to the complexity of the global supply chain. Though the interdependencies created by globalisation

have the potential to generate greater global solidarity, the rules of the new global economy are only partially written and are themselves the subject of contention (FAO, 2001).

There are discrepancies of code implementation activities and the need for bridging performance between different companies (ETI, 2003). Very few organisations have the capacity to effectively work with companies on code implementation. Differences in approaches to ethical trade owing to a growing number of codes and code initiatives have created significant confusion and duplication of effort on the ground. The global production systems manifest complexities of the commercial networks and the wider social and institutional environment in which the codes operate (Barrientos and Smith, 2007). Child labour is more common in the LDCs as a function of poverty and the values esteemed by DCs to protect children may be unrealistic. The setting, especially of the small scale farmers, uses all members of the family to partake of the work in the fields (Rushton, 2011).

The increase of the number of working hours for minors under the age of 18 in the USA from 44 to 48 a week may mean the acceptance of the child labour to help family earnings. It is now left at the discretion of the child to determine if they are willing and able to work for those working hours (Rushton, 2011). Actually, retrenching children in some instances may worsen their livelihoods.

Private and voluntary standards confuse the state of affairs in the LDCs. Globalisation and deregulation has impacted negatively on the livelihoods of the rural poor in these nations while the private and voluntary standards act as a complex process of re-regulation (Du Toit, 2001). Integration of the codes into the complex systems of chain management and other internal systems that are deeply integrated within business strategies is a big challenge. While the codes are supposedly considered as acceptable international norms, they represent to a larger degree the interests of the retailer markets of the developed countries. Thus, the ETI is thought to save the transnational corporations and retailer agendas. Since the conditions of labour are more inclined toward the supplier companies, the retailers themselves are spared from the responsibility of creating an environment of non-exploitation. The challenge of unjust trade power between the rich and poor nations is ignored by the ethical trade issues (Du Toit, 2001). The purposes of free trade are thus taxed.

Many companies expend large amounts of money in the monitoring and auditing of the codes of labour (Barrientos and Smith, 2007). Cost of compliance with ethical codes is borne by the producers and not passed to consumers while the retailers reluctantly squeeze their margins (Du Toit, 2001).

Ethical Trade is a new challenge that was posed upon all SA citrus suppliers during the 2008/9 season by the UK-based retailers (CGA, 2009a). The initial cost implications were between R15 000 and R20 000 per audit, but have declined to between R6 000 and R9 000 per audit. Besides the cost associated with the audit, the self-assessment questionnaire makes use of too much time, on average three to eight hours. There is also over-emphasis on the audit rather than on a continuous improvement approach (CGA, 2009a). The industry was challenged to create a capacity within Fruit SA to drive the ET issues for its members. The ET is presently reported to be better suited to the SA agricultural context and better organised to promote Ethical Trade principles throughout the supply chain (CGA, 2009a).

2.5.3.2 Certification

Certification is usually done by third parties. The engagement of third parties in the certification process is meant to remove both the adopter and implementer of standards out of the evaluation process (Henson and Humphrey, 2009). This is assumed to bear with it an objective protocol.

Certification requirements can be a technical barrier to trade especially when characterised by some preferential tendencies. For instance, a product that has not been certified under GLOBALGAP does not have access to a number of leading supermarkets. This effectively prevents producers from market access and interferes with free trade. It also eliminates consumers' choice (Shah, 2008) and the value of differentiation.

2.5.3.3 Traceability

Greater dependence on traceability and associated certification is a sure result of the increased complexity and stringency in the food safety as requirements are transmitted to the producers and exporters of food products (UN, 2007a). Traceability is defined as a verifiable method of identifying growers, fields, and produce in all its packaging and transport/storage configurations at all stages of the supply chain (FPT Guidelines, 2003). Wilson and Clarke

(1998) define traceability as the information necessary to describe the production history of a crop, and the subsequent transformations and processes that the crop might undergo on its passage from the grower to the consumers' plate. Traceability need to be established at all stages of the production, processing and distribution of the food (UN, 2007a). The system enables the reception and maintenance of the full history of the audit from the overseas retailer back to the farmer and even the orchard or block where the fruit was grown (Olivier, Fourie and Evans, 2006). Traceability is motivated by the fear of the consequences associated with food scandals, the mere management of business risk and the associated call for establishing due carefulness (Olivier, Fourie and Evans, 2006). Consumers demand appropriate labelling and tracking and traceability schemes as sources of information about the food they are consuming.

A good traceability system links a food safety problem to a specific country, pack house, producer orchard or vineyard (DAFF, 2010a). When properly applied a good traceability system according to DAFF serves the following purposes:

- (a) A problem can be linked to one specific producer rather than a whole group.
- (b) It is a fast and accurate way to get to the source of the problem, which limits risks relating to health and diseases.
- (c) It limits unnecessary costs.
- (d) It limits public concerns and fears.

Traceability is a “Major must” within the GLOBALGAP protocols, whereas a visual identification or reference systems in the facility is a “Minor must” (PPECB, 2006). Traceability is meant to facilitate the ease with which a GLOBALGAP registered product can be traced back to and from a registered farm where it was grown. Indications of traceability systems are in terms of recordkeeping practices, designated fruit storage areas in buildings and labels on citrus fruit boxes (PPECB, 2006). Record keeping is thus inevitable for a more effective and cost-efficient traceability system. Traceability information is demanded to be made available within four to eight hours of a food safety incident (Van Hofwegen, Becx and Van Den Broek, 2005).

Olivier, Fourie and Evans (2006) outline the process followed in the case of a food safety problem to include:

- (a) Identification of the product and the problem
- (b) Identification of the origin of the problem
- (c) Identification of the problem (might differ from the origin of the product)
- (d) Identification of other products at risk
- (e) Identification of the location of all other products at risk in the supply chain or market
- (f) Taking appropriate action and if necessary withdrawing or recalling all other products at risk from wherever they are located.

The 1996 formal deregulation of the South African agricultural sector exposed farmers and agribusinesses to pure market forces. Citrus commodity chain was fragmented as it shifted from a single desk exporter to a multiple of privately-owned large citrus cooperatives. While the UK retail chain favours the privately owned packaging facilities, other fruit buyers that are more cautious of traceability e.g. Tesco and Marks, Sainsbury and Spencer do not favour them (Mather and Greenberg, 2003). Cooperatives with uneven quality and without guaranteed traceability are forced to export to wholesale markets in Russia and Eastern Europe where prices are low, impacting on returns for the exporters.

The institution of the tracking system by the National Department of Agriculture, through the Citrus Growers Association in 2001 provides ability to identify and withdraw all fruit produced on a particular production unit when the registration of a sample of that crop is declined (Mabiletsa, 2006). The tracking system was established to benefit the growers under the Special Export Markets, supplying major markets such as the EU, the USA, Japan and Korea. The growers have to register with the department and obtain a Production Unit Code (PUC) per orchard or farm(s). This facilitates responsibility and accountability, reduces risk and uncertainty and improves synergistic performance i.e. performance based on cooperation. Such cooperation is expected to result in shared creativity, increased information to support joint planning, an enhanced customer service leading to improved competitive advantage.

Traceability is often associated with high implementation costs (Olivier, Fourie and Evans, 2006). However, the adoption of the traceability system can be a source of competitive advantage in some categories of retail shops, thereby laying the basis for improved supply chain collaboration and effective access to information (Bollen, 2004; McLeod, 2006).

Informal repacking at the retail side can result in loss of traceability despite the availability of electronic traceability systems (Symington *et al.*, 2004). This can emanate either from the repacking of fruit in the latter stages of the supply chain from bulk packaging material to retailer specification requirements or the sale of loose fruit by many retail export markets. In repacking fruit, total mixing of fruit by region or country of origin may result in cross contamination and possible consignment rejection. Besides repacking for retailer requirements, it is also often done by export agents in order to remove fruit of poor quality and in cases of product deterioration. Repacking involving the mixing of fruit from different suppliers has been observed at all the citrus repacking facilities (Symington *et al.*, 2004).

The traceability link between repacked fruit and the original bulk packaging is usually lost when fruit from different batches and different countries (with different quality and safety standards) are mixed during repacking towards the end of the supply chain (Symington *et al.*, 2004). The handling of loose fruit by consumers prior to purchasing as part of their purchasing decision process, may lead to introductions of potential contamination for the fruit on the shelves. It is also practical for consumers to move fruits between display baskets leading to a mixture of fruit with a potential to cross contaminate and thus lead to a potential consignment rejection.

2.5.3.4 Labelling requirements

Labelling of FFVs is a legal requirement in today's global trade. Information on the labels includes the produce expiry (best before) dates, origin, nutritional status, the ingredients, information on whether product has been organically produced and its weight (Shah, 2008). The increase in retailer power in trade has made labelling a standard that should entail the product's traceability.

2.5.3.5 Packaging regulations

Packaging is an integral and essential part of the industrial and commercial supply chain. Coupled with handling, storage and transport techniques, packaging guarantees that the fruit or fruit juice arrives to the consumer at its highest feasible quality (UNCTAD, 2010). Citrus for export is usually packed at grading and pack sheds. It is usually transported in palletised containers for the convenience of handling.

PRAG (2010) identifies the following as the main functions of packaging:

- (a) Packaging is part of the delivery system for products to ensure that they survive the journey from farm or factory to consumers' homes.
- (b) Packaging helps to sell a product by making it stand out from competing brands. Packaging attracts attention in order to sell the product- this is particularly the case with gifts. It helps promote goods in a competitive market place (INCPEN portal)
- (c) Foods grown or manufactured overseas need to be protected from physical harm or damage on the long journey from producer to consumer, especially when stacked with other containers on top. They may also need to be protected from extreme temperature changes such as those experienced during a sea or air journey.
- (d) Carry a lot of clear, legible information, some required by law (i.e. informs the consumer (INCPEN portal).
- (e) Present difficulty to open on products that are likely to be dangerous to children
- (f) Packaging allows efficient transportation or distribution (INCPEN portal)
- (g) Prolongs shelf life.
- (h) Offers convenience and enables easy use.

Most of the challenges associated with packaging standardisation are linked to carbon footprints, green marketing, labelling and the general need for covering the knowledge gap through provision of detailed information about the product on the labels. There is a growing need for the reduction of packaging drawn from the cost attached to packaging. Thus, the need to use as little as possible becomes an incentive. Producers and retailers advocate for more resource efficient and, where possible, reduced and use of recyclable materials (PRAG, 2010). Lesser packaging means lesser material and energy usage. Sustainable packaging has to provide an improvement to the environmental, social and economic impacts of packaging and product systems (PRAG, 2010). Sustainable packaging has to fulfil these three key areas of major concern (Figure 2.1).

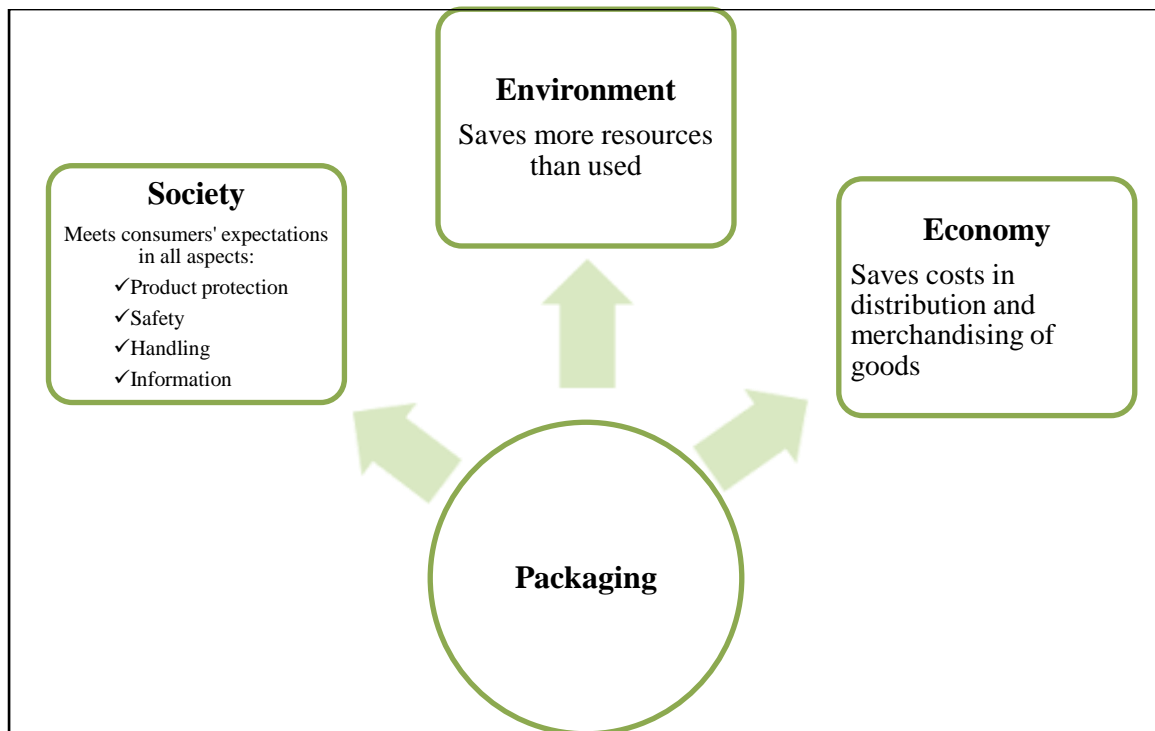


Figure 2. 1: Packaging's contribution to a sustainable society (*Adapted from INCPEN, 2011*)

Great improvement in packaging minimisation and recycling is a product of green marketing (Section 2.5.3.7) (Schvaneldt, 2003). This is believed to offer opportunities for improved environmental performance of the tangible product without altering the core product (Peattie, 2005). Sustainable packaging design considers the full life cycle of the package, recognises the principle of shared product responsibility (SPR) and consequently seeks to minimise the total packaging system cost through efficient and safe package life design.

A reduction of packaging material impacts positively on the environment and the supply chain through a cutback of waste after product use, material cost to make up product and reduced transport and storage costs (Schvaneveldt, 2003). Selling refills, reduced thickness of packaging material, use of efficient design formats and change to packaging of which less material is needed are the most common ways of reducing packaging (Peattie, 2005). The heterogeneity of the producer and buyer segments will always attract the need for a variety of packaging material within the system. The constant change in the standardisation of packaging, market acceptability, packaging technology and disposal regulations has seen the market always set requirements with which producers have to comply. Despite the need for

recyclable and biodegradable packaging, there still would remain the need for packaging material of different sizes for convenience of different players in the FFV chains.

2.5.3.6 Organic fruit production

Demand for better product quality has attracted increased income allocation to organic fruit consumption, especially in the developed markets (Mashinini, 2006). This is caused by the bid to evade consumption of toxic substances contained in pesticides. In addition to health concerns, the consumption of organic products has been esteemed for the production system's contribution towards biodiversity, reduced ammonia and carbon dioxide emissions, water quality improvements, improved physical soil properties, reduced soil erosion and enhanced water efficiency (Creed *et al.*, 2008). However, supplying the organic market has the same constraints as the traditional fruit market. The high standards of traceability, good agricultural practices, phytosanitary and health and safety measures are a challenge that the exporters have to face equally as exporting traditional fruit. Infrastructural, cold chain and transport constraints are some of the challenges faced as with all exporters of fresh fruit. However, organic fruit producers and exporters face other unique constraints (FAO, 2007b) that are discussed below.

(a) Crop management

Organic fruit production requires higher levels of management compared to the conventional crop (Neeson, 2008). Unlike other crops, organic production of fruit can never be rotated. The benefit of crop rotation as an option in pest, disease and nutrient management is thus ruled out. Integrated pest and disease management is the preferred approach to maintaining a disease and pest free organic fruit orchard. Techniques uniquely favouring organic production of fruit include the selection of pest resistant cultivars and creation of environments that encourage beneficial species to keep pest populations in check. Promotion of certain species that may act as repellents for pests is beneficial.

Maintenance of soil fertility and fruit quality needs skill without the alternative use of synthetic pesticides and fertilisers. Government support and expertise becomes an active ingredient for successful organic crop production for the producers in LDCs. However, transition to organic production by the farmers who have been subjected to low input

traditional production or non-usage of artificial inputs has been found to be easier (FAO, 2007b). The management of soil fertility in organic fruit production is more about minimising nutrient inputs losses from within the system (Neeson, 2008). Organic fertiliser can be used to build up soil fertility especially during conversion to organic farming.

(b) Integrated Crop Management (ICM)

The ICM focuses, among others, on the environmental management, responsible agricultural practices and socio aspect. It is a whole farm approach to running a profitable business with responsibility and sensitivity to the environment. This includes minimum reliance on artificial inputs (e.g. fertilisers and pesticides), maintenance of landscape, careful seed variety choices and the enhancement of wildlife habitats.

South Africa uses the Integrated Pest Management (IPM). The formal IPM techniques began in the late 1960s and were conducted in line with international developments. The South African adoption of the IPM was triggered by the requirements of the international market, principally with respect to pesticide residue regulations and criteria of consumers (Urquhart, 1999). The IPM ensures that effective monitoring systems are in place for many pests and diseases, allowing growers to make informed decisions on pest control interventions (Charleston *et al.*, 2003).

(c) Quality assurance

Quality assurance in organic fruit production is equally important as with the conventional produce (Neeson, 2008). The need for easy traceability in case of problems arising can be solved through the keeping of records. Though the SPS requirements for organic products are similar to those of the conventionally grown crops, the strict enforcement of the same has negative consequences for the organic produce. The routine fumigation of imported produce with methyl bromide (as part of the stringent SPS requirements) by markets such as the US and Japan leads to the loss of the organic status of the consignment. Thus, it is costly (FAO, 2007b).

(d) Certification requirements

Certification involves the inspection of both the farm and the farming methods to confirm that they meet the certifier's standards for organic farming (Neeson, 2008). The FAO/WHO Codex Alimentarius Committee has adopted guidelines for the production, processing, marketing and labelling of organic foods (FAO, 2007b). An inspection certificate may be required to accompany the consignment (Neeson, 2008). On the other hand, the establishment of the private voluntary basic standards for organic production is done by the International Federation of Organic Agriculture Movements (IFOAM). However, developed markets like the US, Japan, Canada and the EU have their own bodies that offer certification to exporters according to their own standards. Thus, the standards set by IFOAM and FAO/WHO Codex Alimentarius Committee are not considered as universal. The paper work involved in meeting and maintaining the organic status of the produce and the certification thereof is very costly (FAO, 2007b).

(e) The demand for imported organic produce

The annual growth rates of the demand for organic FFV have been found to slow down since the 1990s. For example, 8% organic fruit sales have been recorded for Germany while the relatively mature Austria and Denmark markets have recorded as low as zero growth rate in organic food sales. The EU consumers have been found to be sceptical about the reliability of the certification mechanisms abroad and would therefore prefer locally-grown conventional to the imported organic product (FAO, 2007b). Market research is essential if a change to organic production and export is contemplated by some of the FFV producers. Contractual arrangements may thus be important for curbing risks and uncertainties associated with organic citrus fruits.

The production and export of organic produce is associated with very high risks for LDCs. Substantial yields, quality reduction and, additional costs of organic certification and compliance and uncertainty about the final value of the produce are risks associated with the producer of organic crops. Exporters face risks of costly rigorous quality control measures needed to meet the importers' standards and high levels of rejections (FAO, 2007b). The small organic market is vulnerable to over-supply and declining price premiums. Unstable

land tenure systems may deter farmers from converting to organic cultivation, since a transition period of two years is often required before products can be sold as organic. Farmers consider this period of low yields and prices as an investment which is worth making only if they can keep the land long enough to benefit from higher prices once they have obtained certification (FAO, 2007b).

2.5.3.7 Green marketing

Green marketing is attributed to a reduction of total negative physical environmental influences associated with development and marketing of products. It is the planning and execution of all efforts to produce, distribute, promote, package, consume and reclaim products in a manner that is sensitive or responsive to ecological concerns (Dahlstrom, 2011). In simpler terms it blends good engineering with good economics while enhancing consumer preferences (Ottman, Stafford and Hartman, 2006). It manipulates the traditional marketing mix (product, price, place and promotion) alongside requiring an understanding of public policy processes (Prakash, 2002). Green marketing entails the development and distribution of products and packages that are characterised by less toxicity, high durability, contain reusable materials or are made of recyclable material. Thus, it encompasses the involvement of all key chain players including promotional efforts employed to gain consumer support of ecologically friendly products (Dahlstrom, 2011).

The main consideration of green marketing is the ability to meet the needs of the present generation without compromising future generations' ability to meet their needs (Dahlstrom, 2011). This is achieved through satisfying two objectives, namely, improved environmental quality and customer satisfaction (Ottman, Stafford and Hartman, 2006). The generation of acceptable levels of economic, social and environmental performances are attributable to a sustainable organisation (Dahlstrom, 2011) (Figure 2.3). These levels are achieved throughout the supply cycle from the procurement of inputs to post-consumption disposal. The social performance is nurtured through the industry's interaction with suppliers, customers, consumers and other interest groups. Green products are those whose production, use and disposal significantly improve on the environment, societal performance in comparison to the traditional products (Peattie, 2005).

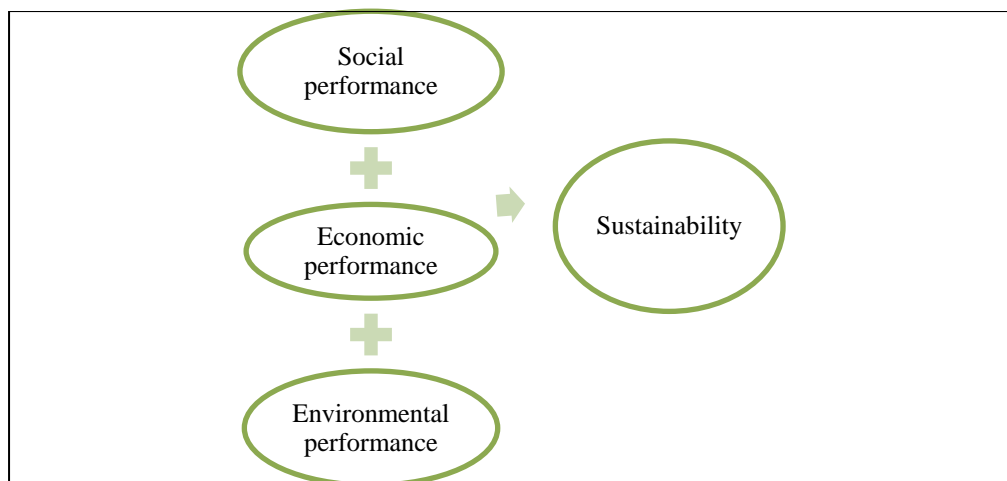


Figure 2. 2: The major components of sustainability in green marketing

Ottman (2007) argues that there are no 100% green products as all products consume some energy, resources and are subject to transportation from one point to another. Gas emissions are involved during these activities. Eventually there has to be some form of disposal after usage.

The upstream green marketing performance is pressured by the retailers through their suppliers (Peattie, 2005). When the marketing of products is highly influenced by the demand side and retailers as representatives of consumers are involved, the challenge may be very difficult to avoid. The importance of retailers is often explained by the reason that they are the first to feel the impact of consumer reactions towards food safety issues because of their vital link between producers and consumers. Thus, reactions of the retailers spring from the want to increase their sales. In consequence they are eager to incorporate all aspects related to safe food trade to maintain their competitive advantages.

Green marketing attracts high costs (Davern, 2007). The environmental performance of producers and manufacturers is also subjected to increased scrutiny. The high degree of uniformity in green products makes differentiation, especially through branding a necessity.

2.5.3.8 Carbon footprints

Carbon footprint is concerned with measuring the impact of business activities on the environment in terms of the amount of greenhouse gas (GHG) produced (Buckley, 2011). The measure of the total amount of the greenhouse gases is called carbon footprint (Bingley,

2008). It is expressed in units of carbon dioxide equivalent (tonnes or kilograms of carbon dioxide equivalents (Buckley, 2011). Direct and indirect emissions of greenhouse gases by individuals, events, organisations or products through such activities as transportation, burning of fossil fuel for electricity, heating and production and consumption of food causes global warming (Bingley, 2008). The post harvest handling and storage of perishable agricultural food products also utilises loads of energy (Shah, 2008). Some of the noted impacts of global warming are weather pattern changes, reduced rainfall in various parts of the globe, receding glaciers, melting icecaps and advancing deserts (Shah, 2008).

Though greenhouse gas emission has been on-going for centuries, the rise in global warming has attracted the need for control, restriction and measurement by industries. One of the major reasons is the world population growth which in turn makes the increase in food production and distribution inevitable. It is estimated that the world population will reach 8 billion by 2025 and somewhat above 9 billion by 2050 (Shah, 2008). The more the increase in human population, the more the food needs to be produced to sustain lives, and the more the likelihood of gas emissions associated with increased food production. A large number of products cannot be grown efficiently and cost effectively without setting up expensive growing environments that will be inefficient and high energy users. Thus, a complete ban on imports is not practical and advocating consumption of locally grown food year round is unlikely (Shah, 2008). This has attracted the need to consider food miles and the responsibility of industries in reduction of footprints. Food miles are the distance fresh produce and flowers move from production unit to markets.

The Carbon Trust and the British Standards Institute (BSI) developed the need for the full-lifecycle analysis of the product (Shah, 2008). Traded FFV are mandated to bear a Carbon Reduction Label that informs consumers of the amount of greenhouse gases and carbon dioxide produced throughout the full-lifecycle analysis (LCA) of the product. The LCA calculations consider emissions associated with sourcing raw materials and their transportation, the production, manufacture and packaging of the goods; and their distribution, retail, use and disposal (Buckley, 2011). Consumers are armed for the reduction of emissions at the product use and disposal stages through the provision of credible information. This promotes consumer responsibility for their own impact on the climate (Carbon Trust, 2008). Carbon labelling can also boost emission reduction through the creation of a sense of urgency across the supply chain. While initial funding for the LCA in

developed countries has been committed to retailers, the eventual costs will be passed to the consumers (Shah, 2008). Amidst the debate on which stage of the LCA receives greater weight for accounting purposes, some big British supermarkets, e.g. Tesco's trial in using Carbon Reduction Label has identified the production part of orange juice as the most carbon intensive stage. The consequences can be significant and detrimental for exporting countries.

Since the Carbon Reduction Labels is a private sector initiative and thus a private standard, it may be difficult to control (Shah, 2008). In the long run they act as protectionist and technical barriers to trade. The insisting of consumers on specific labels eliminates the aspect of product differentiation and thus interfering with free trade. For instance, the consideration of transport in labelling schemes often results in a de facto discrimination against exports from developing countries, leading to economic damage that in turn leads to other environmental problems (Appleton, 2007). The WTO regulations do not permit a government to require the amount of greenhouse gas emissions produced during the production process. However, private standards are difficult to deal with as governments and nations have a prerogative to safeguard their consumers and also retailers have power in FFV trade.

2.6 Options available for traders when standards are set

When food safety and health standards are passed, the suppliers have three general alternatives; to voice, exit or comply (Jaffee *et al.*, 2005) (Table 2.2). Exiting means choosing not to comply with the standards, which may be the best option if compliance will lead to fundamental loss on competitiveness or very negative economic and social consequences. This option does not depict a "loser's" strategy. Exiting may be sound if resources can be channelled elsewhere and still maintain competitiveness e.g. if it is coupled with either switching customers (in case of private standards) or switching to different products. Voicing involves an attempt to challenge the prevailing rules through negotiations or protesting. Efforts to engage any of the three approaches can be reactive or proactive. In many dialogues pertaining to standards, the implicit strategic option for the developing countries has been compliance (Jaffee *et al.*, 2005). Other things being equal, proactive approach affords greater potential to manage compliance in a manner that brings about strategic gain and minimises detrimental economic and social spillovers. It is associated with "first mover" advantages such as reputation effects and greater flexibility afforded by longer periods over which compliance can be pursued (Jaffee *et al.*, 2005).

Table 2. 2: Strategic responses to standards

	Reactive	Proactive
Exit	Wait for standards and give up	Anticipate standards and leave particular markets
Compliance	Wait for standards and then comply	Anticipate standards and comply ahead of time
Voice	Complain when standards are applied	Participate in standard formation or negotiate before standards are applied

Adapted from: Jaffee *et al.*, 2005

Compliance gives numerous non-price benefits among which are:

- (a) Reduction in the incidence of disease and death (Kokarev, 2006).
- (b) Assurance of non-additional effort and establishment of policies that provide equal access to markets and resources.
- (c) Enhanced relationships among organisations, customers and enforcement agencies in the food chain.
- (d) Increased consumer confidence experienced in some if not most trading relations.
- (e) Local consumers having the same view of the local products as with imported products.
- (f) Avoidance of the loss of reputation and product avoidance, brand switching, averting behaviour, mitigation in the export market
- (g) Better risk management. This covers food production from raw materials, processing, distribution, and point of sale to consumption and beyond).
- (h) Moving from a solely retrospective end product testing and sampling approach towards a preventative approach that is designed to reduce product losses and liabilities.
- (i) Higher revenues (Romano *et al.*, 2004) due to enhanced access to new markets or the value of avoiding loss of reputation in existing markets.

2.7 Implications of food safety standards

The increased requirements such as testing, preparing, processing and packaging of products have a potential to create value adding opportunities for the less developed countries (LDCs). The labour intensity associated with these activities along with the growing move of processing activities closer to the production site to reduce degradation and food safety risks can give the LDCs a comparative advantage to performing value addition. This is particularly important for fresh produce including FFVs (Julian, Sullivan and Sánchez, 2000).

The EU food safety policy has been found to cause the most problems for exporters from developing countries (Agritrade, 2009). The EU standards are considered not to take into account the different production conditions and certification existing in the LDCs. Consequently, these standards are viewed as barriers to exports into the Community. Food safety requirements have been identified as one of the prime issues affecting agricultural and food products export from LDCs. The challenge is two-fold; the challenges faced in complying and challenge with regard to the verification of compliance with the EU standards. Non-compliance has led African exporters to an estimated cost of over US\$1 billion per annum in lost exports (Agritrade, 2009). The highly demanded labelling as well as tracking and traceability schemes are also not without costs (UNCTAD, 2010).

2.7.1 Implication of public regulations

Delays associated with such countries as the USA in processing permits for pest risk assessment may prevent some LDCs from applying for the permits and thus lack of access to such markets. In addition to high cost implications, the permits have been noted to take up to about 5 years especially when applications are made for new products (UN, 2007a).

The greater responsibility shouldered by FFV exporting countries may be a great burden to the LDCs and new entrants. This is especially critical regarding the provision of information on general establishment and management of their national food control system and assurance of compliance (UN, 2007a). Exporting countries with weak national food control systems may be faced with challenges wherein their industries have limited options to operate their own systems save to gratify the importing country buyers (UN, 2007a).

Food safety standards have significantly impacted on supply chain governance (Jaffee and Henson, 2004) and many structural changes. The trade impacts of the SPS measures can prohibit trade by imposing an import ban or by prohibitively increasing production and marketing costs. Laying down regulations that discriminate across potential suppliers can divert trade from one trading partner to another. They can also reduce overall trade flows by increasing costs or raising barriers for all potential suppliers (Henson *et al.*, 1999).

The SPS Agreement allows longer timeframes for compliance for the LDCs and encourages and facilitates their active participation in relevant international organisations (Jha, 2005).

However, this is not mandatory. One of the flaws in this arrangement is that it creates flexibility for non-compliance. Nonetheless, the demand driven modern market will naturally eliminate non-competent producers in terms of product quality and traceability. The producers of sub-standard product face a shrink in market outlets except they embark on incredible investments in quality improvements or find alternative export markets (Achterbosch and Van Tongeren, 2002). LDCs lack capacity to participate in policy guiding panels such as WTO and Codex. Lack of technical expertise and financial resources hinders their effective participation in the standardisation processes (Jha, 2005). In the face of these challenges, the LDCs need to mark up the efforts or run the risk of falling out of international business.

Costs attracted by compliance with the increasing product quality and safety measures reduce demand and total trade when they are passed on to consumers (Achterbosch and Van Tongeren, 2002). Product rejections and detentions at the borders for non-compliance with importing nations' technical barriers hinder trade. Such technical barriers are characterised by a ban of certain products, product attributes or simply a rise in the cost of exporting.

2.7.2 Implications of private standards

In addition to the propensity to be more stringent and wider in scope than government regulations, private standards are a key to innovative and continual access to global supply chains (UN, 2007a). The adoption of safety standards through the value chain can lead to improvements in the welfare of consumers. However, the complexity of their demanding nature raises costs especially for smallholder producers. These costs are linked to certification costs, changes in farming practices, farmer training, infrastructure requirements and the associated capital investments. The system also requires maintenance, control and monitoring systems which are not without financial connotations (Henson and Humphrey, 2009). LDCs find it difficult to comply with the private food safety standards because of lack of prior investments in compliance capacity, inefficiency in complying with standards as well as the knowledge and experience at the farm, value chain or national level. The high costs of certification incurred by suppliers or producers are rarely compensated through high prices (UN, 2007a). The standards can be a market entry barrier especially to the lucrative markets (Henson and Humphrey, 2009), in addition to foreign market support regimes for fruits which

the LDC exporters have to submit to (Hinton, 1998). However, Henson (2008) postulates that compliance with private standards can be accomplished by market forces.

Large retailer control of fresh produce trade in high-income countries (Dolan and Humphrey, 2000) poses a challenge for industrial organisation in the developing countries. Compliance with country-specific minimum standards, rapid distribution to ensure freshness and information problems associated with the unobservable product attributes (Achterbosch and Van Tongeren, 2002) forces traders to adjust product chains to avoid trade losses. The challenge of reputation and loyalty and enforcing capacity are highly associated with retailer dominance in food trade in the global market (Horton, 1998)

The implementation of the complex quality assurance systems is associated with considerable amounts of resources and time. Thus, the existence of private standards tends to preserve the existing strengths and weaknesses of competing producers and exporters. Compliance favours economies of scale and the small producers. LDCs whose food safety systems are not so well-developed can be squeezed out of the market as they lack the most significant elements for compliance such as financial and technical capacity (UN, 2007a).

The introduction of process-based private standards at producer-level has a bearing on the transformation involved in farming practices (Henson and Humphrey, 2009). Private standards have been associated with the attrition of the competitiveness of developing countries. The enhancement of the livelihood of the smallholder farmers is also eliminated (Dolan and Humphrey, 2000). However, the World Bank (2005b) views the standards as a necessary element to aid competitiveness and upgrading.

Competition intensity is likely to increase with the harmonisation of the product quality attributes across the world. The increasing strictness of the private standards and the associated pressure for innovation may lead to an influx of sub-standard supplies to the developing countries from both local and foreign supply that has failed to make it into the high-income markets (Achterbosch and Van Tongeren, 2002).

The global market is characterised by less buyers for agricultural products due to the increasing requirement for participation in value chain caused by private standards. Less

stringent market outlets may not be well paying. Securing contracts with particular retailers can also be risky as a failure to meet the standards can result in blacklisting (UN, 2007a).

2.7.3 Institutional constraints in reaching compliance

Since standards are strategic instruments in food marketing, they need to be incorporated as strategic instruments in fruit production and in every link of the supply chain. This will reduce waste through increased fruit rejections, market share losses, reduced consumer loyalty and chain inefficiencies. Response to standards through differentiation, quality and safety for efficient marketing has an equal counterpart at play, which is, the consideration of the same standards at production stage (Achterbosch and Van Tongeren, 2002).

The developing countries face serious institutional constraints with regard to compliance. These challenges include lack of technical capacity for risk assessment and management, high cost of compliance and information problems, strong divergence of domestic and multilateral food safety measures. Apart from confusion, the divergence between domestic and multilateral standards is very costly and may result in export loss. However, it is assumed that loss of export can be an incentive for some sectors (Achterbosch and Van Tongeren, 2002).

Lack of accurate and concise information on technical measures has been attributed to the low participation of the LDCs in international trade panels and standards setting bodies such as WTO, the IPPC and IOE compared to their high-income counterparts (Henson and Loader, 1999). The technical information relates to the acceptable good agricultural practices and the Maximum Residue Limits (MRLs).

Jha (2005) enumerates the factors causing (potentially) adverse trade effects to include:

- (a) lack of transparency in the design and implementation of the measure in the importing country
- (b) stringency of the measure (which may be perceived as unreasonable), inadequate use of science and risk assessment
- (c) lack of awareness of or access to information on the part of the exporter (and/or of the importing firm or retailer)
- (d) compliance costs

- (e) firm size (problems which are typical for small sized enterprises)
- (f) insufficient domestic infrastructure (for example, lack of testing and certification facilities)
- (g) legal factors (no comparable domestic standards or lack of enforcement of domestic legislation)
- (h) insufficient access to technology
- (i) insufficient supply of environment-friendly inputs, prescribed chemicals
- (j) cost of imported inputs.

Meaningful solution to the negative implications of these set standards would be a strongly increased harmonisation of the industrialised food safety standards (Agritrade, 2009), with each new proposal weighed against the likely consequences on the LDCs. Possible alternative measures to reduce impact on the developing countries can be set in place. Technical assistance may be needful to aid compliance in the developing countries (Agritrade, 2009).

2.8 Chapter summary

The implementation of food safety measures is a positive move towards the protection of the global agro-business industry from total collapse through spread of diseases (plant, animal and ultimately human diseases). Protection of the environment is very essential as the need for food production and consumption will increase than otherwise due to the increase in human population. Thus, the future lies largely in the hands of today's generation if the next generations will sustainably meet their needs.

While the main thrust of the development of the food safety regulations and standards is to provide maximum consumer, plant and animal health protection, the evolution of the diverse standards is an inconvenience as it often sets a barrier to new entrants and presents new challenges to existing suppliers and other stakeholders. The private standards have a cost implication upon the producers. The rise in the need for special labels associated with carbon footprints may be a trade barrier for developing countries since food miles may be considered. This nullifies the advocacy for free trade. The link between the lucrative markets and stringent food safety measures may result in exporters looking for alternative market segments that may not be as rewarding as the traditional markets, thus impacting negatively on market shares and general returns.

CHAPTER 3

THEORIES BEHIND INTERNATIONAL TRADE

3.1 Introduction

Many theories have been formulated to explain and understand the underlying motivation for the preparedness of nations to open their borders to overseas traders. All these theories have pointed to a more integrated and inter-dependent world economy where the core concept is free trade. South Africa was a closed economy till the deregulation of its agricultural and fruit industries in the mid 1990s. This study focuses on the international trade of the South African citrus products and not the sales that take place within the nations. Thus the implications of these theories are more inclined on a product that is traded international rather than what actually happens within the nation. A close follow-up of the chronology of the propositions of these theories gives a better understanding of the concept of the comparative advantage and competitiveness of nations and industries as well as the drivers of an industry's competitiveness. Basically, factors of production, productivity, opportunity cost and the business environment form building blocks of these theories. Trade theories can be divided into two categories *v.i.z.*, the neoclassical and the new trade theories. The neoclassical theories include the theory of absolute advantage, comparative advantage, the factor proportions or factor endowment theory, the Leontief paradox and the product life cycle theory. The new trade theories include the new trade theory by Krugman, Porter's diamond model as well as the double diamond. The purpose of this chapter is to comprehensively review these theories. The review is relevant to this study since these theories are also based on drivers of international trade and competitive advantage. The chapter also discusses in greater detail as a theoretical foundation for the analytical framework, the indicators and models used to measure competitiveness both at macro and micro levels.

3.2 Traditional or neoclassical trade theories

It is important to take note of some of the common assumptions claimed by the neoclassical theories before a brief discussion of each individual theory. The first assumption is that all theories restrict trade relations to bilateral trade, with each country having a fixed stock of

factors of production (Rangasamy, 2003). Traditional theories assume perfect mobility of factors among industries and a complete immobility of the same globally. They also assume that countries only trade in final products i.e. none is trading raw materials or semi-finished products. Perfect competition characterises both the factor and product markets, with profit maximisation by the producers and factor returns that are at a level that ensures full employment of all factors. The neoclassical theories also assume a similarity in utility functions for all consumers regardless of where they are situated. Technology is such that production is characterised by constant returns to scale, implying no differences in production efficiency. The theories acknowledge the existence of transport costs associated with trade (Rangasamy, 2003). The theories include mercantilism, absolute advantage, comparative advantage, factor endowment, Leontief paradox, country similarity, product lifecycle, first mover and economies of scale theories.

3.2.1 Mercantilism

This economic theory existed in Europe between the 16th and 18th centuries (Ball *et al.*, 2008). Mercantilism viewed accumulation of precious metals (gold and silver) as an activity essential to a nation's welfare. It viewed trade as a zero-sum game. The trade surplus of one nation is offset by the trade deficit of another (Cho and Moon, 2000). Governmental policies promoted exports and stifled imports, resulting in a trade surplus to be paid for in gold and silver. Import restrictions were implemented through import duties, while government subsidies to exporters increased exports (Ball *et al.*, 2008). This is the economic theory which Adam Smith challenged through the proposal of the theory of absolute advantage

3.2.2 The theory of absolute advantage

This was formulated by Adam Smith in 1776 in order to explain the operation of markets and production in society. The theory of absolute advantage postulates that the direction, volume and composition of international trade were determined by market forces, and not government controls (Smith, 1776). The main argument underlying this theory is specialisation of nations in products that they can uniquely and most efficiently produce i.e. the goods for which the nation has an absolute advantage. A nation exports a product for which it is the world's low-cost producer (Porter, 1998). This will lead to a greater production of goods which will in turn necessitate free trade of the surplus goods. The nations

would trade in commodities which were cheaper than those produced locally since each country will produce more (Smith, 1776).

3.2.3 The theory of comparative advantage

In 1817, Ricardo refined the theory of absolute advantage to that of comparative advantage (Hough, Neuland and Bothma, 2003). The theory of comparative advantage assumes that market forces will allocate a nation's resources to those industries where it is relatively productive (Porter, 1990). The comparative advantage theory suggests that a nation can still import a product that it produces at the lowest opportunity cost if it is even more productive in producing other goods. The theory was based on labour productivity of nations. The ultimate significance then is that world potential production is greater with unrestricted free trade than it is with restricted trade. While the theory of comparative advantage suggests more consumption for all consumers in all nations (when trade is not restricted), it leaves out the growing trend in consumer preferences, growing sensitivity to food safety and health and other standards that govern international trade today (Hough, Neuland and Bothma, 2003). Both the theory of absolute advantage and the theory of comparative advantage have one implicit assumption of one factor of production.

3.2.4 Factor endowment theory or factor proportions

This theory expands from the theory of comparative advantage by introducing the concept of the factors of production and their availability. Attributed to Heckscher and Ohlin (Porter, 1998), the theory is anchored upon the understanding that all nations have the same technology or production systems for the same goods. It automatically implies no differences in production efficiency, thereby concluding that there are no differences in productivity across countries (Hough, Neuland and Bothma, 2003). The international and inter-regional differences in production costs occur due to differences in factors of production endowment within these nations i.e. labour, land, capital and natural resources (Hough, Neuland and Bothma, 2003). The comparative advantage of nations is thus factor-based and a nation should export products that use its relatively abundant resources intensively and import products that use its relatively scarce factors intensively (for which it has comparative disadvantage). This emanates from the theory's assumption that factor prices are determined by factor supplies. However, it is important to note that government intervention can alter

overall or specific factor advantages (Porter, 1998). Good examples of such interventions are the implementation of policies designed to improve comparative advantage e.g. subsidies, reduction of interest rates, holding down wage costs among many (Porter, 1998).

3.2.5 The Leontief paradox

Wassily Leontief postulated that the United States would be an exporter of capital intensive goods as it proved to have more abundant capital compared to the rest of the world. This however, proved wrong as it was found that the US exports were less capital-intensive compared to its imports, thus the name “Leontief paradox” (Hough, Neuland and Bothma, 2003).

3.2.6 The Linder theory of overlapping demand (Country similarity theory)

The theory of country similarity was formulated by Stefan Linder in 1961 (Cho and Moon, 2000). Linder argued that the Heckscher and Ohlin’s factor endowment theory was adequate to explain international trade in primary products but lacked in addressing the need for trade in manufactured goods (Ball *et al.*, 2008). The Heckscher and Ohlin expect trade between the developed and the less developed countries because of their differences in factor endowment than otherwise. In contrast, the demand oriented Linder theory states that tastes are strongly affected by income levels, and therefore a nation’s income per capita level determines the kinds of goods they will demand.

The Country similarity theory is based on two assumptions. The theory deduced that international trade in manufactured goods will be greater between nations with similar tastes (Cho and Moon, 2000) and levels of per capita income than between those with divergent levels of per capita income (Ball *et al.*, 2008). Each country produces for its home market but will export part of the output to other similar countries (Cho and Moon, 2000). The second assumption of the Country similarity theory is that a country exports those manufactured goods for which there is significant home market. Thus, production for home market has to be large enough for firms to achieve economies of scale, hence cost reduction (Cho and Moon, 2000).

Today's business industries and firms are targeting the global market rather than the domestic. This assumption may not hold in today's global economy. Cho and Moon (2000) cites the example of non-Christian countries such as China exporting artificial Christmas trees to Christian countries such as the US, where the market for this product is large. It is further stated that Japan exported typewriters to the US before the market for the same was fully developed in Japan. The first assumption poses problems as well i.e. similarity of tastes and income levels. It is difficult to ascertain why a country originates a particular product. The Linder theory may not be able to explain this theory more than the differences in factor endowments and different characteristics of technology of the trading partners, which is explained by the Heckscher-Ohlin theory (Cho and Moon, 2000).

3.2.7 The product cycle or product life-cycle theory

This was proposed by Raymond Vernon in the mid 1960s (Hough, Neuland and Bothma, 2003). The theory was founded on the notion that by the 20th century, the world's largest proportion of new products would be developed and sold in the US enhanced by its size and wealth. Demand would grow first in the US and later spread to the advanced countries' high income class. The growth in demand within these nations would trigger the feasibility for the US firms setting up production facilities in these advanced countries. The growth in the demand and market for such products would in turn trigger competition based on price and producers would start exporting to the US. When the less developed countries start to become more cost-competitive over time, they would be producing for export to the US and other advanced nations and US would be a net importer (Hough, Neuland and Bothma, 2003). This theory does not hold water with regard to the trading of certain products. For example, the South African citrus fruit has been in the market since the 1900s and is still exporting not only to the US, but also to other developed nations. In the global market, prices are no longer a basis for competition but rather, the market is demand-driven with consumers demanding more of quality and healthy products.

3.2.8 First mover theory

This theory postulates that the industry which first entered the market (first mover) gain large market share, increased technical expertise and benefits reduced costs. This may lead the industries to specialise when there are increased returns to scale and experience (Ball *et al.*,

2008). This advantage can be a discouragement to new foreign entrants whose entry costs may be too high, especially in the initial stages. Studies carried upon a broad range of industries proved that 70% of the leaders in present-day markets were first movers, while another revealed that 30% of the market share was held by first movers compared to just 13% held by late entries.

3.2.9 Economies of scale

This theory was formulated by Krugman and Lancaster in 1979 (Cho and Moon, 2000). It postulates that countries or firms with economies of scale (increasing returns) would benefit through specialisation in the production of a limited range of goods. When there is free trade, consumers can buy commodities produced in either of the countries. Economies of scale and international trade make it possible for each country to produce more efficiently without sacrificing on variety of goods.

There are two problems associated with the theory of economies of scale. Firstly, the pattern of intra-industry trade is unpredictable as the model does not state which country produces which types of goods. Different factor endowments may be the underlying reasons why two countries export different product, and may have nothing to do with the specialisation in production. Secondly, aggregation is too broad, thus overstating the empirical measures of intra-industry trade. Further disaggregation of goods may eliminate much of the apparent intra-industry trade (Cho and Moon, 2000).

3.2.10 Implications of the traditional theories for competitiveness

The conventional theories imply that trade enlarges consumption capacities of nations and is an important stimulant for economic growth. Trade facilitates growth through enhanced access to world markets and scarce resources (Rangasamy, 2003). The Heckscher-Ohlin model asserts that trade volumes and pattern will be positively correlated with differences in factor endowments. Thus, free trade policies result in factor endowments being the major determinant of comparative advantage (Rangasamy, 2003). On the contrary, market forces establish the nation's comparative advantages. Restrictive trade policies can make it difficult even for a nation with abundant labour to export labour-intensive goods.

These implications may strongly hold with regard to the manufacturing industry which solely relies on lifeless inputs. The strictness of the food safety and health standards that affect the fruit industry may demand the relaxation of some of these theories as the biological nature of the industry poses challenges over which the producers have no control. The relaxation of the trade policies have been substituted by stringent food safety and quality standards and other technical barriers to trade that may undermine the benefits of free trade and comparative advantages. Today's fresh agricultural produce market is consumer driven and controlled with the consumers and retailers, especially from the developed nations, exercising power over their supplier base in turn impacting negatively on the economic growth of developing countries like South Africa. Access to information and technology may undermine the previously cherished comparative advantage of fruit producers should the possessor of such does not improve on the endowments.

3.2.11 Criticism of traditional theories

Many multinationals have proved that factor endowments are subject to change over time. Multinationals have managed to engage in the easy transference of factors such as capital, technology and skilled manpower across borders (Abedian, 1998). This is in contrast to the assumption by the neoclassical theories that resources are country specific, fixed in quantity, and constant in quality and in full employment across countries. International trade is one of the major determinants of uneven expansion of productive resources in different countries (Rangasamy, 2003).

The modern global economy is characterised by technological change, in contrast to the claims of the neoclassical theories that claim that it is either fixed (classical model) or similar and freely available (factor endowment model) to all nations. Efficient and cost effective machinery is substituting manual labour in the modern global village (Sarig, 2005). Availability of internet and E-commerce has made business faster than in the previous years. Access to information has also been made more eminent (Rangasamy, 2003). It is also unrealistic to exclude risk as is the case under perfect competition associated with the neoclassical models. The mobility of factors of production between production activities may not be realistic. Increased return to scale is a common feature of the production process (Rangasamy, 2003).

Governments are active role players in international trade (Cho and Moon, 2000). The interaction of demand and supply as the main determinant of international prices does not hold in today's global village that is characterised by imperfect competition which necessitates government intervention (Rangasamy, 2003). With the rise of stringent safety standards and the associated need for traceability, trade is no longer carried among anonymous producers whose sole aim is cost minimisation and maximisation of profits. The distribution of trade benefits may not be equitable among the trading partners. Government protection of local producers characterises today's international trade e.g. through imposition of non-tariff barriers. Government intervention is usually done in order to secure benefits from trade.

3.3 New Trade theories

The new trade theories build on several assumptions that replace several assumptions made by the neoclassical theories. The new trade theories assume that there is imperfect competition, in opposition to the traditional theories' assumption of perfect competition. The new trade theories put more emphasis on product differentiation opposed to the homogeneous goods linked to the traditional theories. The assumption of increasing returns to scale replaces the constant returns (non-increasing returns) to scale associated with the traditional trade theories (Rangasamy, 2003). These new trade theories include Porter's diamond model, the double diamond model, and the nine-factor model.

3.3.1 Competitive Advantage of nation: Porter's diamond model

The diamond model was developed by Michael Porter in 1990 with the aim of explaining why some nations succeed and others fail in international competitive situations. A nation's ability to achieve sustained international success within a particular industry may be explained by variables other than the factors of production on which the theories of comparative advantage and Heckscher-Ohlin are based (Ball *et al.*, 2008). Porter identified four attributes as the driving and sustaining vigour for competitiveness i.e. either hampering or promoting the creation of innovation. These are; firm strategy, structure and rivalry, factor endowments, demand conditions and related and supporting industries (Porter, 1990) (Figure 3.1). These attributes interact to impact on a nation's competitiveness, which involves its ability to design, produce, distribute and service products within an international trading

context while earning increasing returns on its resources (Ball *et al.*, 2008). Porter's diamond model treats government and chance events as exogenous forces to competitiveness of nations.

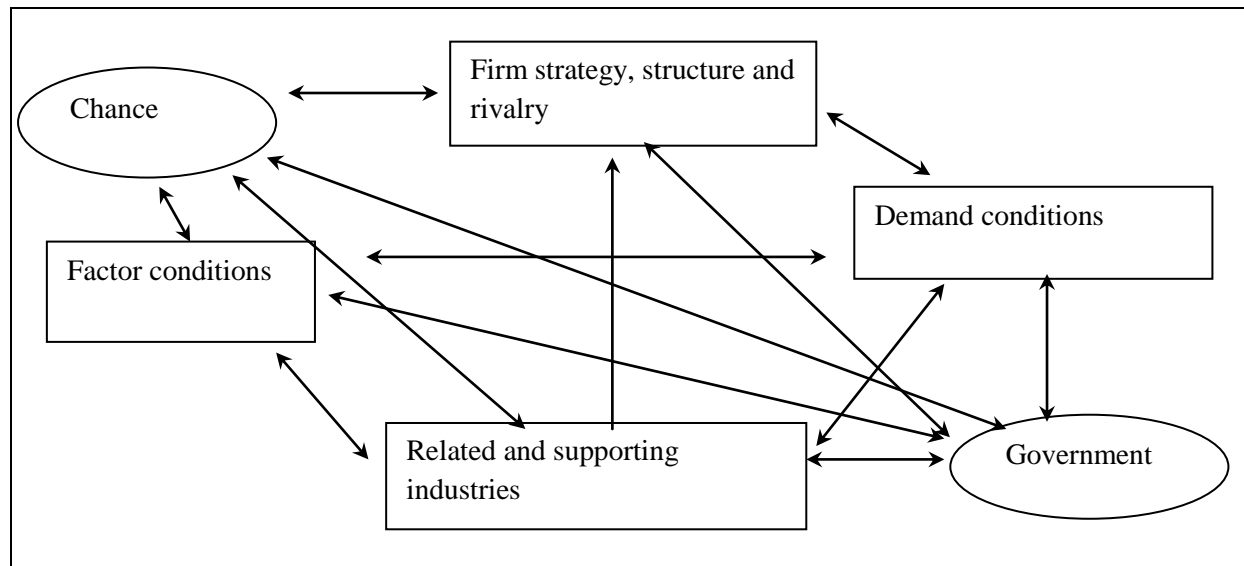


Figure 3. 1: Porter's diamond model

3.3.1.1 Factor conditions

These are the factors of production commonly classified as human, physical, knowledge, capital resources and infrastructure. Conventionally they are grouped into land, labour, capital, natural resources and infrastructure. Factors of production diversely vary (factor mix or proportions) across nations giving each nation a distinctive potential towards obtaining a competitive advantage against rivals. Competitive advantage is gained when a nation's firms possess low-cost or uniquely high quality factors of the particular type that are significant to competition in a particular industry. Thus, nations will export those goods which make intensive use of the factors with which it is relatively well endowed (Porter, 1998).

Possession of low-cost and uniquely high-quality factors of the right type that is significant to competition sets the industry on a better position towards gaining competitive advantage. However, Porter (1990) argues that factors of production themselves are insufficient to determine competitiveness unless influencing strategy and innovation are employed. This implies the need for an industry to efficiently and effectively develop its factor endowment. Proper use and management of factors of production can be shaped by other determinants in

the diamond model. Porter (1998) argues however that few factors are inherited, and thus industries must create or develop them over time through investment and upgrading.

3.3.1.2 Demand conditions

Demand conditions refer to the degree of health and competition the firm must face in its local market. Demand conditions refer to the nature rather than merely the size of the local demand (Ball *et al.*, 2008). The quality of demand is determined by the needs of the buyers while the quantity is attributed to the size and pattern of home demand growth and the mechanisms by which a nation's domestic preferences are transmitted to foreign markets (Porter, 1990). Highly demanding and sophisticated customers will trigger the firm to produce high quality and innovative commodities that can compete globally. The influence of the home demand shapes the way industries respond to, construe and perceive buyer needs in general. Firms gain confidence towards acting on buyer needs which is characteristic of the global market. The higher the demand, the more pressure will be exerted upon industries, forcing them to continually innovate and create products of higher quality, thus improving on competitiveness (Porter, 1990).

A product's fundamental and core design nearly always reflects home market needs. The needs of the home buyers are a positive influence towards a competitive advantage if they match those of other nations (Porter, 1990). The earlier these indications are shown and acted upon, the earlier the chances of upgrading to products of high quality. A large size of the domestic market can translate into economies of scale especially for industries with heavy R&D requirements, high levels of uncertainty, large generational leaps in technology and substantial economies of scale in production (Porter, 1990).

Domestic demand is insignificant to impact upon international competitiveness save if there is domestic rivalry. Rivalry in the home market will force industries to focus outward in pursuit of superior efficiency and higher profitability (Porter, 1990). Industries are forced to look beyond factor advantages which are common to all rivals within the nation. As industries innovate in response to pressure of domestic competition, they upgrade the competitive advantage through seeking higher-order and more sustainable sources of competitive advantage. In the case of the citrus industry, rivalry will be among citrus fruit

producers vying for the consumers' Rand and also among the related and supporting industries.

3.3.1.3 Related and supporting industries

Related and supporting industries are those whereby firms cooperate or share activities within the value chain or those which involve products that are complementary to the firms of the nation. Related industries share activities with the industry under consideration e.g. technology developments, distribution and marketing. The presence and absence of internationally competitive supplier and supporting industries is crucial. Globally competitive industries have a potential to confer advantages to the downstream firms (Porter, 1990). These industries serve as an important foundation for competitive success through the provision of a network of suppliers, subcontractors and a commercial infrastructure (Ball *et al.*, 2008). Domestic based related and supporting industries bear the advantage of the proximity of managerial and technical personnel, early, rapid and sometimes preferential access to cost-effective inputs of international standards. Also, cultural similarity tends to facilitate free and open information flow. Transaction costs are also reduced (Porter, 1998). Supplier industries must effectively and efficiently utilise most cost-effective inputs. These should be accessed early and rapidly (Porter, 1990). They should invest in R&D and critically prioritise access to new technology, innovations and information. The established supporting and related industries for the South African citrus industry are suppliers of input and suitable packaging materials, research and transport industries.

3.3.1.4 Firm strategy, structure and rivalry

Every industry in every nation operates within the realms of domestic rivalry, industry organisation and management. The firm strategy, structure and rivalry relate to the conditions in the home industry that either thwart or aid the industry's ability to create, organise and manage the nature of the domestic and international rivalry (Porter, 1990). Companies subject to grave competition in their domestic markets are in all probability to improve their efficiencies and innovativeness, leading to international competitiveness (Ball *et al.*, 2008).

Management practices and modes of organisation suited to the sources of an industry's competitive advantage will confer success to a nation's industries (Porter, 1998). Strategies,

goals and organisation of industries should be well suited to the industry's sources of competitive advantage. The most critical management-related differences among nations emanate from background, training, leadership orientation, attitudes towards authority, professional standards, tools for decision making and norms of interpersonal interaction among others (Porter, 1998).

3.3.1.5 Government

Government positively or negatively influences and can be influenced by factor conditions, demand conditions, related and supporting industries as well as the firm strategy, structure and rivalry (Porter, 1998). Government policy formulations either ease or make it difficult for domestic industries to operate in global markets. Domestic reform policies, capital market policies, indirect or direct support, foreign exchange and educational policy control are examples of ways in which government can impact on the international competitiveness of its domestic industries. Tariffs and quotas are often used by governments as entry barrier to foreign firms. Heavy subsidy is an indirect penalty for foreign firms and industries e.g. western farmers' subsidies by their governments distorts real market earnings by players in the international market. Government's role in shaping local demand is often more subtle. Government bodies establish local product standards or regulations that mandate or influence buyer needs (Porter, 1990).

Government can shape the circumstances of related and supporting industries in countless other ways, such as control of advertising media or regulation of supporting services. Government influences on firm strategy, structure and rivalry are often through such devices as capital market regulations, tax policy, and antitrust laws (Porter, 1998). Government acts as a catalyst either to stimulate domestic rivalry, attainment of higher levels of competitive performance or challenge industries through enforcement of regulations (Porter, 1990).

3.3.1.6 Chance

These are events whose occurrence is not influenced by the firm or industry's circumstances, and often the national government. Chance events include the following among others: wars, political decisions by foreign governments, surges of world or regional demand, acts of pure invention, major technological inventions, significant shifts in world financial markets or

exchange rates and discontinuities in input costs (Porter, 1990). They have asymmetric impacts on different nations and they can lead to shifts in competitive positions of industries. Chance events may partly alter the conditions in the 'diamond' e.g., major shifts in input costs or exchange rates may create selective factor disadvantages that can catalyse periods of significant innovation. Better competitors may turn out to be worse off and vice-versa. However, national attributes play an important role on which nation exploits the chance events (Porter, 1998). Since the determinants of national advantage work together as a powerful system for sustaining advantage, the nation with the most favourable 'diamond' will be most likely to convert the chance events into competitive advantage. It is, thus, the prerogative of industries to exploit the chance events whenever the diamond is favourable.

3.3.2 Interactions among the attributes

The nation's competitiveness depends on the type and quality of the interaction of one or more of the four home-based determinants of international competitiveness (Porter, 1990). They shape the environment in which local industries compete and promote or impede the creation of competitive conditions. Successful export industries that engage in outward foreign direct investment are those that build upon this home-based diamond. In short, the successful utilisation of the components of the home based diamond is the basis upon which a global firm can attain a sustainable competitive advantage (Rugman and D'Cruz, 1993). The advantage of this model is that it evaluates all participants in the supply chain (Porter, 1990; 1998). While the diamond points out the weaknesses and strengths of a sector, it also identifies critical success factors in the supply chain to which special attention can be paid with the objective of successfully developing and sustaining competitiveness in the future.

Competitive advantage constitutes innovation that includes not only technical progress, but also improved working and managerial methods (Budd and Hirmis, 2004). Competitive advantage is generated when a proper national strategy is pursued, coupled with the creation of circumstances that support the competitive advantage of the internationally exposed sectors and industries (Porter, 1998). The industrial level of competitive advantage has its origins in the industrial organisation whose emphasis is on cost leadership and differentiation. The resource-based view (RBV) of competitive advantage suggests that unique resources are the source of sustained competitive advantage (Barney, 1991). The heterogeneity in resource

endowments provides competitive advantages (Peteraf, 1993). These heterogeneous resources include the non-traded location and non-price factors at industrial and firm levels.

Porter (2002) states that productivity in the internationally traded goods and services sector is the only basis of national competitiveness, where productivity is defined as the output per unit of input, including both capital and labour inputs. Porter argues that this is because productivity is the prime determinant for the long run standard of living of a nation and that it is the root cause of per capita income. However, competitiveness is also attributed to the ability of some firms and industries to acquire global markets shares (Davies and Ellis, 2000).

While Porter's work complements Ricardo and Heckscher-Ohlin theories, there is however, nothing new in Porter's analysis, save that Porter set out a model in which determinants of national competitiveness may be identified (Ball *et al.*, 2008). Also, Porter's competitive advantage of nations theory argues that competition involves industries not countries despite the fact that nation-specific factors can provide a critical foundation for creating and enhancing the competitiveness of the company, or industry on an international level. Lastly, Porter's evidence is believed to be anecdotal rather than based on rigorous empirical research (Ball *et al.*, 2008).

3.3.3 Criticism of Porter's diamond model

Moon, Rugman and Verbekec (1998) argue that Porter had a correct perspective by focusing on the strategies of the firm and not the nations. Firms, not nations, compete in the international markets. However, the diamond model had weaknesses. Moon, Rugman and Verbekec (1998) generally concur that the weakness of Porter's diamond model is its exclusive focus. Some of the weaknesses of Porter's diamond model upon which the double diamond gained its strength are discussed below.

Porter's single home-based diamond views an industry's capabilities to tap into the location advantages of other nations as very limited (Moon, Rugman and Verbekec, 1998). Porter also made evaluations at macro levels and ignored the micro levels.

Porter's global firm is just an exporter, whose most effective global strategy is to concentrate as many activities as possible in one country, and then serve the world from this home base

(Porter, 1986; 1990). Porter's methodology does not take into account the organisational complexities of true global operations by multinational firms (Moon, 1994).

Porter's model explained the performance of multinationals particularly in the US, Japan and the EC (the triad). However, the model was found not to be applicable to small, open, trading economies which are not parts of this triad. Rugman and D'Cruz (1993) found out that the small and open economies such as Canada, Finland and New Zealand were characterised by a two way flow of trade and investment. They were highly interdependent with one or more of the triad blocks. Small countries target resources and markets not just in a domestic context, but also in a global context. Therefore, a nation's competitiveness depends partly upon the domestic diamond and partly upon the 'international' diamond relevant to its firms (Moon, Rugman and Verbekec, 1998).

Institutional arrangements such as free trade agreements may call for modifications in the diamond model. Such arrangements may make it necessary for the competitiveness of a nation to be analysed jointly with that of its trading partner. Home-based forces are not satisfactory for explaining the competitiveness of a firm exporting a high proportion of its produce (Cartwright, 1991).

The single home based diamond approach does not incorporate foreign activities into the model, as Porter makes a distinction between geographic scope of competition and the geographic locus of competitive advantage. Sustainable value added in a specific country may result from both domestically owned and foreign owned firms (Moon, Rugman and Verbekec, 1998).

The dependent variable of the diamond model is a nation's competitiveness. According to Porter (1990) the only meaningful concept of competitiveness at national level is national productivity. However, productivity is not necessarily a good measure or indicator of regional competitive advantage (Martin and Tyler, 2003). The relationship is complex. Increasing returns, external economies and endogenous growth effects have a greater influence on regional success. Thus, competitive advantage at the firm level relates to superior performance (Ma, 2000). Equally, competitive advantage at the regional level does not directly lead to superior performance.

According to Porter (1990), factors of production can be distinguished into two categories, namely, basic factors and advanced factors. Basic factors include natural resources, climate, location, unskilled and semiskilled labour, and debt capital. Advanced factors include modern communications, infrastructure and highly educated personnel such as engineers and scientists. Porter (1990) argues that advanced factors are now the most significant ones for competitive advantage. This may be true for a motor industry, but, for an agriculturally based industry like citrus, the basic factors are equally important. For instance, climate plays a critical role in its influence of the pests and diseases that affect the fruit trees and in turn affecting the quality of the fruits. Fruit yields and quality are very much dependent on natural factors such as soils and water availability. Labour is very important especially during harvesting times. Labour is even more critical considering the rise in the need for compliance with the ethical codes and their likelihood to increase production costs. Non-compliance with ethical codes may in turn be used to advantage by retailers intending to sideline certain producers for the purposes of dealing with a manageable number of suppliers whom they can effectively monitor.

The rate of growth of the home demand can be more important to competitive advantage than its absolute size. Rapid domestic growth leads a nation's firms to adopt new technologies faster, with less fear that such technologies would make existing investments redundant, and to build large, efficient facilities with the confidence that they will be utilised (Porter, 1990). In addition, a nation's firms gain competitive advantage. With the rise in the globalisation of the agro-based industries, as well as the demand-driven nature of agricultural products, growth of domestic demand may be of lesser impact. It may also be worthwhile to mention the impact of food safety standards imposed by the highly lucrative international markets, which have a possibility to shape the demand and production in all nations engaged in export. The higher level of education of the consumers increases demand sophistication.

The related and supporting industries may have strong backward and forward linkages with the firms in a given sector. In today's global business, it is neither efficient nor desirable to rely solely on home based related and supporting industries (Moon, Rugman and Verbekec, 1998).

The final determinant of a nation's competitiveness reflects the context in which firms are created, organised, and managed. National advantage may result from a good match among

these variables. However, Porter (1990) found that no one managerial system is universally appropriate. Instead, Porter expresses a strong preference in favour of vigorous domestic rivalry for creating and sustaining competitive advantage in an industry. Porter (1990) argues that domestic rivalry is superior to rivalry with foreign competitors. This argument may be true in large economies such as the United States, but not in small economies such as Canada, Korea and Singapore (Rugman and Verbekec, 1990). This may also not be true for an export-oriented industry such as the South African citrus industry whose international rivals are more aggressive and highly competent in meeting the export consumer demand. More so, with the internationalisation of the food product standards, rivalry is likely to go beyond the borders.

Porter's two external forces (chance and government) present interesting contrasts. The government factor is very important in influencing a nation's competitive advantage. Governments frequently pursue interventionist trade and industrial strategies (Rugman & Verbekec, 1990). Government can use tariffs as a direct entry barrier penalising foreign firms or it can use subsidies as an indirect vehicle to penalise foreign-based firms. In both cases 'domestic' firms benefit in terms of short-run competitive advantages. These types of government actions can lead to "shelter" for domestic firms, where shelter is defined to prevent the development of sustainable (long-run) competitive advantages. In contrast, work on "chance" has been minor. It is probably confined to those economists who inject "shocks" into a model system to forecast aggregative responses. Porter uses it to refer to events such as wars (Rugman and D'Cruz, 1993).

3.3.2 Double diamond model

The double diamond model was developed by Rugman and D'Cruz (1993). Rugman and D'Cruz suggest that for the industry to become globally competitive in terms of survival, profitability, and growth, managers need to build on both domestic and foreign diamonds.

In the generalised double diamond, the outside diamond represents a global diamond, whose size is fixed within a foreseeable period. The inside diamond represents a domestic diamond, whose size varies according to the country size and its competitiveness. Between these two diamonds, is an international diamond (Figure 3.2), which represents the nation's competitiveness as determined by both domestic and international parameters. The difference

between the international and the domestic diamond thus represents international or multinational activities, which include both outbound and inbound foreign direct investment (FDI).

The generalised double diamond model has three important extensions to Porter's original framework. First, while Porter's diamond model considers mainly the impact of traditional home-based activity, the generalised diamond model explicitly incorporates multinational activities (Rugman and D'Cruz, 1993). Secondly, the generalised double diamond model easily allows operationalisation of the competitiveness paradigm. The comparison of the sizes and shapes of the domestic and international diamonds reveals strategic differences. Thirdly, while Porter's diamond model treats government as an exogenous parameter; the generalised double diamond model includes it as an important variable which influences the other four determinants of the model (Rugman and D'Cruz, 1993).

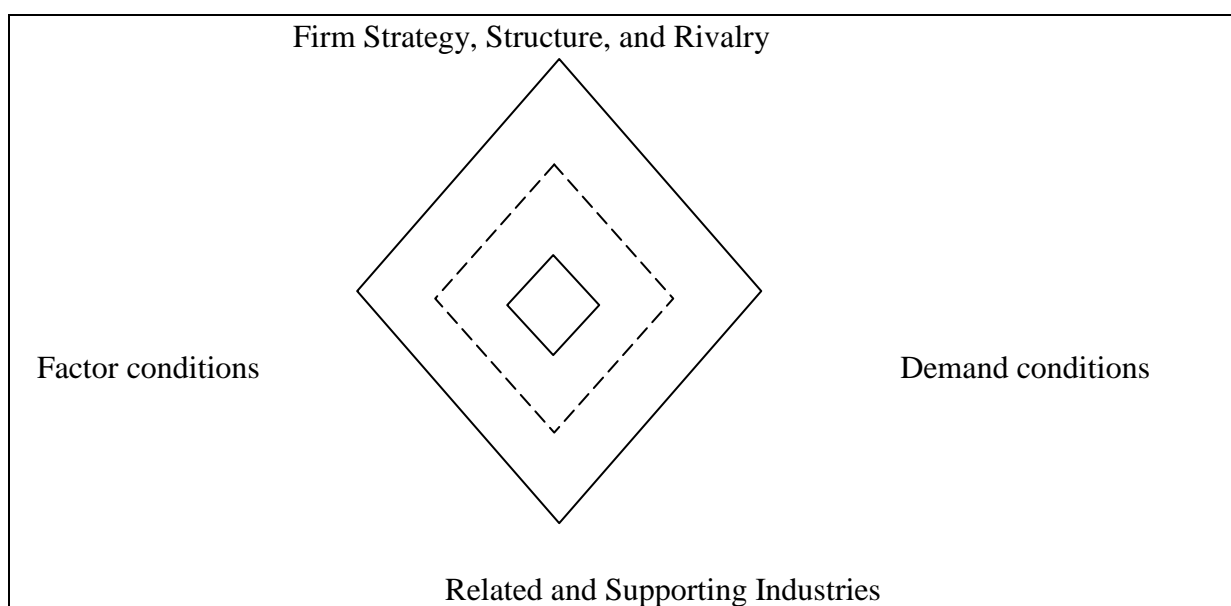


Figure 3. 2: The generalised double diamond model

Under the generalised double diamond, industries engaged in value added activities in a particular country should be capable to sustain this value added over long periods of time in spite of international competition.

3.3.3 The Nine-factor model

The nine-factor model was postulated by Cho in 1994 (Cho and Moon, 2000). Cho argued that Porter's diamond model had limited applicability to the less developed countries, and thus proposed a different division of factors in addition to new factors. Figure 3.3 illustrates the factors considered under the nine-factor model.

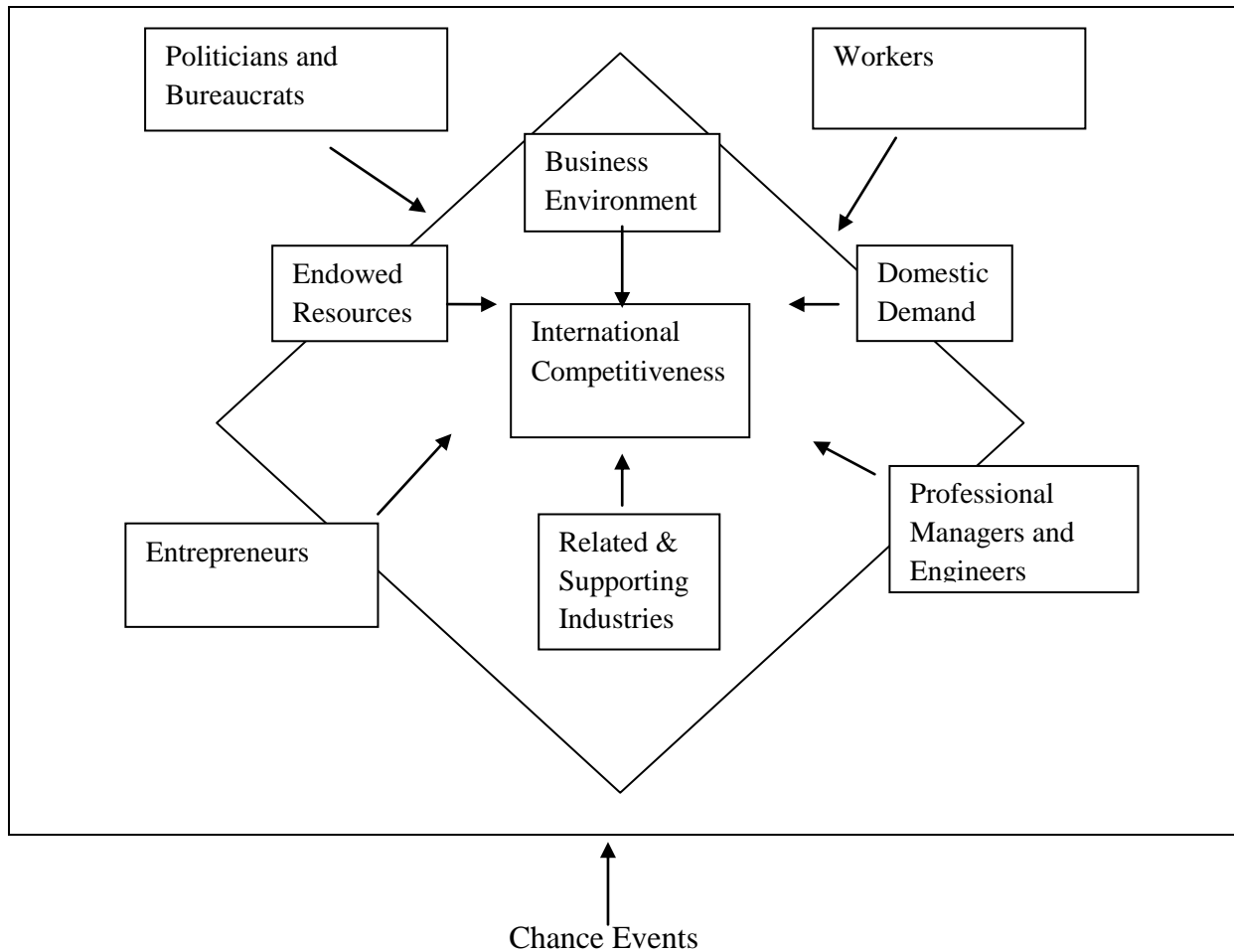


Figure 3. 3: The Nine-factor model

While the diamond model categorises natural resources and labour as factor conditions, the nine-factor model treats natural resources as endowed resources and labour is classified under the workers category. Cho (1994) argues that international competitiveness is not determined by endowed resources. Rather, the endowed resources are a part of many determinant factors (Cho and Moon, 2000). The movement of raw materials, capital and even labour across the borders of the global village nullifies the notion of endowed resources as the sole determinant of competitiveness. Nonetheless, the nine-factor model postulates that meaningful

competitiveness among nations will only take place among those nations endowed with similar comparative advantages and competing in similar industries. Figure 3.4 shows the comparison between the diamond model and the nine-factor model. This is immediately followed by a brief discussion of the determinants proposed by the nine-factor model.

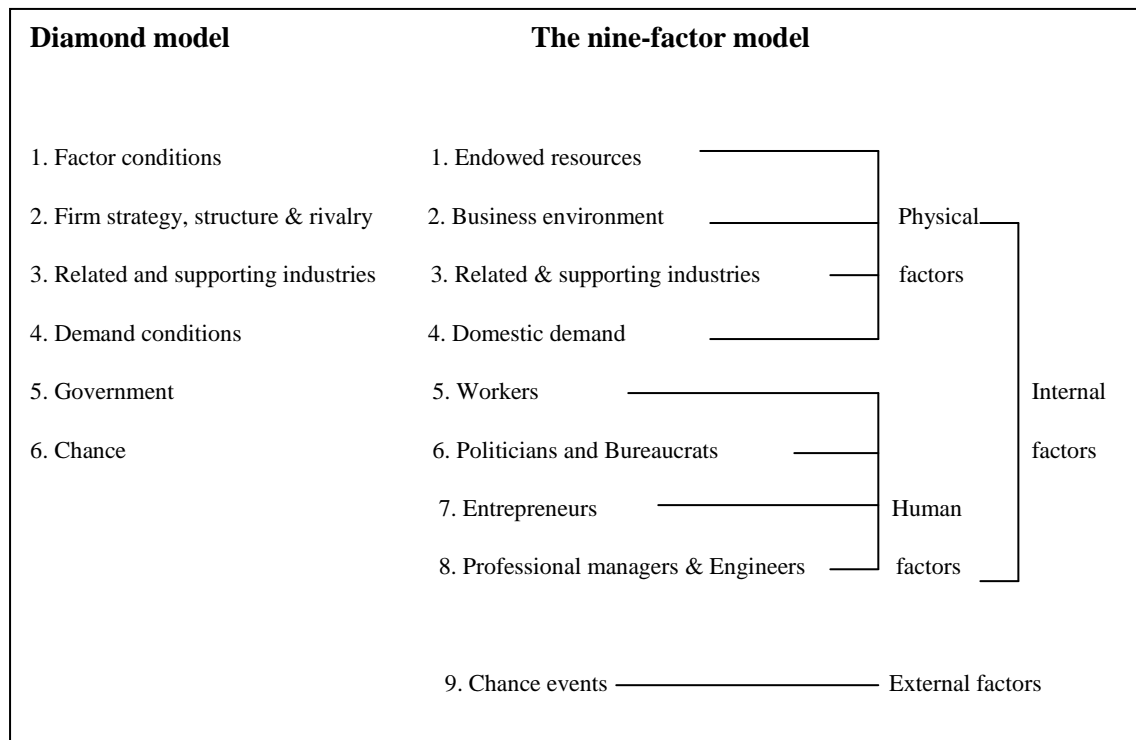


Figure 3. 4: The comparison between the diamond and the nine-factor models

3.3.3.1 Physical factors

The physical factors comprises of the endowed resources, business environment, related and supporting industries as well as domestic demand. These are discussed in detail in the next section.

(a) Endowed resources

These are the natural advantages that can form inputs into a nation's economic activities, with the possibility of adding to the international competitiveness of a nation. These natural advantages are further divided into mineral, energy, non-energy, agriculture, forests and fish stocks as well as environmental factors. Mineral resources are depletable while the agriculture, forest and fish stocks are renewable. The environmental factors are composed of

the land, weather and water. Energy resources include oil, coal and natural gas while the non-energy resources are made up of minerals such as gold, silver and iron ore (Cho and Moon, 2000).

(b) Business environment

The business environment is made up of two types of elements, the visible and the invisible. The visible include roads, ports, telecommunication and other forms of infrastructure. The invisible entails obligations of commercial deals and credit, people's acceptance of competitive values and market mechanisms, commitment of producers, consumers and other participants. The business can be viewed either at the industry, company or nation level. The degree of product differentiation, number and size of competitors, factors shaping the nature of rivalry as well as the type and height of entry barriers are the most common determinants of the industrial business environment. Major considerations for the business environment at company level are the attitudes and behaviour of individuals and groups within enterprises, the organisation and strategy of the business (Cho and Moon, 2000).

(c) Related and supporting industries

The supporting industries include the information, transport, financial, insurance and other service sectors. The nine-factor model divides the related industries into two classes v.i.z, the vertical and horizontally related industries (Cho and Moon, 2000). The horizontally related industries are those industries which use the same technology, raw materials, marketing activities and distribution channels. The vertically related industries pertain to the industries involved in the upstream and downstream stages of production.

(d) Domestic demand

This includes both the qualitative and quantitative dimensions. Greater benefits can be gained from the qualitative more than the other (Cho and Moon, 2000). The size of the domestic market determines the stability of demand as well as the minimum economies of scale. Sophisticated consumer expectations, high degree of consumerism and strict standards of product quality can be advantageous as satisfying demanding home consumers can also lead to international advantages. Thus, the home demand serves as a test market for products

destined for international markets leading to a reduction in risks associated with international commerce (Cho and Moon, 2000).

3.3.3.2 Human factors

The human factors are essential for the mobilisation of the physical factors in order to obtain international competitiveness (Cho and Moon, 2000). The sections below give a brief explanation on the human factors

(a) Workers

Size of the labour pool, education levels, sense of belonging to the organisation, work ethics, acceptance of authority and wage level are some of the most important attributes that directly or indirectly affect labour productivity (Cho and Moon, 2000).

(b) Politicians and bureaucrats

Politicians that are committed to economic growth can assist in the creation of international competitiveness. This can be done through the application of state policy that promotes international competitiveness. However, this is only possible with an efficient and non-corrupt bureaucracy (Cho and Moon, 2000).

(c) Entrepreneurs

These are essential at the early stages of economic development. They have a capacity to venture into business despite a high degree of risks than the ordinary businessmen (Cho and Moon, 2000). Their efforts to diminish risks and maximise profits strengthen the nation's competitiveness over time.

(d) Professional managers and engineers

Professional managers should strive to reduce production costs and shorten delivery times in the face of an international market that necessitates fierce price cutting and a search for

enhanced service. Thus, it compels managers to go beyond a risk-taking attitude if competitiveness can ever be enhanced (Cho and Moon, 2000).

3.3.3.3 External factors: Chance events

Chance events are defined as unpredictable changes in the environment, often not associated with the international business system (Cho and Moon, 2000). They may in many cases, lead to the configuration of the human and physical factors if a nation has to maintain or improve competitiveness. The most common chance events include unexpected breakthroughs in new technology or products, world capital markets or foreign exchange rates fluctuations, oil shocks, foreign government policy changes, war outbreak and changes in international demands (Cho and Moon, 2000).

3.4 Measuring competitiveness

The measurement of the concept of competitiveness is a controversial issue due to its complexity. It means quite a lot of different issues to different people with different interests and focus in the exploration of the subject. Thus, there is no single measure of international competitiveness that has had general acceptance, while there exists an important aspect in the general level of prices across countries (Ferto and Hubbard, 2002). This is witnessed by the failure of scholars to come to a conclusive definition of the concept, the basis of comparison and the number of dimensions included in the determination of competitiveness. The definition one attributes to the concept guides the methodology and consequently the data needed and collection process (Esterhuizen, Van Rooyen and D'Hase, 2008). Like globalisation, competitiveness sheds more heat but little light (Budd and Hirmis, 2004). The diverse range of objectives pursued in measuring competitiveness e.g. whether it is undertaken for policy analysis purposes within a specific country, or used for international comparisons of the business environment has also contributed to the ambiguity of the concept.

Competitiveness also has a spatial dimension of analysis that may regard the comparison of firms and regions within a single country or the comparison of different countries, making the analysis assume a national or international context (Frohberg and Hartman, 1997). Thus, measuring competitiveness greatly differs according to the level of analysis, i.e. at firm,

sector and overall economy levels. For instance, the assessment of trade indices is common at sector level where trends and countries are compared in the international market (Banterle, and Carraresi, 2007). Profitability, competitive strategy and competitive advantage achieved by the firm in terms of cost advantage are commonly used for firm level analysis. National level analyses consider such approaches as national productivity growth, trade performance and composition of domestic output (Lall, 2001). Many approaches used to analyse competitiveness are subject to at least one of the numerous dimensions attributed to the concept.

3.4.1 Dimensions of the competitiveness concept affecting the choice of analysis

Comparative advantage and competitive advantage are the two main concepts frequently used to explain competitiveness (Van Rooyen, 1998). Comparative advantage deals with how nations make efficient use of resources (land, labour and capital inputs) under perfectly restricted trade conditions in order to benefit from trade. Competitive advantage explains existing trading patterns in the face of real market forces including all manner of barriers to trade for instance, policy effects, product quality differences and industry marketing skills which are not considered by the comparative advantage (Van Rooyen, 1998). In addition to this kind of categorisation, Siggel (2006) identifies a lot more classifications of dimensions of competitiveness. These include; macro versus micro-economic concepts, one-versus multi-dimensional concepts, bases of comparison, static versus dynamic concepts, deterministic versus stochastic and ex post versus ex ante concepts, positive versus normative concepts and different objectives pursued in measuring competitiveness (Siggel, 2006). These dimensions are discussed in detail in the following sub-sections.

3.4.1.1 Macro versus micro-economic concepts

The microeconomic concept applies to single producers or industries. They are less controversial but involve a variety of indicators. The macroeconomic concept is an aggregate of the microeconomic concept (Siggel, 2006). The ability of an economy to harbour a large number of internationally competitive enterprises and industries makes it competitive. The macroeconomic competitiveness indicator is the most controversial although it is more popular. While countries may compete for market share or for foreign investment, the

attributes of stability, good government and profitable investment opportunities, are better summarised as a favourable business climate than competitiveness.

The widely known versions of the macroeconomic concepts are the World Competitiveness Index computed and published yearly by the World Economic Forum (WEF) and Institute of Management Development (IMD). The index forms the basis for an international ranking of countries in terms of their business climate (Siggel, 2006). It is a composite of a large number of attributes condensed into a single index. Though it may serve a useful purpose to international investors, its theoretical base and, especially, its aggregation method are problematic. The qualitative measures are based on subjective executive opinions. The methodologies have been labelled as flawed (Lall, 2001), constituting of a combination of both hard and soft data (O'Neill, 1997).

3.4.1.2 One-versus multi-dimensional concepts

It is not uncommon to have different dimensions in the measuring of competitiveness. In spite of reflecting the complexity of the concept, the number of dimensions included in the measurement of competitiveness is also a source of ambiguity (Siggel, 2006). For instance, although unit labour cost focuses on the dimension of real cost of labour, the fact that it can be further broken down into the product of the wage rate, labour productivity and exchange rate (in international comparisons) can be a source of debate on whether it is a one-dimensional indicator or otherwise. Also, Porter's four determinants of competitiveness (namely strategy, structure and rivalry, demand conditions, factor conditions as well as related and supporting industries) have been viewed as dimensions along which competitiveness can be measured (Siggel, 2006).

3.4.1.3 Bases of comparison- the notion of competitiveness

The concept of competitiveness always involves comparisons between producers or industries in different countries. Price comparison is often used as an indicator of competitiveness (Siggel, 2006). This comparison is often between the output price of a domestic producer and the free-trade price of a close substitute taken as an indicator of competitiveness vis-à-vis a group of countries in a market close to the home country. The indicator often amounts to a product-specific real effective exchange rate (REER). REER is a

multilateral indicator of competitiveness as it takes into account the different exchange rate valuations of all important trading partners of a country. However, Real Exchange Rate (RER) is a bilateral indicator. This approach is also used in indicators such as the Domestic Resource Cost (DRC) and the Full Unit Cost.

For a meaningful outcome of the competitiveness concept, the choice of a foreign competitor is very important. Price comparisons usually make use of free trade prices of imports at the point of entry, i.e., border prices due to the unavailability of cost, productivity data and transport costs for groups of countries. Use of free trade prices is assumed to reflect best practices as imports are usually attributed to the lowest bidder. The approach sets a high standard of competitiveness though the inclusion of transport cost to the point of entry lowers the same (Siggel, 2006).

3.4.1.4 Static versus dynamic concepts

Competitiveness changes over time. The static nature of the competitiveness principle poses major limitations in explaining and predicting trade patterns (Siggel, 2006). On the other hand, the knowledge of how it changes over time and the predictions of future trade patterns requires a knowledge of the sources or determinants of trade, which is the substance of much of trade theory and policy. Firms or industries that acquire a new and promising technology can be said to enjoy dynamic competitiveness as they are likely to gain market share. Changes in market share are a dynamic indicator of competitiveness. It is a more pertinent measure of competitive strength than the market share itself (Siggel, 2006).

3.4.1.5 Deterministic versus stochastic and ex post versus ex ante concepts

Deterministic concepts measure observable aspects such as costs, prices and market shares and they reflect actual performance (Siggel, 2006). Stochastic concepts depend on a number of variables or determinants of competitiveness with special focus on notions of welfare or potential performance that are not directly observable. For the stochastic concepts, variables are either chosen as proxies, or they serve as data in statistical analysis of the unobservable indicators (Siggel, 2006). Such concepts add an element of uncertainty about the relevance and statistical significance of the proposed model.

The ex post and ex ante concept is closely related to the deterministic and stochastic distinction. Ex post concepts are inclined to deterministic, while ex ante concepts are likely to be stochastic in nature (Siggel, 2006). The ex post concepts reflect the outcome of competition while ex ante concepts measure the competitiveness potential. An example of ex post competitiveness measure is the Revealed Comparative Advantage (RCA) by Balassa (1965). The Market Share Increase by Fagerberg (1988) is both stochastic and ex ante at macroeconomic levels.

3.4.1.6 Positive versus normative concepts

These two concepts are closely related to the deterministic and stochastic concepts. Positive concepts measure what is and are based on observable reality and do not involve value judgements (Siggel, 2006). Normative ones measure what should be and involve value judgements. Normative concepts are more frequently used in the macro context e.g. Real Income Growth by Markusen (1992).

3.4.1.7 Different objectives pursued in measuring competitiveness

Competitiveness indicators are mainly used by government departments for the purposes of designing industrial policies, negotiating trade agreements or writing development plans. Industrial corporations and private sector agents as well as semi-private institutions like business associations and trade unions also embark on competitiveness analysis (Siggel, 2006). The measurement can be undertaken for policy analysis purposes within an economy. It can also be undertaken for international business environment comparisons. An example of the latter kind is the World Competitiveness Index (WEF/IMD) which ranks countries according to a number of conditions that are known to be favourable for business development (Siggel, 2006). Table 3.1 sums the different measures of competitiveness based on these dimensions in addition to the concept characteristics.

Table 3. 1: Concepts and indicators of competitiveness and their characteristics

Proposing author or organisation	Concept characteristics					Measurement criterion
	1	2	3	4	5	
Macro concepts						
Lipschitz and McDonald (1991), Marsh and Tokarick (1994), IMF	u	s/d	det	p	ea	Real exchange rate, real effective exchange rate
Hatsopoulos <i>et al.</i> (1988)	Two	s/d	det	n	ea	Trade balance with rising real income
Markusen (1992)	Two	s/d	det	n	ea	Real income growth with free balanced trade
Dollar and Wolff (1993)	Two	s	det	p	ea	Productivity
Fagerberg (1988)	m	d	sto	n	ea	Market Share increase
Sharpe (1985)	u	s	det	p	ep	Market Share
WEF/IMD (1995)	m	s/d	det	p	ea	World Competitiveness Index
Aiginger (1998); Pitelis (2003)	m	d	det	n	ea	n.a
Micro Concepts						
Balassa (1995)	u	s	det	p	ea	Revealed Comparative Advantage
Bruno (1965)	u	s	det	p	ea	Domestic resource cost
Buckley <i>et al.</i> (1992)	m	d	det	n	ea	Composite, multi-variable
Durand and Giorno (1987); OECD	u	s	det	p	ea	Price competitiveness
Helleiner (1991)	Two	d	det	p	ea	Real effective exchange rates
Hickman (1992)	u	s	det	p	ea	Unit labour cost
Jorgenson and Kuroda (1992)	u	s	det	p	ea	Price competitiveness
Krugman and Hatsopoulos (1987)	u	s/d	det	p	ep	Market share, change
Mandeng (1991)	u	s/d	det	p	ep	Market share, change
Oral (1993)	m	s	det	p	ea	Industrial mastery, unit cost
Porter (1990)	m	s/d	det	p	ea	Composite, multi-variable
Siggel and Cockburn (1995)	u	s	det	p	ea	Full unit cost
Swann and Taghavi (1992)	m	s	sto	p	ea	Price/product attribute
Turner and Golub (1997)	u	s	det	p	ea	Relative unit labour cost

Concept characteristics: (1) dimensions of concept: *u* uni, two, *m* multi-dimensional (2) *s* static or *d* dynamic nature of concept. (3) *det* deterministic, *sto* stochastic nature of concept. (4) *p* positive, *n* normative nature of concept. (5) *ep* ex post or *ea* ex ante nature of concept.

Source: Siggel, 2006

3.4.2 Models and indicators for measuring competitiveness

Competitiveness is a relative measure requiring comparisons of cases and trends (Banterle and Carraresi, 2007). Whatever level of analysis is embarked on, it should be assessed relative to a base value. Some of the numerous measures of competitiveness include the use of indices, real exchange rate, real effective exchange rate, unit labour cost, direct foreign investment, domestic resource cost, competitiveness coefficient, revealed trade advantage, the constant market share, the gravity model, export performance, production cost comparisons and determinants of competitive advantage. The most commonly used are discussed below.

3.4.2.1 Indices

Use of competitiveness indices is largely associated with the Competitiveness Index computed and published yearly by the World Economic Forum (WEF) and the International Institute for Management Development (IMD) (Cho and Moon, 2000). This index is based upon a huge number of variables (over 300 in the case of WEF and up to 224 for IMD) (O'Neill, 1997). Despite the discrepancies in the rankings produced by the two organisations, the variables used are weighted and assigned to 8 principal factors which are almost the same (Cho and Moon, 2000). The principal factors include internationalisation or openness of the economy; the domestic economy and government involvement and policies (including the legal and regulatory environment and institutions of civil society); financial institutions, including their size and transparency; physical infrastructure, environment and energy; management skills; science and technology capability and facilities; and people, including skills and access to education, unemployment levels, working hours, welfare and social services, equality of opportunity, quality of life and attitudes to work (O'Neill, 1997).

The indicator guides investors and banks in their choices of investment locations and evaluation of country-specific risks respectively. The establishment of country-specific weaknesses and strengths can be useful in informing policy makers (Siggel, 2006).

The existing WEF and IMD reports lack strong theoretical background (Cho and Moon, 2000). The organisations use a combination of 'hard' data (published statistics) and 'soft' data (survey data from executive opinion surveys) (O'Neill, 1997). However, the qualitative measures have been labelled vague, redundant and wrong (Lall, 2001) as they are based on subjective executive opinions. In spite of operating on a broad definition for competitiveness, the approaches used to establish the competitiveness indices by WEF and IMD are based on flawed methodologies (Lall, 2001) that lacks rigorous theoretical explanation (Cho and Moon, 2000).

3.4.2.2 The Real Exchange Rate (RER)

The RER is defined as a ratio of the price index of tradable commodities (P^T) to that of the non-tradable ones (P^{NT}). Though sometimes employed as a measure for specific sectors, RER is usually applied to the entire economy (Frohberg and Hartman, 1997).

It is computed as follows:

$$RER = \frac{P^T}{P^{NT}} \text{-----} (1)$$

The varying prices of non-tradable inputs used in commodity production affect the differences in costs of non-tradable goods produced between countries more than do the tradable inputs (Frohberg and Hartman, 1997). This is because the differences in prices between countries are caused by trade policies upon which the tradable inputs cannot contribute a large divergence.

Prices for the non-tradables are hardly available. Thus, the ratio of foreign to domestic price indices is used to approximate the RER (Frohberg and Hartman, 1997). This is commonly accomplished through dividing the nominal exchange rate by the Purchasing Power Parity (PPP) as shown below.

$$RER = \frac{NER}{PPP} = NER \cdot \frac{P^F}{P^D} \text{-----} (2)$$

Where;

NER = nominal exchange rate expressed in units of domestic currency per one unit of foreign currency

P^F =foreign price deflators

P^D = domestic price deflators

Since RER implicitly compares the nominal exchange rate with the purchasing power parity rate, it thus measures the degree of currency misalignment based on the purchasing power parity assumption (Siggel, 2006). While currency misalignment is easy to detect, regimes of fixed exchange rates may render it difficult (Siggel, 2006). Under-valuation enhances whereas overvaluation reduces international competitiveness of the domestic producers. Although this indicator is clearly macroeconomic, it however, transforms into a microeconomic indicator of price competitiveness when the price indices used refer to single products or industries (Siggel, 2006). At macro level it captures the distortion of the currency

value, rather than factors of real competitiveness, thus, making it a monetary indicator (Siggel, 2006).

3.4.2.3 Unit Labour Costs

Unit labour costs (ULC) measure the average cost of labour per unit of output. They are calculated as the ratio of total labour costs to real output, or equivalently, as the ratio of mean labour costs per hour to labour productivity (output per hour). As such, a ULC represents a link between productivity and the cost of labour in producing output (Freeman, 2008; MacKenzie and Brackfield, 2008). The variables required for the calculation of the ULC are wages, product prices, output and exchange rates (Esterhuizen, 2005). An increase in unit labour costs indicates that growth in average employee compensation exceeds growth in labour productivity, which may create pressure on producer prices (MacKenzie and Brackfield, 2008). On the other hand, an increase in productivity can offset an increase in compensation per hour and its effects on unit labour costs (Esterhuizen, 2005).

This approach is commonly used by the OECD to compile annual and quarterly unit labour costs (ULC) and related indicators for comparisons across countries. These annual and quarterly series include data on total economy; manufacturing; construction; trade; transport and communication; finance and business services; market services; market services; and business sector excluding agriculture (Freeman, 2008). Comparable developments in unit labour costs or economic activities over time can thus be established using the ULC ratios.

The major challenge with the use of ULCs is the achievement of comparability across countries and economic activities for unit labour costs largely due to lack of uniformity in earnings and labour cost data available on a sub-annual basis across different economic activities within and across countries (McKenzie and Brackfield, 2008). This is particularly more challenging for the quarterly costs. In addition, large volatility in a derived statistic such as the unit labour cost is not uncommon stemming from poor coherence with quarterly indicators of real output (McKenzie and Brackfield, 2008). The use of the compensation of employees (COE) in ULC calculations presents two main problems. COE excludes some relevant items of total labour cost such as the cost of employee training, welfare amenities and recruitment; taxes on employment (*e.g.* payroll tax) and; fringe benefits tax. It also excludes labour costs relating to the self-employed (McKenzie and Brackfield, 2008).

3.4.2.4 Foreign Direct Investment

The OECD (1996b) defines Foreign Direct Investment (FDI) as a reflection of the objective of obtaining a lasting interest by a resident entity in one economy (direct investor) in an entity resident in an economy other than that of the investor (direct investment enterprise). FDI involves the injection of funds by a foreign investor in an enterprise that operates in a different country from the investor's origin with the intent of establishing a long-term relationship. Thus, it is a measure of foreign ownership of the productive assets, such as land, mines and factories (Esterhuizen, 2005).

High levels of investments are viewed as an indicator of competitiveness (Frohberg and Hartman, 1997). FDIs primarily aimed at opening up foreign markets that can perhaps not be accessed through exports due to trade barriers reflect the competitiveness of the investor country. On the other hand, a foreign country that has a high capability to pull in mobile international resources in the form of physical and knowhow is interpreted as competitive (Frohberg and Hartman, 1997). Thus, a country with the advantage of production conditions will attract FDIs. Therefore, this implies that if FDIs are not working against trade barriers, they indicate the competitiveness of the attracting country or region. However, it is difficult to distinguish between the two kinds of competitiveness (Frohberg and Hartman, 1997).

FDIs are a means of overcoming trade barriers (Frohberg and Hartman, 1997). FDIs lead to a partial substitution of exports (Frohberg and Hartman, 1997) and are also a source of technology transfer (Lall, 2001)

3.4.2.5 Domestic Resource Cost

Domestic Resource Costs (DRC) is a measure of the comparative advantage of different policy options. The indicator measures the opportunity cost of producing and saving products to foreign exchange (Frohberg and Hartman, 1997). The DRC can be interpreted as the shadow value of domestic non-tradable factors necessary in producing a traded good per unit of tradable value added (Frohberg and Hartman, 1997). When comparisons are made across sectors, the DRC calculations provide an estimation of the sector than can efficiently use the domestic resources more than others (Dhehibi and Frija, 2009).

DRC is computed as follows:

$$DRC_i = \frac{\sum_{j=k+1}^n a_{ij} P_j^D}{P_i^B - \sum_{j=1}^k a_{ij} P_j^B} \text{-----} (3)$$

Where;

a_{ij} = quantity of the j^{th} traded (if $j \leq k$) or non-traded (if $j > k$) input ($j = 1, 2, \dots, n$) used to produce one unit of output i ;

P_j^D = domestic (shadow) price of input j

P_i^B = border price of output i

P_j^B = border price of input j

If the alternative will lead to growth, the domestic value added will be greater than the opportunity cost of the used domestic resources ($DRC < 1$). Otherwise ($DRC > 1$) the policy is an inefficient alternative.

The DRC is associated with biased results. Since calculations are carried out for specific enterprises, the results are certainly not representative. Thus, for regional or country comparisons, representative firms of the corresponding spatial entity should be chosen (Frohberg and Hartman, 1997). Besides, detailed information on the most important characteristics of the enterprises concerning competitiveness and the suitable sampling method is required. The repercussions for prices caused by changes in demand for inputs are neglected. The omission of distribution and marketing costs where international competitiveness is measured is a disadvantage as these costs can seriously impede or even become prohibitive for trade especially for bulky goods (Frohberg and Hartman, 1997). Domestic resource abundance and transport costs may be responsible for higher import prices than domestic prices of tradable inputs, despite the availability of the latter at international prices. Thus, making transport costs and the abundance of domestic resources a source of comparative advantage (Siggel, 2006). The gathering of the necessary input-output coefficients needed for analysis is usually not easy (Frohberg and Hartman, 1997).

3.4.2.6 Competitiveness Coefficient

The Competitiveness Coefficient is the inverse of the DRC (Frohberg and Hartman, 1997). Its ability to reveal the highest values for policy alternatives which indicate largest returns to fixed resources, and supposedly have a competitive advantage, makes it more intuitively appealing than the DRC.

3.4.2.7 Revealed Comparative Advantage (RCA)

The Revealed Comparative Advantage (RCA) was developed by Balassa (1965). RCA is grounded on the conventional trade theory. It measures a nation's exports of a product or service relative to its overall exports and to the corresponding export performance of a set of countries (Ferto and Hubbard, 2002). It is defined as the ratio of the share of a product in world trade. It thus identifies sectors for which an individual country has a comparative advantage and a comparative disadvantage. The RCA is a basic measure of success and failure and it can provide useful data for the testing of hypotheses in other areas. The indices are interpreted with respect to the extent to which a nation has a comparative (dis)advantage in a particular product. The RCA index provides a ranking of products according to the degree of comparative advantage. The index identifies a binary type demarcation of products based on comparative advantage and comparative disadvantage (Ferto and Hubbard, 2002). If the index takes a value greater than one, the country is considered to have a revealed comparative advantage in the product while a value below one indicates a comparative disadvantage. It measures relative success in exporting, but does not make reference to underlying resources, productivity, subsidies and prices (Esterhuizen, 2005).

The RCA is stated as follows:

$$\beta = (\chi_{ij} / \chi_{it}) / (\chi_{nj} / \chi_{nt}) \text{-----} (4)$$

Where χ represents exports, i is a country, and j is a commodity, t is a set of commodities and n is a set of countries. β is based on observed trade patterns; it measures a country's exports of a commodity relative to its total exports and to the corresponding export performance of a set of countries. If β is greater than 1, then a comparative advantage is revealed.

The advantage of the RCA is that the only data required are trade statistics. The quality of the results is thus, to a considerable extent dependent on the quality of available data for analysis. The RCA index examines relative or comparative performance of an industry as compared to other industries in the same country, whereas the market share indicator looks at the absolute performance of an industry or a company vis-a-vis its competitors (Esterhuizen, 2005). This model accounts for exports only. Vollrath's (1991) Relative Trade Advantage (RTA) added the imports aspect to Balassa's RCA theory as shown in section 3.4.2.8 below.

3.4.2.8 The Relative Trade Advantage (RTA)

Vollrath (1991) coined the RTA as an alternative to the RCA. The RTA index describes a country's share of the world market pertaining to one commodity relative to its share of all traded goods. It accounts for imports as well as exports (Mashabela and Vink, 2008). The competitive advantage as revealed in actual or operational terms (RTA) can be measured by the trading performance of individual firms, commodities, industry chains and countries in the sense that the trade pattern reflects all relative market advantages, enhancements, constraints, market costs as well as differences in non-price competitive factors, such as government policies.

It is calculated as the difference between relative export performance (RXA), which equates to the Balassa index, and its relative counterpart, relative import advantage (RMA). The model is stated as follows:

$$RTA = RXA - RMA \text{ ----- (5)}$$

Where, RXA= country's exports (which equates or is similar to Balassa's RCA index).

$$RMA = (M_{ij} / M_{it}) / (M_{nj} / M_{nt}), \text{ where } M \text{ represents imports.}$$

$$\text{Thus, } RTA = [(\chi_{ij} / \chi_{it}) / (\chi_{nj} / \chi_{nt})] - [(M_{ij} / M_{it}) / (M_{nj} / M_{nt})] \text{ ----- (6)}$$

Vollrath's RXA eliminates double counting of the countries and commodities which is attributed to Balassa's RCA (Ferto and Hubbard, 2002). The RXA also accounts for all traded goods and all countries rather than subsets and is thus global in nature. Vollrath coined two other measures, namely, the logarithm of the relative export advantage (lnRXA) and the Revealed Competitiveness (RC), stated as $RC = \ln RXA - \ln RMA$. All the 3 measures by Vollrath, i.e. RXA, lnRXA and RC reveal a comparative advantage when the values are positive.

Esterhuizen and Van Rooyen formulated the RTA model as follows:

$$RTA_{iv} = RXA_{iv} - RMP_{iv} \quad [1] \text{-----} (7)$$

$$RXA_{iv} = \left[X_{iv} / \sum_{n=1}^u X_{in} \right] / \left[\sum_{m=1}^h X_{mv} / \sum_{m=1}^h \sum_{n=1}^u X_{mn} \right] \quad [2]$$

$$RMP_{iv} = \left[M_{iv} / \sum_{n=1}^u M_{in} \right] / \left[\sum_{m=1}^h \sum_{n=1}^u M_{mn} \right] \quad [3]$$

Where, X and M in equations 2 and 3 refer to exports and imports respectively. The subscripts i and m denote the product categories, while v and n denote the country categories. The numerator in equation 2 and 3 is equal to a country's export value (imports) of a commodity value relative to the export value of the commodity from all countries except for the country under consideration. The denominator reveals the exports (imports) for all products except for the commodity in consideration from the respective country as a percentage of all other countries' exports (imports) of all other products. The level of these indicators represents the degree of revealed export competitiveness or import penetration (Esterhuizen and Van Rooyen, 2006). While the calculations of indices RXA and RMP are exclusively based on either export or import values, the RTA considers both export and import activities. The importance of the export and the import competitive advantages are calculated and the revealed competitive advantage is weighted. The values that are above zero denote a competitive trade advantage while the opposite is true for competitive trade disadvantage (Van Rooyen, Esterhuizen and Doyer, 2000).

The RTA model allows for the measurement of competitiveness under real world conditions such as uneven economic playing fields, distorted economies and different trade regimes (Esterhuizen and Van Rooyen, 2006; Vollrath, 1991). Export restrictions and other policies might distort the RCA indices. Restrictions and protectionist policies are more on the import side and thus, the impact of such policies is more on the RTA and RCA than the lnRXA. Vollrath (1991) recommended that the lnRXA is less susceptible to policy-induced distortions which tend to be more pronounced on the import side. Natural factor endowments are of prime importance for agricultural enterprises, and as predicted by conventional trade theory, agricultural policies affect only flows and not underlying patterns. Vollrath and Vo (1990) found that export performance was more affected by economic fundamentals than by government intervention. The reverse applied for import behaviour. Thus, government intervention and competitiveness tend to be inversely related (Vollrath, 1998).

There are several challenges with the use of indices. The indices may misrepresent underlying comparative advantages (Ferto and Hubbard, 2002). The RTA may also say nothing about how a country acquires its market share, which may well be maintained by costly government incentives (Mosoma, 2004). The size of a country affects the RXA, RTA and RMP values. Consequently, the indices cannot be compared across countries (Pitts *et al.*, 1995). It is a lot more difficult for a small country to attain the same volume of export as a large one. The interpretation of the results becomes difficult if the three measures reveal large annual fluctuation attributable to structural changes (Frohberg and Hartman, 1997).

3.4.2.9 Constant Market Share analysis (CMS)

The Constant Market Share (CMS) model was developed by Tyznsnk in 1951 and later developed by Milana in 1988. The model measures a country's share of world exports in a particular commodity or other export items. It is based on the assumption that an industry should maintain its export share in a given market (i.e. remain unchanged over time). If a country's share of total products exports is growing in relation to competitors, for example, this may reflect increasing competitiveness of that country's product sector (Siggel, 2006). Barbaros, Akgungor, Aydogus (2007) modelled the CMS as follows:

$$\Delta q = \underbrace{\sum_i \sum_j S_{ij}^o \Delta Q_{ij}}_{[1]} + \underbrace{\sum_i \sum_j Q_j^o \Delta S_{ij}}_{[2]} + \underbrace{\sum_i \sum_j \Delta S_{ij} \Delta Q_{ij}}_{[3]} \text{----- (8)}$$

Where,

q = target country's citrus exports (value)

S_{ij} = An exporter country's export market share of product i (where there are more than one selected products) in country j (more than one selected countries)

Q_{ij} = Total imports of market j

Δ = annual change

0 = base year

The three terms on the right hand side of the equation, represent the size of market (structural) effect (1), the second order effect (2) and the competitive effect (3), respectively. These three factors are assumed to explain the reason why a country's exports grow faster than the world exports. The three effects can further be decomposed to give a more detailed cluster of effects as shown in Figure 3.5. These are explained in depth in Table 3.2, with a detailed discussion on their implications given immediately below the Table.

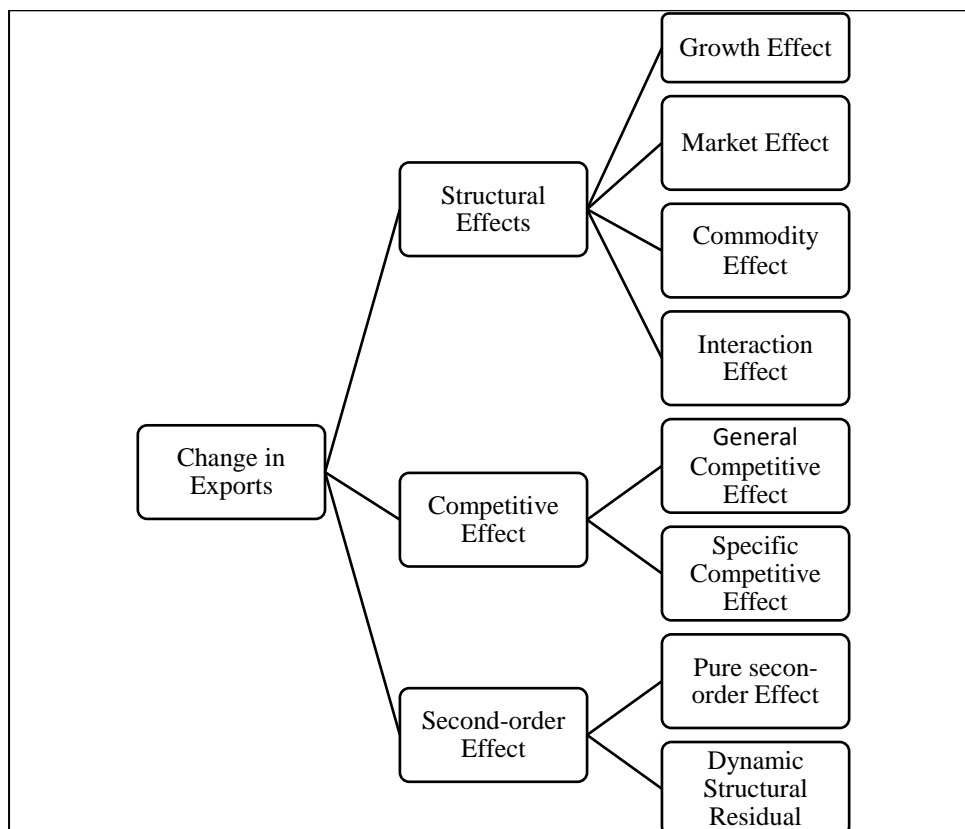


Figure 3. 5: The Two-level decomposition of the change in export (*Adapted from Chen and Duan, 2001*)

The CMS analysis model (Equation 1 below) is further decomposed to level two as shown by equation 2.

$$\Delta q = \sum_i \sum_j S_{ij}^o \Delta Q_{ij} + \sum_i \sum_j Q_j^o \Delta S_{ij} + \sum_i \sum_j \Delta S_{ij} \Delta Q_{ij} \quad [1]$$

$$\begin{aligned} \Delta q = & S^0 \Delta Q + \left(\sum_i \sum_j S_{ij}^0 \Delta Q_{ij} - \sum_i S_i^0 \Delta Q_i \right) + \left(\sum_i \sum_j S_{ij}^0 \Delta Q_{ij} - \sum_j S_j^0 \Delta Q_j \right) \\ \text{Growth Effect} & \quad \text{Market Effect} \quad \text{Commodity Effect} \\ & + \left[\left(\sum_i S_i^0 \Delta Q_i - S^0 \Delta Q \right) - \sum_i \sum_j S_{ij}^0 \Delta Q_{ij} - \sum_j S_j^0 \Delta Q_j \right] + \Delta S Q^0 \\ & \quad \text{Structural Interaction Effect} \quad \text{General competitive Effect} \\ & + \sum_i \sum_j \Delta S_{ij} Q_{ij}^0 - \Delta S Q^0 + \left(\frac{Q^1}{Q^0} - 1 \right) \sum_i \sum_j \Delta S_{ij} Q_{ij}^0 \\ & \quad \text{Specific Competitive Effect} \quad \text{Pure Second Order Effect} \\ & + \left[\sum_i \sum_j \Delta S_{ij} \Delta Q_{ij} - \left(\frac{Q^1}{Q^0} - 1 \right) \sum_i \sum_j \Delta S_{ij} Q_{ij}^0 \right] \\ & \quad \text{Dynamic Structural Residual} \end{aligned} \quad [2] \text{-----} (9)$$

Where,

Q =an exporting country's (SA in this case) total product exports (citrus in this case)

S =is the South Africa's share of citrus exports in export market,

S_j = South Africa's share of the citrus product in market j (where there are more than one selected country)

S_i = South Africa's share of product i in the market (where there are more than one selected products)

S_{ij} = South Africa's market share of product i in destination j

Q = the total imports in target destination of product under consideration

Q_j = total imports in destination j

Q_i = total imports of commodity i

Q_{ij} = is total imports of commodity i in destination j

Δ represents the change in the two periods ; superscription 0 is the initial year; 1 is the terminal year; subscript i represents export products (in this case, oranges, grapefruit, lemons and limes and soft citrus); and j represents export destinations (in this case, Americas, S.E Asia, UK, Central Europe, and Africa).

Table 3. 2: Interpretations for the two-level CMS decomposition items

Decomposition	Interpretation
Change in exports	The change in an exporting country's export value of the product
The First-level Decomposition	
Structural Effect	The change in exports due to the change in the importing country product imports.
Competitive Effect	The change in exports due to the change in the exporting country's competitiveness.
Second-order Effect	The change in exports due to the interaction of the change in an exporting country's competitiveness and the change in the importing country's product imports.
The Second-level Decomposition	
Growth Effect	The change in exports due to the change in the total importing country's imports.
Market Effect	The change in exports due to the market distribution of an exporting country's products exports to country of choice.
Commodity Effect	The change in exports due to the commodity composition of an exporting country's product exports to country of choice.
Interaction Effect	The change in exports due to the interaction of the market distribution effect and the commodity composition effect.
General Competitive Effect	The change in exports due to the change of an exporting country's competitiveness in its total product exports to the total country of choice product market.
Specific Competitive Effect	The change in exports due to the change of an exporting country's competitiveness in its exports of specific commodities to specific country of destination markets.
Pure Second-order Effect	The change in exports due to the interaction of an exporting country's export competitiveness and the total product imports in country of choice.
Dynamic Structural Residual	The change in exports due to the interaction of an exporting country's export competitiveness and imports of specific commodities in specific country of choice markets.

Adapted from Chen and Duan, 2001

The identification of different effects exposed by the CMS is important as it has policy implications (Turkekul *et al.*, 2007). The structural effect is the change in exports due to the change in the importing country's products imports. In simpler terms, it is the growth of the export market relative to the world export growth. The structural effect is further decomposed into the growth effect, the market effect, commodity effect and the interaction effect (Chen and Duan, 2007) (Table 3.2). The commodity composition effect points out whether a country has concentrated on the export of products for which markets have been expanding rapidly, or on products for which markets have been expanding less rapidly. This effect

reflects the factor endowment of the exporting country and the income and price elasticities of the demand for the products in which that country specialises. The market size indicates the part of a country's export growth attributable to the general increases in destination market imports. The magnitude of this effect shows the potential increase of a country's exports if it were able to maintain its share of destination imports (Turkekul *et al.*, 2007). The market composition effect indicates the country's ability to concentrate on relatively rapidly growing countries. The magnitude of the market size effect shows the potential increase of a country's exports if it were able to maintain its share of destination imports (Chen and Duan, 2007).

The competitive effect measures the change in exports due to the exporting country's improvements in competitiveness (Barbaros, Akgungor and Aydogus, 2007). The competitive effect has two components i.e. a change in the exporting country's general competitive effect and a specific competitive effect. The general competitive effect is a change in the exporting country's market share of the total product under consideration in the total relevant market. The specific competitive effect is a change in the exporting country's market share of specific products in specific destinations (Chen and Duan, 2001). With reference to the citrus industry, this can be a change in market shares of specific citrus varieties or cultivars e.g. soft citrus, oranges, grapefruits or lemons and limes. The competitive effect indicates the improvement or the deterioration in the competitiveness of the exports, depending on whether it has a positive or negative sign. The underlying assumption is that this effect is independent of the other effects and it largely reflects the role of domestic factors of the exporting countries (Turkekul *et al.*, 2007). The competitive effect can be explained with price changes. The analysis of the competitiveness term is interpreted as demand reacting to given price changes. Implicit in this interpretation is the assumption that price changes are supply rather than demand determined. Under this assumption, the competitiveness term is supply determined (Merkies and van der Meers, 1988). However, the assumption that price changes are supply determined may not hold in the modern demand-driven global market, characterised by technical barriers to trade (TBT).

The second-order is a combined effect of competitiveness and structure (Barbaros, Akgungor and Aydogus, 2007). It is the change in exports due to the interactions between the exporting country's competitiveness and the importing country's imports. (Chen and Duan, 2001).

CMS is used for the evaluation of international exchanges involving one or more countries exporting in one or more destinations. It is based on the disintegration of variations occurring either in their exports or in their market shares (Malorgio and Hertzberg, 2007). The backdrop consideration for the use of this model is that the growth rate of imports coming from the whole world is different from the growth rate of imports coming from a single country. The heart of the diagnostic interpretation of the CMS norm is based on the presumption that, changes in market share reflect purely competitive conditions. Interpretation is thus a description of past trading pattern. Inevitably, inferences regarding the forces underlying the country's export performance may be the end result, thereby, resulting in an interpretation that is diagnostic (Malorgio and Hertzberg, 2007). The impact of different environmental forces on similar industries may result in different but independent reactions and volumes exported to the same market outlet. In addition, there are differences in home base environmental factors affecting the imports coming from varying countries into a single market.

There is a real problem with the use of indices. Government intervention in agriculture is commonplace and the observed trade patterns can be distorted by government policies and various forms of interventions. Thus, the indices may misrepresent underlying comparative advantage. In fact the greatest concern regards to the extent to which import restrictions, export subsidies and other protectionist policies might distort indices of revealed comparative advantage (Ferto and Hubbard, 2002). However, competitiveness indices may also reflect a policy that encourages exports and boosts that country's market share. In this case the gain in market share is not because of an industry's gain of competitiveness, but rather, because of a policy which is not increasing competitiveness at all. The measure of market share is a relatively loose measure of competitiveness as a consequence.

3.4.2.10 Determinants of competitive advantage

This approach deals with the assessment of the elements that facilitate or hamper competitiveness. Among these are Porter's diamond model, the double diamond and the nine-factor theory. A nation's ability to achieve sustained international success within a particular industry may be explained by variables other than the factors of production on which the theory of comparative advantage is based (Ball *et al.*, 2008). These models are discussed in greater detail in the previous sections of this chapter i.e. sections 3.3.1 to 3.3.4.

3.5 Chapter summary

This chapter has offered a general overview of the theories behind international trade. The common thread through all of them is the search for reasons behind nations opening their borders to exporters, the pillars for leadership in international markets. No single theory is satisfactory in explaining today's international trade because it is much more complicated than before. However, none of the traditional theories have died. They remain useful in understanding many of today's industrial and trade policies (Cho and Moon, 2000). The theories are the building blocks for the recognition of the most important variable(s) i.e. factor endowments. However, they do not dwell much on the important variables such as demand conditions. The stringent safety and quality conditions associated with trade of food products across borders are not fully catered for by the traditional theories. Trade of fruit is much affected by conditions that are beyond producer control such as vagaries of nature and market forces.

CHAPTER 4

THE SOUTH AFRICAN CITRUS INDUSTRY

4.1 Introduction

This chapter provides an overview of citrus production in South Africa, the organisation of the industry, its contribution to the economy, and the challenges and opportunities available for the long-term productivity. The production of citrus fruits in South Africa is confined to specific climatic regions. The most active citrus production areas are the Limpopo, Eastern Cape, Mpumalanga and Western Cape Provinces. The vast array of supporting organisations focuses attention on promoting the competitive performance of the industry. The industry is a significant foreign currency earner and contributes considerably to the country's GDP, with an average of 4.5% contribution towards the gross agricultural production. Though there has been some significant reduction in employment figures since the deregulation of the fruit industry in 1996, the industry still provides some significant employment especially during peak periods like fruit harvesting. The issues associated with these trends, including the causes and consequences, are reviewed in the chapter.

4.2 Citrus production in South Africa

An estimate of over 100 million tons of citrus fruit is produced throughout the world (FAOSTAT, 2010). In 2009, a total of over 116 million tonnes was produced globally. While citrus is produced in almost every country throughout the world, it is however, geographically concentrated. The major production sites in the northern hemisphere are located in the United States of America (US) and Spain. The southern hemisphere citrus production is dominated by South Africa, Argentina and Australia.

The South African citrus industry is characterised by distinct heterogeneity of the fruit producers, ranging from large, highly commercial producers to resource poorer small scale producers. This fragmentation results in a clear market segmentation (export market, supermarkets, local retailers, and local markets) along the farm size groups (Philp, 2006). While each group serves a certain market, inclusivity and equity is of strategic importance to

the South African government. Market integration is further encouraged by the new Marketing of Agricultural Products Act of 1996, Number 47 of 1996, in which the government promotes market liberalisation with low government involvement and the Agricultural Broad-Based Black Economic Empowerment (AgriBEE) programme for black farmers (Philp, 2006). However, the changes in the business environment including the stringent food quality standards frustrate the efforts.

There are approximately 2 200 small farmers (100 trees and more) that supply the local market (Philp, 2006). Although the Southern African citrus industry produces only 1.5% of the world production, South Africa is the second largest exporter of citrus after Spain. It is estimated that 54% of the total citrus production is exported, 25% processed and 21% is locally consumed as fresh fruit (CGA, 2008). Of the total citrus export, 70% is orange, 16% grape fruit, lemons 8% and mandarins 6% (NDA, 2003).

4.3 Active areas of production

Southern Africa is able to produce a wide array of citrus products over an extended time period due to the region's diverse climate. This ranges from winter rainfall regions in the South to summer rainfall in the North, and from near desert in the west to subtropical, high rainfall regions in the East (CGA, 2010b). This allows for the production of the full range of citrus fruits with different quality attributes, meeting the diverse preferences of the global consumer segments. In South Africa, citrus is grown in the Western Cape, Eastern Cape, KwaZulu Natal, Mpumalanga and the Limpopo provinces. Limpopo Province has the greatest hectareage under citrus, followed by Eastern Cape, Mpumalanga and Western Cape Provinces (Figure 4.1). Smaller portions are grown in the KwaZulu Natal. The active growing areas within these provinces are shown in map below (Figure 4.2).

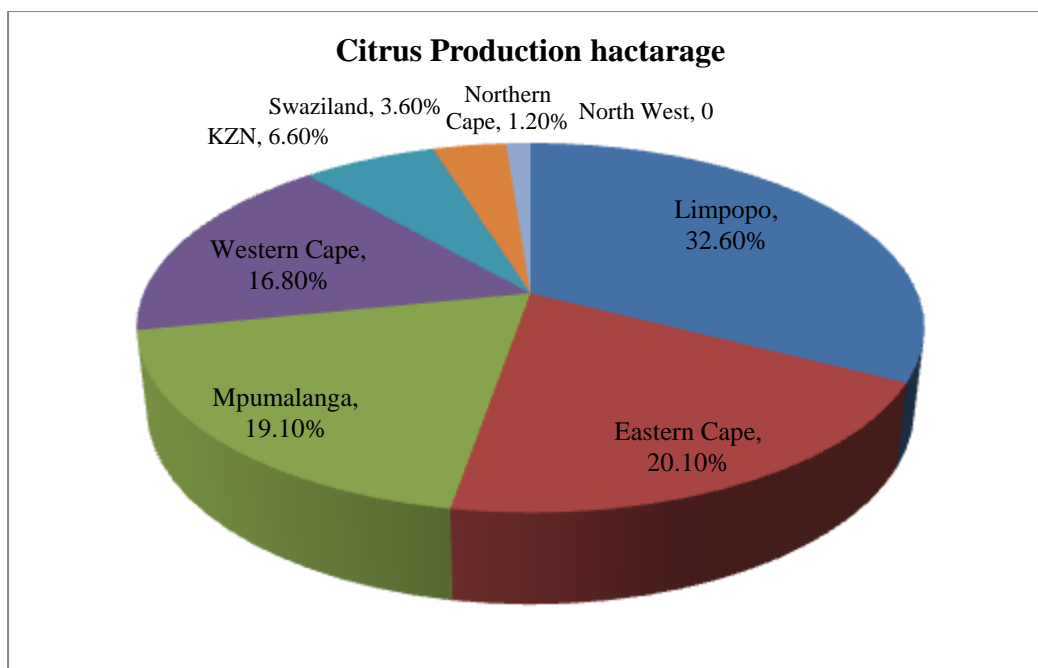


Figure 4. 1: South African citrus industry organisation (*Adapted from CGA, 2010b*)

It is important to note however, that different Provinces cater for different varieties and cultivars of citrus fruit, due to their climatic conditions which in turn translate to the cultivars suitable for these areas. Soft citrus, Navel oranges and lemons are widely grown in the Eastern and Western Cape Provinces.

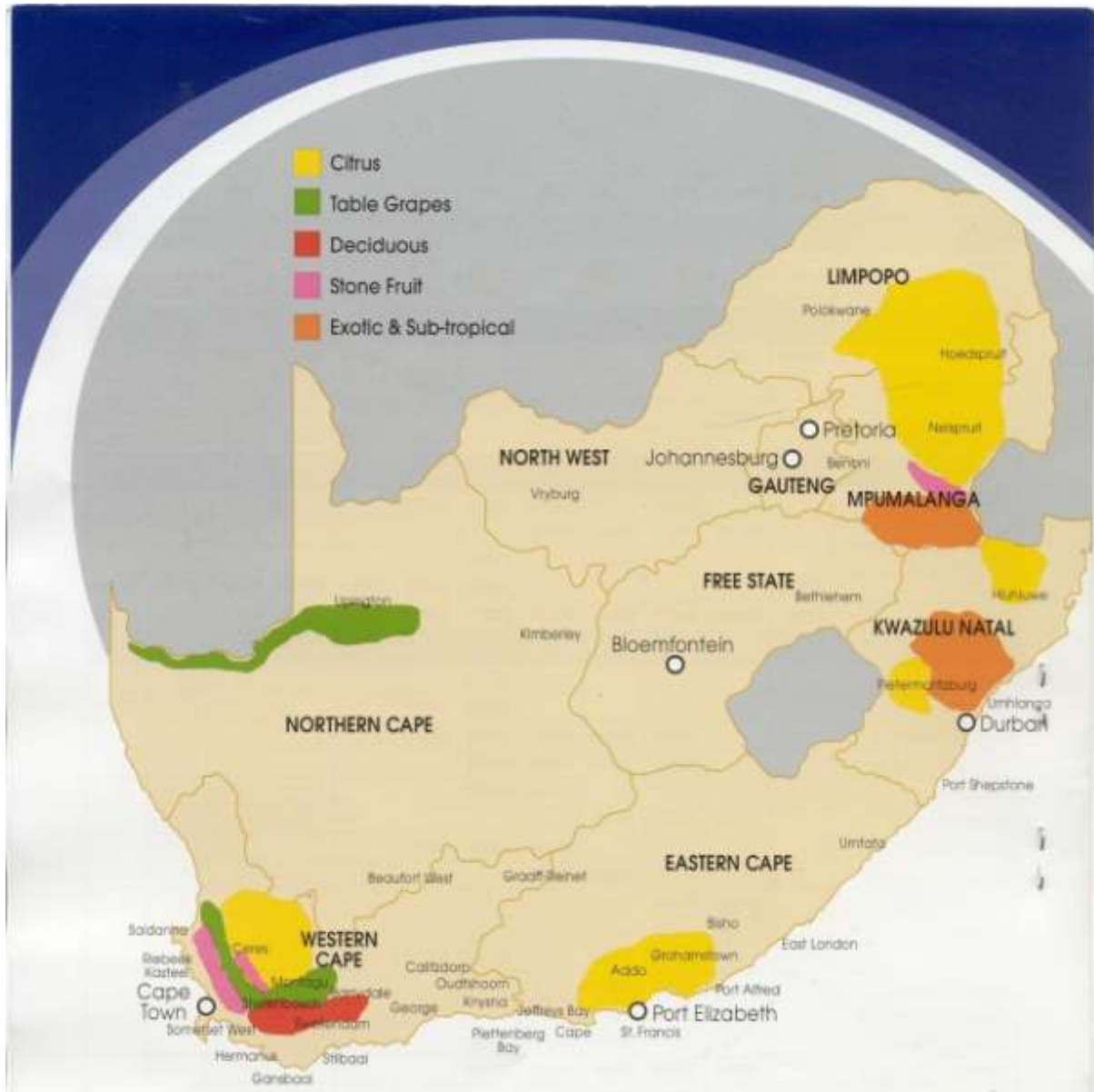


Figure 4. 2: Map of South Africa showing citrus growing areas (*Adapted from the CGA Portal, 2010b*)

The cooler conditions of these provinces have also allowed the production of easy peelers like Satsumas and Clementines which are increasingly on demand in overseas markets. The Eastern and Western Cape account for 79.1% of total soft citrus production in SA; i.e. 49.1% and 30.3% respectively (Figure 4.3). Oranges (especially navels) are concentrated in the Cape provinces and grapefruits, easy peelers and mandarins are concentrated in the Northern districts like Limpopo (Philp, 2006). The Limpopo Province is responsible for 50% of the Valencia oranges grown in South Africa (Figure 4.3). Grapefruits also do well in Limpopo (35%) as well as Mpumalanga (33%) and KwaZulu Natal (20%) provinces.

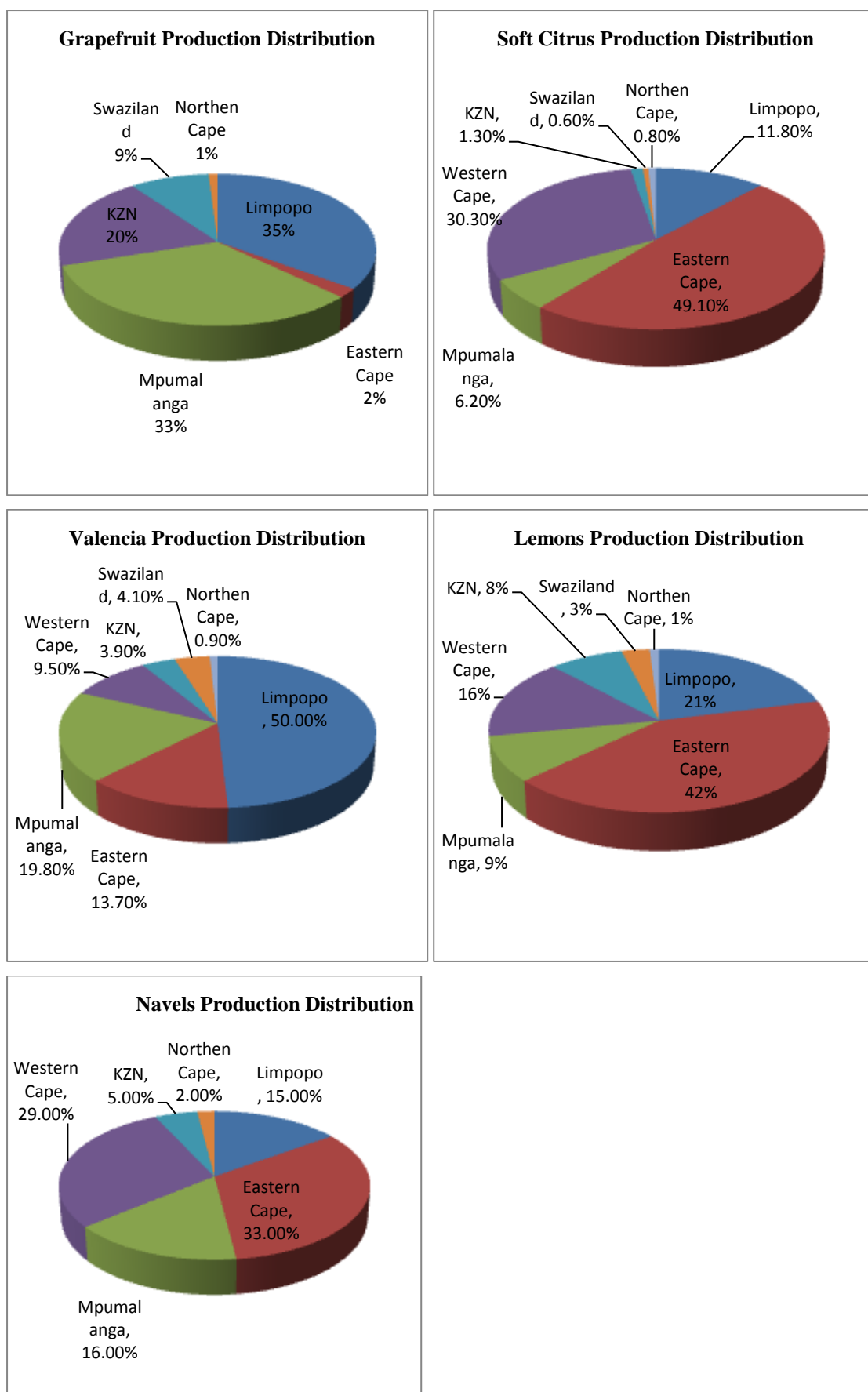


Figure 4. 3: Production distribution of citrus cultivars within the Provinces

The variation in climatic conditions also creates a difference in pest and disease challenges within the South African citrus industry. For instance, the Citrus Black Spot (CBS), false coddling moth and the citrus greening disease are prevalent in the Northern provinces (Philp, 2006). These problems are a hindrance to accessing markets such as the US and only the southern production districts can supply fruit to this market. A disease outbreak in one climatic zone may not necessarily interfere with production levels in the other. Thus, supply to the international market may not necessarily be a total failure.

4.4 The coordination mechanisms and support structures for the South African citrus Industry

The citrus industry is organised around the commercial and the smallholder producers who are members and non-members of the CGA. Many entities provide help to the growers among which are the department of agriculture and the academic institutions. The CGA provides support to the growers in research, production, marketing and market access. Some of the key organisations supporting the citrus industry are learning institutions, Fresh Produce Exporters Forum (FPEF), Citrus Research International (CRI), Agricultural Research Council (ARC), the Citrus Academy, Perishable Products Exporters Control Board (PPECB), the National Department of Agriculture (NDA). Figure 4.4 gives an overview of the coordination mechanisms and support structures for the South African citrus industry. The link to the related and supporting industries is either direct or indirect. Their role in promoting the performance of the citrus industry in the market is expounded in greater depth herewith. It is however key to note the strategic role of the Citrus Growers Association (CGA). It is the principal citrus organisation and provides research, development and extension to the growers (Philp, 2006).

The CGA represents the stakeholder interests to the exporters, research institutions, government and suppliers to the citrus industry. The grower representation of the CGA is made up of 15 regions in SA as well as Swaziland and Zimbabwe. The CGA has approximately 1 400 citrus growers membership throughout South Africa, Zimbabwe and Swaziland (CGA, 2010a). Fruit from Swaziland and Zimbabwe is exported under South Africa and they benefit the services provided by the CGA. The association has also braced

transformation by including the previously disadvantaged growers into the industry. It provides mentorship for the small farmers (CGA, 2011).

One of the key responsibilities of the CGA is ensuring a long-term profitability for the members of the association. This is achieved through continual commitment to research, development and communication with stakeholders, caring for the environment and community within which it operates, ensuring optimum cost-effective production of quality fruits, transfer of technology and providing the industry with access to global markets. The Association funds a number of programs by means of a statutory levy of 1.4%/kg exports which entails research biased towards disease management, integrated pest management and fruit quality enhancement (Philp, 2006).

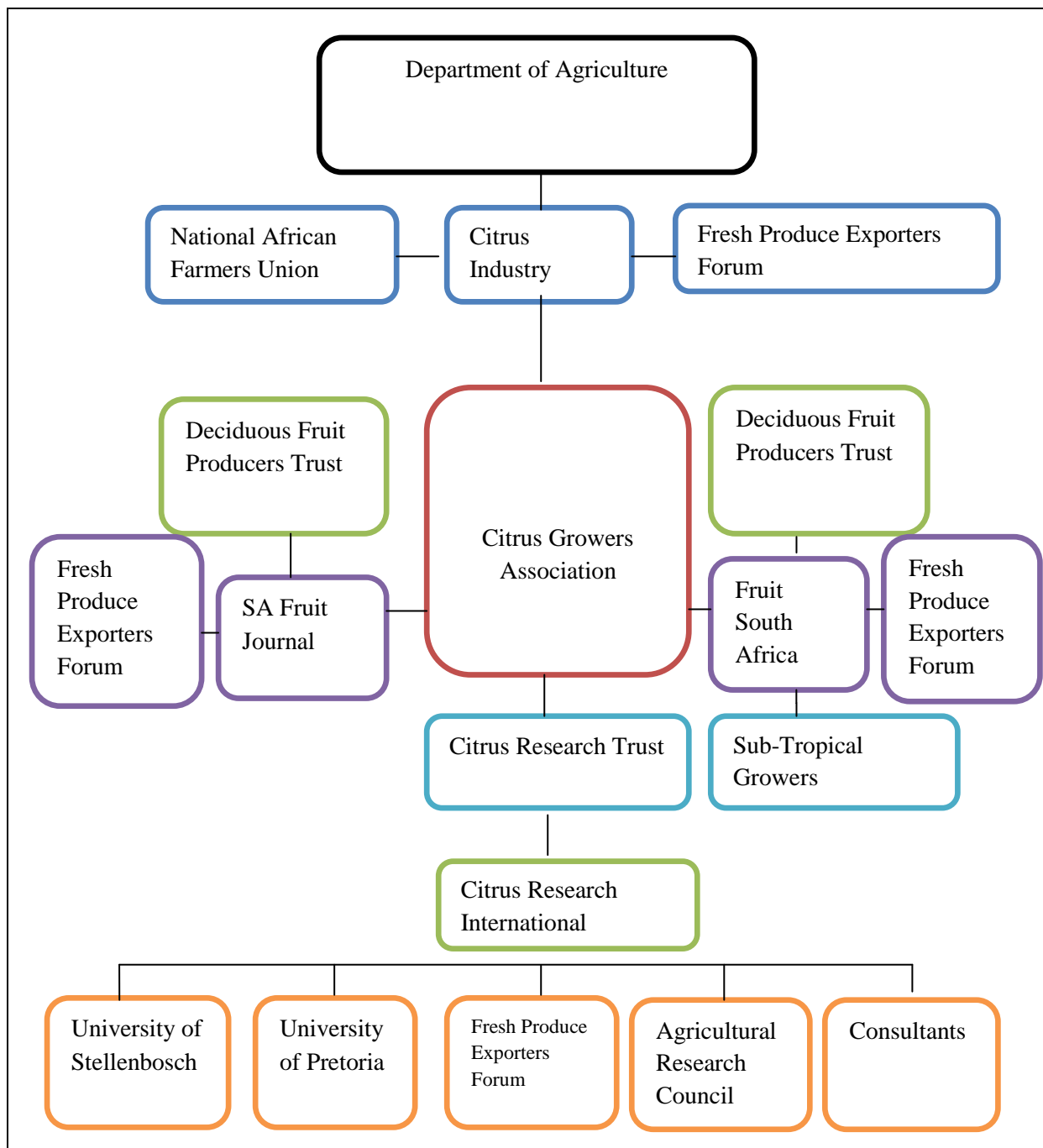


Figure 4. 4: The South African citrus industry coordination mechanisms and support structures (*Adapted from Philp, 2006*)

The Citrus Research International (CRI) is the CGA's research wing (Philp, 2006). It is committed to the promotion and maximisation of long term global competitiveness of the Southern African citrus growers through the development, support, coordination, and provision of technical and research services (Philp, 2006). It achieves this through combining the strengths of all CRI partners. The CRI research is focused towards delivering competitive advantages in export markets.

The CRI is also responsible for the coordination of funding distribution for the support of identified research proposals. The Universities of Stellenbosch and Pretoria provide university-linked research for the citrus industry. Both institutions have a membership in the CRI Board (Philp, 2006). The CGA's Citrus Academy is responsible for the bursary fund. The bursary is aimed at supporting previously disadvantaged learners to gain access to higher education in citrus related fields of study, support learners in fields of study that are related to scarce and critical skills in the industry and to generate a constant supply of qualified, skilled candidates of the citrus industry (Citrus Academy portal). The bursaries are also allocated to secondary education support and Black Economic Empowerment Bursary Support. The Academy also supports skills and knowledge development around citrus pest monitoring in collaboration with the CRI and CGA. Modules targeted at supporting the development of skills and knowledge are developed for the nursery workers for purposes of increasing productivity and efficiency. The CRI Board is made up of 11 citrus industry stakeholders: 6 grower representatives, 1 University of Pretoria, 1 Stellenbosch University, 1 Citrus consultant, 1 Agricultural Research Council, and 1 Citrus exporter (Philp, 2006).

The core functions of the CRI are cultivar evaluation (cultivars, rootstocks, acquisition of varieties) and disease management (including soil borne diseases, graft transmissible diseases, Citrus Black Spot, fruit and foliar diseases, post harvest pathology). It is also responsible for crop load and fruit quality management (fruit production and quality, rind condition) and integrated pest management (bio-control interference, cosmetic pests, false codling moth, fruit flies, mealy bug and other phytosanitary pests, production pests). The CRI's Citrus Foundation Block (CFB) located in Utenage specialises in the multiplication of the propagation materials. The bud wood thus produced is bought by the commercial citrus nurseries for propagation from the CFB (NDA, 2003).

The Agricultural Research Council (ARC) specialises in the breeding of new varieties and houses the citrus quarantine station. The citrus breeding and selection program is conducted at ARC's 153 ha Addo Research Station (Eastern Cape region) as well as other stations located in the Nelspruit and Malelane. This property was established in 1975 and by 2006 it had approximately 100 promising selections under final evaluation (Philp, 2006). Addo Research Station runs several research programmes which include the maintenance of part of South Africa's citrus gene bank, improved rootstock development, seedless citrus variety breeding (e.g. Eureka lemon) which is mainly done through mutation breeding. There are

improved citrus cultivar development activities for cooler climates which specifically focus on high quality mandarins. The research station also conducts evaluations of both citrus cultivars and rootstocks. Rootstock evaluation is mainly focusing on impact on fruit quality and yield, resistance to phytophthora and viruses. Evaluation of cultivars has the following current results: 37 navel, 17 Valencia, 14 Clementine, 27 easy peelers, 14 mid season, 18 lemon and 3 Satsuma varieties under evaluation.

The Perishable Product Exporters Control Board (PPECB) provides food safety, quality and assurance services to promote and instil confidence in the agricultural products of South Africa that are internationally preferred (NDA, 2003). The South African government mandated the PPECB to provide quality inspection, handling, storage and maintenance of cold chain services to the perishable produce industries. Quality management is achieved through checking of citrus pallets in packing sheds which are thus certified for exports. Most large pack sheds are GlobalGAP accredited since over 50% of exports are destined for the UK and Europe (Philp, 2006).

The Fresh Produce Exporters Forum (FPEF) has as its primary role, the provision of leadership and services to its members and the international buying community (FPEF portal). Since its operation from 2002, FPEF comprises of approximately 300 exporters. Seventy-two of these exporters are volunteers and control approximately 80% of South Africa's citrus exports (Philp, 2006). FPEF provides technical information concerning handling and management of produce. It also contributes towards black empowerment and the training of formerly underprivileged individuals (FPEF portal) and facilitates market information assembly and sharing between members involving specific market forum groups (e.g. Japan, Canada and EU). FPEF membership is voluntary and open to all fresh fruit South African exporting companies. However, stringent accreditation criteria are set up to ensure that only competent and reliable marketing agents and grower-exporters are part of the forum.

The marketing campaigns carried out by the FPEF are geared towards creating awareness and differentiation of South African products among consumers. They are also intended to develop and strengthen trust relationships between South Africa and the international retailers (FPEF portal). Trust relationships with retailers are achieved through the communication of key messages about production practices, ethical trading and food safety. FPEF is also

committed to driving ethical practices along the supply chain and also highly considers the involvement of the emerging farmers.

4.5 Citrus marketing in the past

The South African citrus industry has always been globally focused and integrated. The industry has enjoyed export of its fruit from the 1900s, most exclusively to Britain (Philp, 2006), with the first record of South African citrus having been shipped to England in 1902 (CGA, 2003). In 1914, the Fruit Export Act was passed by the Union parliament to enforce the inspection of export fruit as the quality was not so good. The South African exports hit the one million box mark by 1925. In the same year, the government formed a Fruit Export Control Board for coordinating shipping in order to address delays at the ports. Citrus growers branched away from the board in 1926 and formed their own South African Cooperative Citrus Exchange (SACCE) as they felt preference was given to deciduous fruit exports (CGA, 2003). By 1930, a total of 1 706 803 boxes of citrus was exported. The industry itself was not formally regulated until the early 1940s (Mather and Greenberg, 2003). The regulation followed the 1937 formation of the Agricultural Marketing Act which aimed at controlling the agricultural sector (Goedhals, 2003).

Export of citrus fruit to the international markets, mainly Britain, was done through the SACCE between the mid 1920s and 1997 (Mather and Greenberg, 2003). This was a single channel system (monopoly agricultural marketing). The single channel system was proved competent and free of corruption, an unusual characteristic attributable to monopolistic agricultural marketing (Dixie, 1995). The citrus exchange managed to export about 80% of the South African export crop between the mid 1920s and late 1930s. This affirms the impact that SACCE had on the export market, though it does not reflect the share the product had in the global market. SACCE was able to store fruit for limited periods during times when market conditions were slow or when the market was oversupplied. The stock would be released after improvement in demand conditions or when competitors had exhausted their stock (Mather, 2008).

Fruit quality was assessed by the Perishable Products Export Control Board (PPECB) at cooperative and private pack houses. It was later done at the cold facilities at the various ports in South Africa. Notwithstanding this, the SACCE monitored quality after fruit delivery

at the overseas ports. SACCE re-sorted the fruit to eliminate post-harvest diseased fruits and others affected by various fruit quality problems after a two-week voyage (Mather, 2008). This was done so as to avoid such fruit from getting to the retailers and wholesale markets. Despite all efforts to maintain the export market shares, the single channel could not govern escalating volumes from southern hemisphere competitors and unsold stock in the northern hemisphere (Mather, 2008). This challenge exerted difficulty over the Exchange's market power.

The South African Cooperative Citrus Exchange (SACCE) pooled fruit by variety and size. Payment to the producers was made on the basis of volumes and variety contributed by growers. Losses incurred were also shared among growers. The pool system, rather than individual growers, was also charged for fruit that could not be sold on arrival in the international market. It promoted farm plantings based on productivity rather than market demand (Mather, 2008). This made the difference in production systems of no repute as poor growing practices were shared by all contributors. The pool system presented a problem of high quality producers subsidising the producers of inferior fruits. In the mid-1980s the better growers complained about them subsidising the poor growers. It was also noted that the single channel system was failing its European customers, which led them to solicit for import quantities from other southern hemisphere citrus growers like Australia, Argentina and Uruguay. The single channel system was blamed for being very rigid and inflexible.

The demand for high quality and newer varieties by powerful retailers in the global market in the early 1990s presented a challenge to the single channel system (Jaffee, 1998). Problems relating to the quality of South African citrus fruit affected the whole national industry, though it was not a problem with all the exporters. Still operating under the single channel system, the Citrus Exchange formed a subsidiary called Outspan International in 1992. Outspan sold citrus worth R1.4 billion in more than 50 countries (Mather, 1999). It dominated the counter-season trade from the southern hemisphere with 50% of the overall supply.

Sophisticated infrastructure was constructed through the charging of levies on growers. The levies were used for improving transport infrastructure and the construction and upgrading of the loading and cooling facilities at the ports (Mather and Greenberg, 2003). Levies made it possible for the exchange to establish a nursery of disease free certified plants. The nursery

catered not only for local growers, but, for those in Zimbabwe, Mozambique and Swaziland as well. The citrus fruit was packed in about 174 cooperative and estate packhouses throughout the nation (Mather, 1999). The whole of the citrus range from different growers (local and regional cooperatives, large estates and individual producers) was traded under Outspan brand name. The Outspan brand label became synonymous with South Africa in the predominant importing countries of Britain and continental Europe. The use of a single label became an international marketing strategy as it obscured the differences in growing regions within South Africa. It also catered for the diverse cultivars grown in different ecological regions of the nation (Mather, 1999).

Outspan uniquely provided service to growers and exporters, ranging from the seed and budwood, production, packing, shipping and final distribution and marketing of the products. This created a single commodity chain controlled by Outspan. It offered research which was targeted toward improving the quality of the South African citrus fruit. The prevention of the spread of diseases through infected propagating material was ensured through production of budwood at Outspan's farm called Outspan Foundation Block. Certified propagating material was then distributed to nurseries participating in the citrus improvement programme (Mather, 1999). Outspan International established overseas companies and also amalgamated with other active companies based in the importing countries. Thus, Outspan was directly involved in the marketing and distribution of citrus fruit in the international market. Within South Africa, Outspan International merged with Unifruco (the single channel exporter of deciduous fruit) resulting in the formation of the Capespan International Ltd company. The later became the world's largest fruit exporting company by the late 1990s. In 1998, the CGA was formed with the objective of managing research on behalf of all citrus growers. The association was and is funded through voluntary levies paid by the growers (CGA, 2003).

The whole of the agricultural sector was highly protected and regulated, till the post-apartheid deregulation of agriculture in 1996, which was followed by the deregulation of the fruit industry in 1997 (Mather and Greenberg, 2003). One of the main characteristics of the regulated agricultural sector was isolation from world market forces (FAO, 2008b). In fact, the support for the agricultural sector was founded on price support and cross-subsidies. Some of the policies ushered in by the post-apartheid government that were more inclined to the agricultural sector included laws protecting agricultural workers, land reform programme, new rural development policy, liberalisation of international trade and agricultural marketing.

4.6 Deregulation and its implications on the performance of the industry

The South African agriculture and fruit industry were regulated till their formal deregulation in the mid 1990s. The deregulation of the fruit industry brought with it vast changes most of which negatively affected the industry. The severity of the deregulation was particularly worse during the early years of implementation as the bulk of the producers and other value chain players were least prepared for the change.

4.6.1 The deregulation of the South African agricultural sector

The South African apartheid era was characterised by a complex array of tariffs which underpinned its protectionist policies. South Africa committed itself to extensive tariff reduction reached at when the country took part in the Uruguay Round of multilateral trade negotiations that commenced in 1986 and was finalised in Marrakech in January 1994. Thus, trade liberalisation coincided with transition to a democratic government. The new government's Reconstruction and Development Programme (RDP) emphasised on worker rights and growth through redistribution (Theron, Godfrey, and Visser, 2007).

The South African fruit industry was formally regulated in the 1940s but later was deregulated in 1997 (Mather and Greenberg, 2003). The Marketing of Agricultural Products Acts of 1996, number 47 of 1996 is the major legal instrument in the deregulation of the agricultural industry. There are several other Acts that were promulgated to address other aspects of the agricultural sector such as the Agricultural Broad-Based Black Economic Empowerment Framework (AgriBEE), the Land Reform (Labour Tenants) Act, number 3 of 1996, the Land Restitution and Reform Laws Amendment Act, number 78 of 1996, the Strategic Plan for the Agricultural Sector and the Land Redistribution for Agricultural Development (LRAD). The deregulation exerted pressure on the industry as it was coupled with eliminating subsidies, research support, price support, phasing out certain export and import controls and introducing import tariffs (Theron, Godfrey and Visser, 2007). The South African fruit industry was thus, exposed to competition with the world's best and farmers had to position themselves as players in the globally competitive environment (South Africa info, 2008). Essential services such as storage, value adding, information dissemination and research, grading and deliveries which were formerly provided by marketing boards were interrupted for a short while. Price risk management was consequently provided by

specialised marketing institutions such as South African Futures Exchanges (Safex) and the Agricultural Futures Market of JSE (South Africa info, 2008).

Griffiths (2003) notes that South Africa's deregulation exercise went beyond the requirements of the Uruguay Round Agreement. Consequently, the South African agriculture sector is one of the least protected in the world (Tilley, 2002). The producers were caught in between the impasse of rising quality standards and falling prices (Barrientos, and Kritzing, 2004) at a time when they were least prepared (Van Dyk and Maspero, 2004). Competition against the heavily subsidised producers in developed countries became stiff. Neither can the local producers compete against highly subsidised imported commodities (Meyer, 2005). It appears though that the policies embarked on did not take into consideration the potential effect on the emerging farmers (Theron, Godfrey and Visser, 2007). If the highly demanding international trade environment poses challenges for the established commercial producers, the small producers may not make it without government support.

4.6.2 The implications of the deregulation on the performance of the fruit industry

The deregulation of the fruit industry led to many changes that affected the performance of the industry. Some of the changes include an improved payment system for all grower, opportunity to anyone to register as an export agent, increased foreign direct investment, changes in the structure of employment and increase in the need for additional infrastructure and infrastructural changes. Also, deregulation led to an improved level of customer service, fragmentation of the citrus commodity chain, difficulty to cope with the volatile free market without government support by the small farmers and losses for inexperienced new entrants. Competition associated with the deregulation of the fruit industry led to an improved payment system for all growers (Mather, 2008). Payments in the regulated system were slow, but are more prompt for the liberated growers. The former were characterised by fixed payments and minimum guarantees.

The deregulation of the fruit industry in 1997 offered the opportunity to anyone to register as an export agent. This resulted in the emergence of a large number of domestic export agents (Mather and Greenberg, 2003), which caused a 20% export loss for the Capespan in the year following deregulation. By 1999, the number of export agents had grown to over 160. The Fresh Produce Exporter's Forum (FPEF) was then formed by export agents to address

problems such as competition of agents against each other which usually led to oversupply in some markets. Consequently, oversupply led to poorer prices for the growers (CGA, 2003).

The deregulation of the agricultural sector facilitated an increased foreign investment which saw the establishment of companies associated with citrus export industry within exporting countries. Two of the world's largest multinationals, namely Dole and Del Monte established their branches in South Africa. Dole and Del Monte invested in packing and cold storage facilities (Mather, 2008). Doubtless, this should have significantly shaped the industry, impacting on its competitiveness in the international market. However, many farm workers lost their jobs and some inefficient farmers failed to survive global competition without government support in the form of subsidies. While globalisation improves overall competitiveness of nations and production efficiencies, the resultant jobs creation and reduction of unemployment is mostly experienced in the advanced nations (Hough, Neuland and Bothma, 2003). It ultimately has the potential of bringing about poverty in the less developed ones. For instance, about 200 000 permanent and another 200 000 seasonal farm workers lost their jobs between 1986 and 1996 as a result of the deregulation of the agricultural sector (Mather and Greenberg, 2003). This impacted on productivity of the industry which was unprepared for such a change.

The structure of employment has changed within and between sectors since the 1990s deregulation (Theron, Godfrey, and Visser, 2007). Changes within sectors are attributed to technological changes than it is trade liberalisation, while the changes between sectors are attributed to trade liberalisation. Employment has declined in primary sectors and increased in the tertiary sector.

Although it takes a while for situations to normalise after a change, domestic producers and exporters needed to adjust to the needs of the competitive global fruit market. The emergence of businesses as a result of deregulation of the fruit market resulted in an increase in the need for additional infrastructure and infrastructural changes (Goedhals, 2003). The unveiling of weaknesses in the South African transport systems does not only lead to chances of better developments in the same, but also developments for the transport system for local purposes besides export needs.

A deregulated market system forces producers and exporters to improve on their level of customer service. Producers are allowed to diversify their products and at the same time provide overall satisfaction to the consumer (Goedhals, 2003). Both the producer and consumer are assured of getting value for their money as quality is central to the competitive market. An increase in the need for high quality infrastructure and importance of reliable transport is inseparable from the high stringent demands of the competitive global market. Increased high quality infrastructure and the importance of reliable transport are of great importance since long periods are experienced to get the product from the grower to the plate (Goedhals, 2003) and delays affect the quality of the fruit (Van Dyk and Maspero, 2004).

While upgrading is necessary for long-term sustainability, some upgrading may eliminate manual labour especially that associated with technological improvements (Mather and Greenberg, 2003). The upgrading of farms could be labour-intensive, resulting in a rise in employment figures e.g. during new plantings and clearing of new land. This however, could be ephemeral as such activities can be done once after a long while. The bulk of the labour force for the citrus industry is seasonally hired according to the work regularity. Positively, the construction of pack houses in the Eastern Cape created employment (Mather and Greenberg, 2003). However, the capacity or size of the packhouse determined the maximum number of people to be employed. Negatively, the number of citrus nurseries declined from 160 to 17 between pre-deregulation period and 2002 (Mather and Greenberg, 2003).

According to Mather and Greenberg (2003), deregulation of the fruit industry led to a fragmented citrus commodity chain. The industry experienced a shift in market power from cooperatives and the single desk exporter to large, privately owned citrus enterprises. Fruit buyers in the lucrative UK retail chains such as Sainsbury's, Tesco and Marks & Spencer did not favour privately owned citrus enterprises as they lacked traceability and provided fruit of an uneven quality. Consequently, suppliers that lacked traceability and had uneven fruit quality were forced to export to wholesale markets in the European continent, especially Eastern Europe and Russia where prices are lower (Mather and Greenberg, 2003). Such a shift has a bearing on the revenues (Theron, Godfrey and Visser, 2007). Thus, quantities exported may not be a good indicator of the actual performance of the industry in the international market as the revenues are determined by the prices offered by the markets of choice. The fast global spread of the Good Agricultural Practices (GAP) regulations and their

implications may seriously impact on such citrus enterprises, such that they might fail to stand against the pressure.

Small farmers found it difficult to cope with the volatile free market without government support. Small white farmers, with small volumes of poor quality fruit, faced the problem of unsustainable debts and fewer resources. Small black farmers faced challenges of severe credit constraints, failure to meet the stringent export market requirements and are often undercapitalised (Mather and Greenberg, 2003).

The deregulated market provides the opportunity for independent fruit growers to influence the optimisation of the value chain. This is even more important considering that the market has shifted from being producer to demand-driven (Goedhals, 2003). Producers are sanctioned to arrange their own marketing and export of fruit at any price, to any market, while complying with the minimum PPECB quality standards (Van Dyk and Maspero, 2004).

Deregulation removed barriers to entry to the industry. Small businesses entered into the industry hoping to benefit from the new opportunity. This led to capacity shortage at major points in the supply chain (Goedhals, 2003). For example, the ports throughout SA have struggled with adjusting to the increased demand for capacity and are in the process of developing ways of meeting the requirements. The erection of additional cold stores and packhouses was embraced by the industry to address the problem of insufficient capacity, since the infrastructure was previously based on the operations of a single channel system. The uncontrolled entry of new players into the industry led to competition. Competition in turn led to price wars, which in turn prompted a reduction in the level of profits (Barrientos and Kritzinger, 2004). Complexity increased within the industry. The rigidity of the single channel system also led to the importers resorting to other countries for fruit supplies. Markets which were previously considered as exclusively supplied by South Africa are currently immersed with fruit from new supplying countries (Goedhals, 2003).

New entrants and new brands in the fruit export market were also linked to many inexperienced and/or incompetent service providers (Van Dyk and Maspero, 2004). Many businesses operated at a loss, which might have negatively affected the economy. Some inefficiency was a result of the fact that all past experiences and knowledge were accumulated with focus on the improvement of the regulated industry. Effective management

became a challenge in the face of the sudden change. An increase in efficiency was needed especially at the ports where shipping lines needed to meet a specific window overseas (Goedhals, 2003).

Different markets differ in marking and labelling requirements. These are also liable to change from time to time, posing a challenge for producers and exporters delivering fruit to diverse markets (Goedhals, 2003).

4.7 Contribution of the citrus industry to the economy

The citrus industry is an important contributor to economic growth in South Africa. It has an average of 4.5% contribution to the country's agricultural gross value of production (NDA, 2003). Export of citrus fruit is an important component of the South African agricultural exports which contributes on average, 27% of the total agricultural exports. The citrus export chain is dominated by Large Scale Commercial producers who sell their produce mainly to European markets (25% of the exports from 1999 to 2004) and the UK (29% of the exports from 1999 to 2004) (Symington *et al.*, 2004).

Employment in the agricultural sector experienced a 33% decline between 2001 March and 2010 March, i.e. from 969000 to 319000 employees (DAFF, 2010c). The agricultural sector's share of total employment dropped significantly from 11% in September 2000 to 5.1% in March 2010 (DAFF, 2010c). The adoption of technology which substitutes manual labour (e.g. herbicides usage in place of manual weeding) has been cited as a reason for the decline in employment in primary industries such as agriculture. The second cause is the formation of agricultural businesses that create employment opportunities subject to type and labour intensity resulting from innovation and entrepreneurship promotion.

The majority of the citrus growers are commercial white farmers who predominantly use black and coloured labour. The industry employs approximately 100 000 permanent farm workers. The figure for seasonal farm employees hired by citrus farms is unknown as the organisation of farm workers has been proven extremely difficult in South Africa (Mather, 1999). It is estimated that over a million households depend on the South African citrus industry. These are part of the unspecified numbers of people employed throughout the supply chain services such as the transport, port handling and related services (DAFF, 2010b)

Labour efficiency for the South African citrus industry has been found to be far less than that of Australia. It is estimated that a job done by one person in Australia takes 3-4 people in South Africa to do (Philp, 2006). The South African citrus industry makes great use of contractors for tasks such as chemical application, orchard floor management and pruning. This has been found to grant more efficient use of machinery and cuts on cost of maintaining own labour pool for seasonal work (Philp, 2006).

4.8 Opportunities and challenges in the production and export of citrus fruit

The industry has diverse opportunities to enhance performance in export markets such as counter-seasonality of production to the nation's northern hemisphere rivals, the geographic position of the nation in relation to most of the nation's international markets and the deep coasts. However, there are serious challenges such as road transport and harbour congestion facing the exporters and high crime rates linked to farm attacks. South Africa enjoys an excellent world class infrastructure, including readily available air, rail, road networks, deep water ports, well-developed cold chain facilities and a sophisticated financial sector. The high degree of exposure of the country to international business over the years can be a firm basis for good performance of its industries in the international market. It is also the closest Southern hemisphere producer of horticultural products to Europe, with significantly shorter shipping times than its rivals (South Africa info, 2008).

South Africa also occupies a strategic geographical position. The wide range of climatic conditions (tropical, sub-tropical and Mediterranean) (Philp, 2006) gives the nation an advantage of producing a vast range of citrus cultivars that may meet different consumer needs in different markets. This explains the variations in hectrages under each citrus variety or cultivar for each of the provinces wherein citrus is produced. Most citrus pests and diseases are prevalent in certain climatic conditions than others. The vast range of climatic conditions guarantees the industry that a total national failure in production for a particular season may not be possible as an infestation in one locale may not affect production in other areas. This is of great advantage as supply to the market can be guaranteed at all times in spite of the variations in quantities that may result from any such external forces. South African soils are also mostly slightly acid (pH around 6) sandy loams, creating less nutrition and soil management difficulties (Philp, 2006).

South Africa enjoys a counter-season production system to its major northern hemisphere rivals especially Europe (South Africa info, 2008), which is the country's main export market (Figure 4.7). This is a major competitive advantage. Competition based on volumes exported to the international markets may be lessened. However, transport costs are very high, especially rail to ports (primarily Durban). Exporters also incur additional costs at harbours. This is a major challenge especially when exports are destined for the European countries, where South African citrus industry's northern hemisphere rivals have relatively low transport costs as they are closely situated to the markets concerned. The emerging market in Japan and Middle East markets are fast growing. While new markets are opened (e.g. in China), new products have also been added to the existing markets (such as clementines into Japan) (CGA, 2010c).

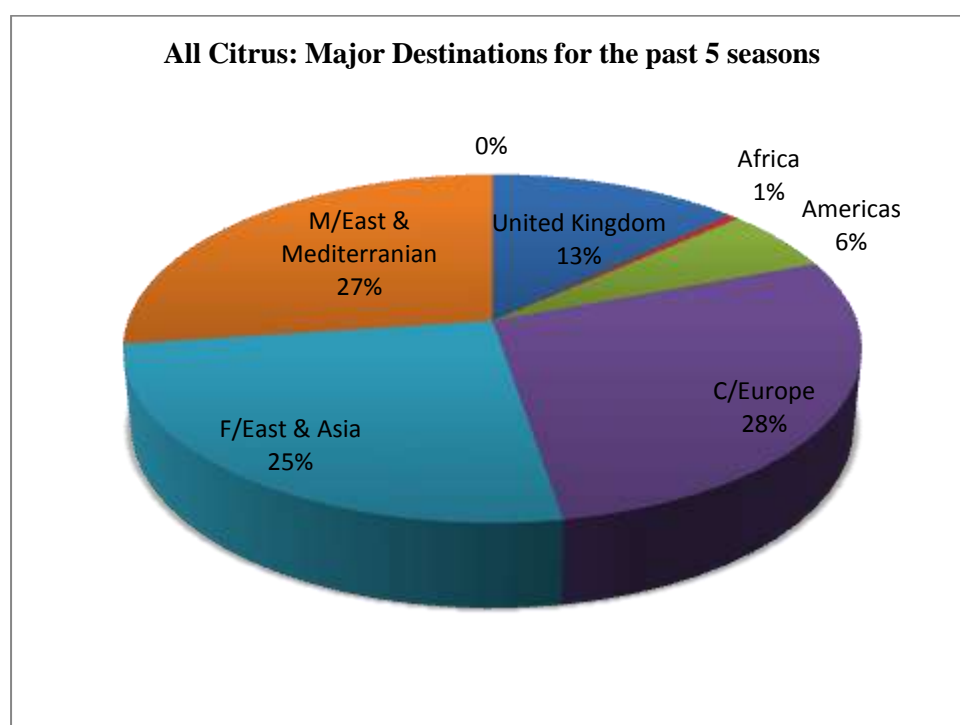


Figure 4. 5: Major destinations for all citrus for the past 5 years (*Adapted from CGA, 2008*)

Consumption of Frozen Concentrated Orange Juice (FCOJ) is high in mature markets of North America, Australia and some Western European countries (UNCTAD, 2010). There is potential for consumption growth in Southern and Eastern European countries, where there is still certain preference for fresh fruit consumption and freshly squeezed juices. Asian and Latin American emerging markets are also promising, due to their low per capita

consumption levels, their big populations and the fact that they are opening their markets. A case of particular interest is China, which, after its entry in the World Trade Organisation (WTO), provides an immense market for citrus fruit products

Crime is a major concern in South Africa and may lead to lack of confidence with regard to investments. The murder rate for farmers has been estimated to be 313 in every 100 000 per year (Jacobs, 2008). Of the 1398 farm attacks in 2001, 61.6% were white victims, 33.3% black, 4.4% coloured and 0.7% was Indian. However, 2007 statistics showed a decline in farm murders (Jacobs, 2008). A total of 3035 white farm dwellers have been killed between 1994 and February 2009 (Stuijt, 2009). An estimated 11600 commercial farmers had remained in the South African land down from approximately 85000 in 1994, while millions of farm workers lost their jobs (Stuijt, 2009).

SA police services records that there has been an increase in farm attacks since the early 1990s. A total of 6122 attacks and 1254 have been documented by the South African police services between 1991 and 2001 (SAPS, 2003). However, farm attacks are considered as a manifestation of crimes such as robbery, housebreaking, murder, malicious damage to property. This gives the actual statistics on farm attack unreadily available as the attacks are categorised into common crime found in the society. Non-the-less, crime has been on the rise in South Africa (SAPS, 2003), although 2007 statistics showed a decline in farm murders (Jacobs, 2008). The registered attacks between 1991 and 2001 were considered somewhat lower than the real statistics. According to the SAPS (2003), 2001 statistics show that 0.69% of all murder cases in South Africa, 0.82% of attempted murder, 0.13% of rape and 0.58% of armed robbery were linked to farm attacks.

4.9 Chapter summary

Despite the changes in the business environment, both national and international, the South African citrus industry has managed to keep quantities of citrus products sailed to the international markets. The industry has managed to cope with competition and challenges to some degree. There is however, need for continually innovation and research as well as capitalising on opportunities as they avail themselves from both the production and market side. The challenges that are beyond the industry's means to fight may need government

intervention especially farm-related crimes as these may have a strong bearing on investments and the competitiveness of the industry in general.

CHAPTER 5

AN OVERVIEW OF THE PERFORMANCE OF THE SOUTH AFRICAN CITRUS INDUSTRY

5.1 Introduction

This chapter presents the overall international activity of the South African citrus industry, the challenges faced by exporters and future prospects of the industry. The chapter is a review of the literature about the performance of the industry in the international markets. The discussion addresses the current challenges and opportunities in the markets currently served. Some of the aspects raised provide a basis for the determination of factors affecting the degree to which they affect the competitiveness of the industry. The heterogeneity of the South African citrus producers influences the diversity of markets served by each class of producers. This is due to the differences in the quality of fruit produced. As is with production, the citrus export chain is dominated by large commercial producers. Quality assurance is a critical issue associated with export citrus fruit. The challenge to meet stringent private standards is worsened by the lengthy supply chain which may be detrimental to fruit quality; with high fruit rejections from the international markets are associated with lucrative markets. The resource-poor producers predominantly serve local retailers as well as specialising in farm-gate sales. This study is however biased towards the export market and the issues associated with foregoing are reviewed in some detail in this chapter.

5.2 Marketing of the citrus fruit today

The South African citrus industry is characterised by a variety of different systems, farm sizes, climatic conditions, soil conditions and plant genetic material. Production ranges highly commercial to resource poor producers. Differences in farming practices, producers' knowledge and skills and communication levels are also not insignificant. The distinct heterogeneity of citrus growers results in different fruit qualities and consequently segmentation in marketing (Swinnen, Vandeplas and Maertens, 2007). The diverse market segments differ in terms of requirements for fruit quality and volumes to be supplied,

production practices and accreditation, and governance structure (Polderdijk *et al.*, 2006). They also explain the marketing supply channel and governance systems.

There are basically four distinct markets served by the South African citrus industry *v.i.z.* export market, local supermarkets, local retailers and informal markets (Philp, 2006). Small quantities of lower and variable quality, usually associated with irregular supply and fruit that would be rejected by the export and local high-value chains are attributed to farm-gate selling to the informal markets. Usually there are no long-term relationships with the marketing agents. On the contrary, National Fresh Produce Markets involve larger volumes, long-term relationships with the market agents, the enforcement of quality standards and grading systems. Food processors and supermarkets are the most challenging national market outlets for the citrus fruit industry. These demand large and consistent volumes, certification for good agricultural practices, and adherence to specific product quality standards. Fruits for export need to pass stringent control measures and are characterised by much higher and relatively constant quality level (Poulton, Kydd and Dorward, 2006). Farms producing for export must comply with GLOBALGAP regulations or other certification schemes to enter the market, and critical volumes need to be supplied (Polderdijk *et al.*, 2006). The relationship between the quality level and variation in quality and market channel is illustrated in Figure 5.1 below.

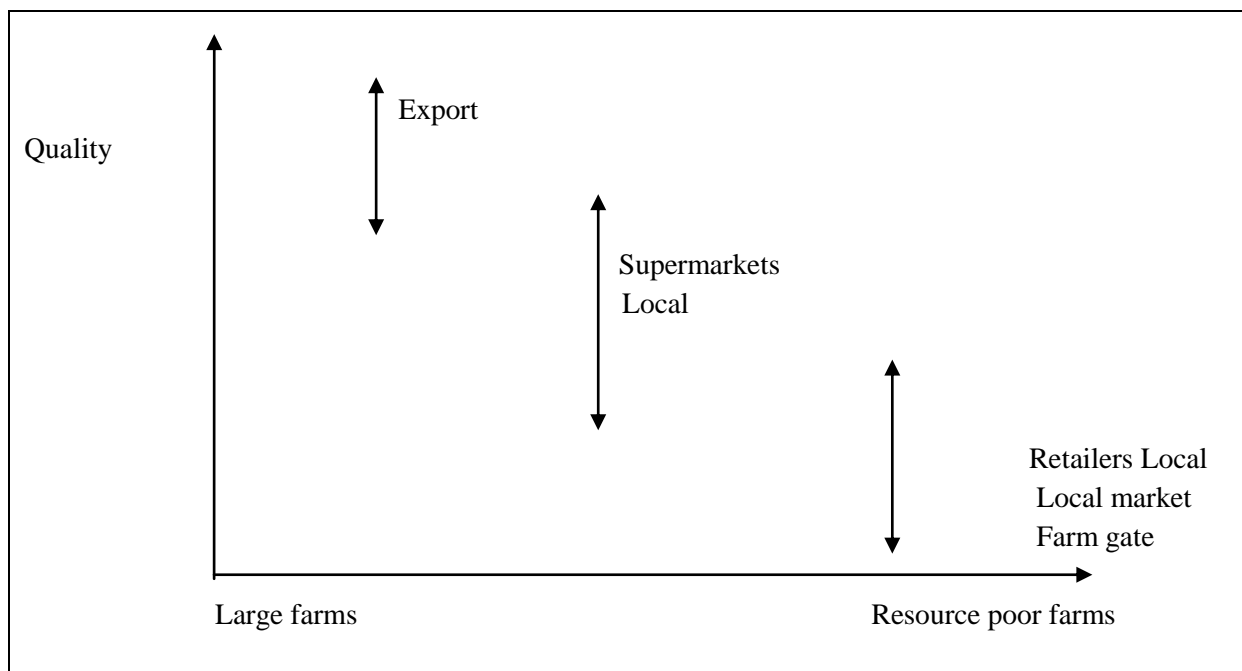


Figure 5. 1: Relationship between quality level and variability and market channels

The industry exports about 900,000 tons of citrus fruit, 540 000 tons of oranges, 120 000 tons of grapefruit and 90 000 tons of lemons annually (Mabiletsa, 2006). South Africa's export period for citrus is from April to October each year. SA's main competitors are Argentina, Chile and Australia during the principal season, and Israel, Spain, Egypt and the US towards the end of the marketing season (Mabiletsa, 2006). Soft citrus is the most competitive line. Argentina is the main competitor with regard to lemon and soft citrus. South Africa takes the lead in oranges and grapefruits, although Argentina has a significant impact especially on the Eastern European orange market. Chile is a competitor in soft citrus and oranges in the US market. Australia is a significant competitor for the US orange market and for certain markets in the Far East (Mabiletsa, 2006).

5.3 Quality assurance

Two kinds of product inspections are carried out on fruit destined for export markets, v.i.z. the sanitary and phytosanitary (SPS) and quality purposes. Phytosanitary inspections are obligatory and depend on the nature of the permit conditions (DAFF, 2010a). These are done by the Department of Agriculture, Fisheries and Forestry (DAFF). The inspection is done for all markets, all types of fruit and plant products by the department's inspectors. SPS inspection points for special markets are all ports of exit, as well as inland cold stores at Piketberg, Paarl, Grabouw and Swellendam. The phytosanitary certificates may also be issued on the basis of the Perishable Products Exporters Control Board (PPECB) inspections. The phytosanitary inspections differ from quality inspections in that they focus on quarantine pests and diseases, while quality inspection focuses only on the final quality of the fruit (DAFF, 2010a).

Establishment of a Quality Assurance (QA) system is a prerequisite for FFV exporters, even at the smallest scale. A marketable quality that is safe consumers to eat is not an option. Quality assurance covers every stage from raw material selection and procurement as well as the monitoring and control of the factors that can affect product quality and safety (UNIDO, 2004). Thus, food quality is an ongoing process and not an end on its own (UN, 2007b).

Quality inspections are carried out to ensure that orchards and packhouses comply with the conditions of the relevant importing countries (DAFF, 2010a). Verification and compliance of the orchards is a prerequisite for all special markets, including the EU countries.

Conformity to EU marketing standards for quality and labelling is checked before fruit can be allowed free circulation in the EU member States. The PPECB is the designated assignee of the DAFF authorised to inspect and pass fruit destined for the EU markets on behalf of the EU inspectorate (DAFF, 2010a). The PPECB carries out inspections at production and packhouse levels. Assessors are stationed at about 1 500 locations across the country. Approved export products carry the PPECB “passed for export” stamp, which is regarded as a symbol of quality assurance to clients and consumers across the globe (DAFF, 2010a). Inspection reduces risk for both producers and exporters. This serves as an advantage as the South African fruit entering the EU markets does not have to undergo quality inspection on arrival at EU ports of destination.

On the other hand, the Fresh Produce Exporters Forum (FPEF) provides training on the entire value chain of the fresh fruit export industry for previously disadvantaged individuals in the industry, emerging farmers and extension officers (DAFF, 2010a). The CGA also helps with mentorship for the small farmers the purposes of improving performance of both small and large scale producers.

Today’s chain is technically advanced, market-driven, flexible, customer-focused and owner-controlled and provides door-to-door services. The consumer controlled and focused market poses a challenge of ever-changing and additional standards beside the statutory (minimum) standards prescribed by the APS Act, the various statutory SPS requirements and SA GAP.

Individual retailers in the UK and European lucrative markets continually set private standards to which farmers can subscribe on a voluntary basis. The retailers continually subject growers and packers to proliferating and ever-changing standards relating to ethical trading, food safety, good agricultural and environmental practices and social accountability (DAFF, 2010a). The producers and suppliers to these retailers are compelled to undergo an audit by third-party certification bodies which are paid for by the grower. The greatest challenge is that these are not a stand-alone set of standards, but are in addition to the broader ones. The farmer may need to carry out a cost-benefit analysis so as to weigh this against supplying alternative markets. Small, new and developing growers often limit their trade to these markets as they lack infrastructure needed to manage the massive amount of requirements.

5.4 The citrus export supply chain

There are several approaches to defining the supply chain. Below is a sample of some of the common definitions which concur in the idea that the supply chain involves networking of organisations, processing of commodities, and distribution among other key activities.

“A supply chain is as an integrated process through which a number of business entities (e.g. producers, manufacturers, distributors and retailers) collaborate in an endeavour to acquire raw materials, convert these raw materials into specified final products and convey the final products to retailers (Doyer, 2000) and the final disposal after use (Kaplinsky and Morris, 2000)”.

“A supply chain is a network of organisations that work together to convert and move goods from the raw materials stage to the end customer. These organisations are linked together through physical, information, and monetary flows (Verma and Boyer, 2010)”.

“A supply chain is the alignment of firms that bring products or services to markets (Lambert, Stock and Ellram, 1998)”.

“A supply chain or network may be considered to be a set of linked processes connecting downstream customers to upstream suppliers, factories, distribution centres and retailers (Troutt, Ambrose and Chan, 2005)”.

“A supply chain consists of all stages involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers and customers themselves (Chopra and Meindl, 2003)”.

“A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers (Ganeshan and Harrison, 1995)”.

The definitions concur that the supply chain involves the collaboration of organisation in the linked processes of converting raw materials into finished goods and their delivery to the end users. Supply chains are developed to improve efficiency through better product flow scheduling and resource utilisation. They increase the ability to manage and control quality throughout the chain, reduce risk and increase the ability of the agricultural industries to respond promptly to changes in consumer demand. Therefore, supply chain management

enhances the efficiency and effectiveness of the system to deliver an array of healthy, safe and desirable food and fibre products in a cost effective way to the consumer or public (Doyer, 2000) and other end-users such as fruit juice extractors.

The deregulation of the South African agricultural sector made the actors in the agricultural supply chains to shoulder the responsibilities which were previously fulfilled by government agencies e.g. control boards. Such responsibilities include quality and price control and distribution. In spite of exposing South African farmers to increased competition from international rivals, deregulation fundamentally changed the structure and the responsibilities of actors in the chain (Doyer, 2000). Cooperation with other firms in the agro-food complex to provide better products and services is proving to be one of the most popular strategies to deal with international competition.

There are many players in the production and trading of citrus fruits. Figure 5.2 is a simple portrayal of the supply chain of the fresh fruit to the export market. The chain only shows the critical stages involved. With the long distance to the greater bulk of the country's export markets, time and temperature are of vital importance. Delays anywhere in the supply chain can be detrimental to the fruit quality, resulting in a failure to meet the market requirements. Physical and technology infrastructure thus become very necessary. The high supply chain costs are associated with high inland transportation costs, operational inefficiencies at ports, lack of rail facilities at ports as well as the security and reliability of rail (Van Dyk and Maspero, 2004). All the stages in the chain are punctuated with inspection to ensure fruit of right quality is delivered to the consumer.

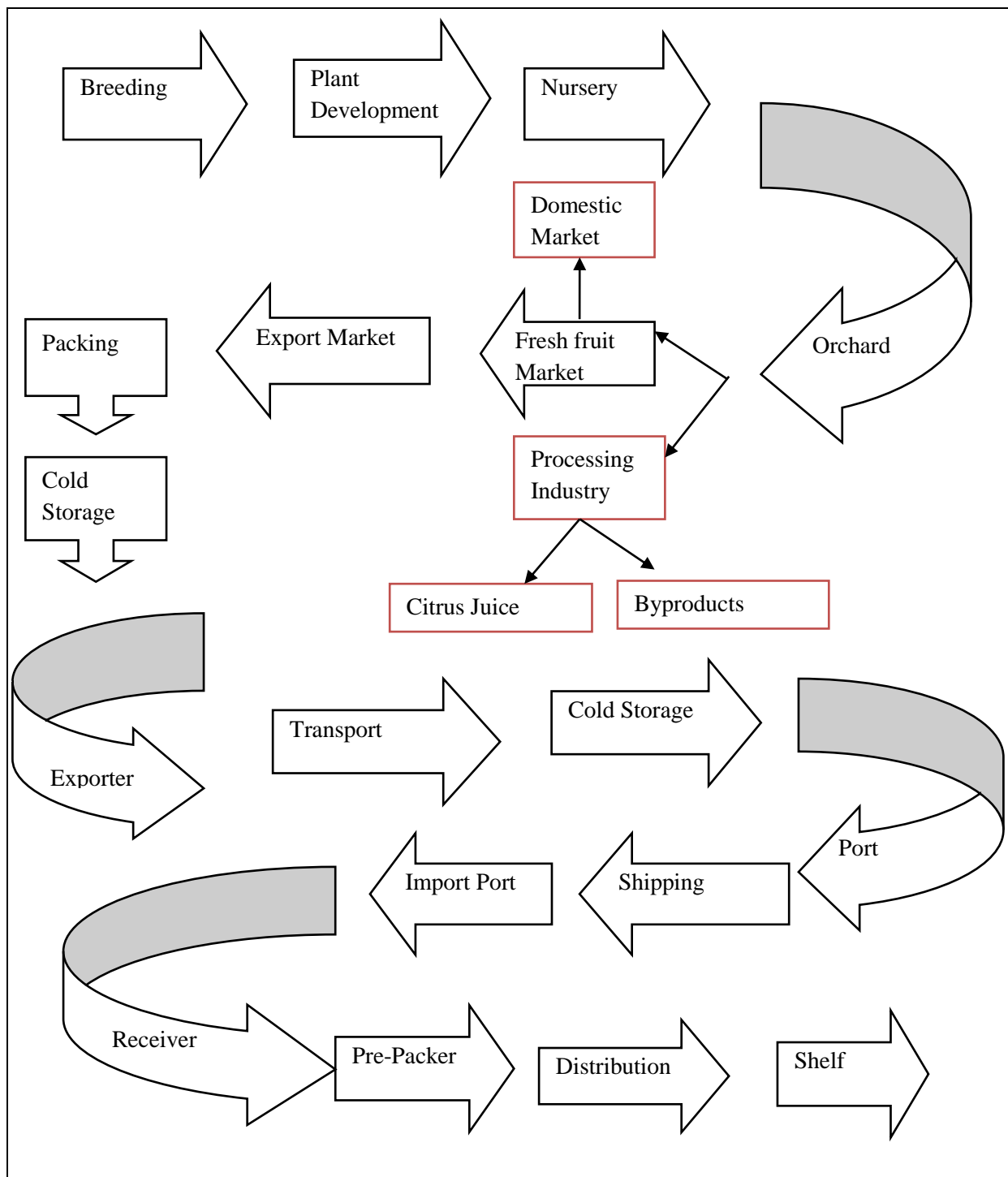


Figure 5. 2: The Fresh Fruit Export Supply Chain (Adapted from Dodd, 2010; UNCTAD, 2010)

The citrus export market is evolving in a highly competitive environment, which is increasingly becoming consumer-driven. Exporters are increasingly focusing upon quality and value-added aspects to cope with changes in the consumption patterns. For instance, mature markets like North America, Australia and some Western European countries are

characterised by an increase in the consumption of Frozen Concentrated Orange Juice (FCOJ) (UNCTAD, 2010). Generally, the demand for and sales of FFV is estimated to grow by 4.2% in year 2020 (Mashinini, 2006). This is manifested by an increasing role and power of the global retail chains in the fruit distribution in developed countries, mainly in the EU, Latin America, Asia and USA (UNCTAD, 2010). There is also increased consolidation of producer groups in response to consumer coordination. The concentration of fruit growers e.g. in the form of cooperatives, improves negotiating power and coordination of grower activities.

Increasing concentration, consolidation and global expansion in retail chains has improved the retailers' position and augmented their buying power in the market. This allows them to influence and better control the marketing chain, imposing more stringent requirements through determining conditions of production and distribution. Supermarkets demand higher quantities of better qualities at lower prices. Increased vertical coordination has been a resultant product of the downward shift of power in the produce marketing chain (UNCTAD, 2010). This has been achieved mainly through supply chain management practices used by the retail chains, such as category management. Guaranteed continuous supply at the required levels of quality is ensured through the building up of long-term relationships with preferred suppliers. The development of long-term relationships between retailers and growers/shippers has dramatically overshadowed the importance of the wholesale sector. Some citrus fruit growers and processing companies are reacting, shifting from their production orientation to a more market oriented approach. This shift revolves around improving supply chain management, in order to better meet consumers' demands (UNCTAD, 2010).

The consolidation of markets, however, has not been found to lead to non-competitive pricing. On the contrary, consolidation of food retailers and their integration into wholesaling at regional level appears to lead to lower market prices for orange juice (Binkley *et al.*, 2002). Increased private label competition with the leading national brands has also been associated with lower orange juice prices.

New technologies like internet and e-commerce present a positive implication on trade as they enhance access to worldwide information, management, logistics and procurement systems (UNCTAD, 2010). This is very important especially coupled with the ever-changing global food safety and environmental standards, as the requirements of a market can easily be communicated. Technology can also be used as a marketing and promotional tool for

business. Since many leading grocery stores allow customers to place orders online for home deliveries, especially in the developed countries where most of the citrus products are marketed to, this may enhance citrus marketing. Though a greater proportion of the target consumers may not have access to on-line facilities, such flexible ways of shopping may increase market shares.

5.5 The Supply Chain and Competitiveness

The agricultural environment is characterised by high price risks. Higher price risks also lead to changes in the agricultural supply structure. Uncertainties related to quality and problems associated with detecting quality exacerbate the risks in the agricultural sector (Doyer, 2000). Farmers and agribusinesses are seeking mechanisms to share and reduce the risks associated with price and product quality uncertainty in the supply chain. This is achieved through improved and precise forecasting as well as informed decisions. Proper management of the supply chain reduces risks through integration of demand planning with production and other logistics through working together in marketing (Doyer, 2000).

The formation of supply chains has been imminent with the maximisation of the overall value generated (Chopra and Meindhl, 2003). It also focuses on the reduction of costs, particularly transaction costs, thereby promoting competitiveness (Doyer, 2000). However, the level at which the supply chain is formulated will determine the competitiveness of the industry. Quality is the key critical success factor in today's global market coupled with market prices. The export market views quality based on three aspects; the visual quality, internal quality and perceived quality (UN, 2007b). The visual quality relates to the appearance, feel and the defects. The internal quality relates to texture, odour, and taste. The perceived (hidden) quality pertains to wholesomeness, nutritive value and food safety (UN, 2007b). While local consumers may generally be more inclined to the visual assessment, the global consumer highly values the production conditions of the fruit (Doyer, 2000).

Deterioration and product losses on the farms are curbed through various treatments and actions in the pre-harvest, harvesting and postharvest stages for instance, storage and transportation (NDA, 2007a). However, there is a longer time lapse between harvesting and consumption due to the long citrus export supply chains which involve a large number of intermediaries and intensive fruit handling (Symington *et al.*, 2004). Re-sorting and

repackaging is normally unavoidable at the supermarket distribution/repack facility in the export market, leading to possible breaking of the cold chain, more produce handling and increased chances of contamination and losses. A physical tracking of export citrus consignments was carried out by Capespan (Symington *et al.*, 2004) from South African orchards, via the packhouse, the South African harbour to their final destinations (harbour cold storage facility, retail distribution centre, repacking facility and supermarket) in Rotterdam (Netherlands), Antwerpen (Belgium), Hamburg (Germany) and Stockholm (Sweden). Sanitary conditions and compliance with the private standards in these various end destinations were reviewed on sampled fruit. The behaviour of different agents within the chain was easily monitored and economic implications of their actions also assessed. Farmers are often held accountable for the quality of fruit for which they have no practical control beyond the farm-gate.

Interruption in the cold chain and negligent handling within the lengthy chain causes fruit quality deterioration (Kirsten, 2000). The fruit reaches the final overseas consumer after an average of three weeks. Thus, proper management of the supply chain will help preserve the product quality till it reaches the consumers' table

5.6 Current status of the South African citrus industry in the export market

South Africa ranks twelfth in the world citrus production, with China, Brazil and the USA taking the lead. This is revealed in the trend analysis of the export quantities of citrus products of the globally top-producing nations (Figure 5.3). However, South Africa ranks second in citrus exports (Figure 5.4) after Spain. South Africa exports a diverse range of citrus products; oranges, soft citrus, grapefruits, lemons and limes, and citrus juices. Though South Africa exports both whole citrus fruit and juice, this study only considered the export of whole fruits.

The South African citrus industry is an export-driven industry. The local market cannot sustain the volumes produced. Neither can the regional market sustain the quantities (DAFF, 2010b). Export volumes rose over the past 30 years from approximately 38 million cartons before deregulation to more than 70 million cartons in 2007 (DAFF, 2010b). In 2010, South Africa exported 99 136 675 cartons of fruit (distributed into 69 475 380 oranges, 7 535 584 soft citrus, 12 470 420 grapefruit and 9 655 291 cartons of lemons and limes) (CGA

Statsbook, 2011). The growth in volumes of citrus exported to traditional and new markets imply that market availability is not a challenge, though requirements and specifications may vary widely. The venture into serving many markets saves the industry the vulnerability to and risk of market collapses.

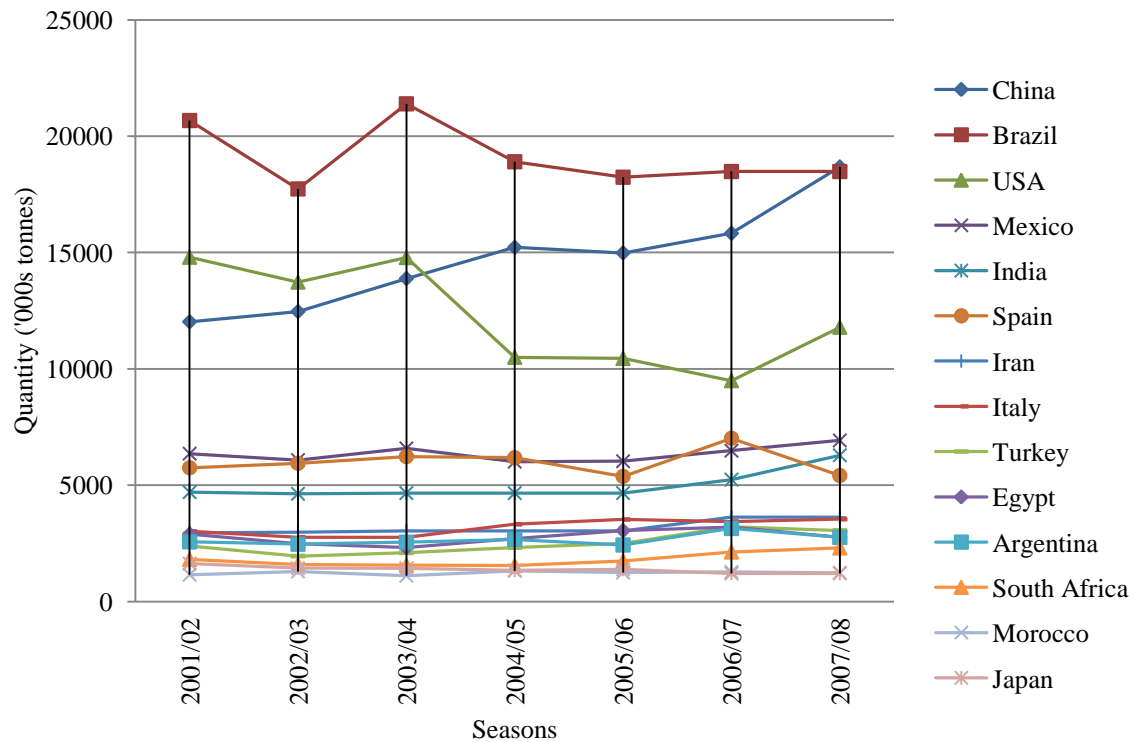


Figure 5. 3: World citrus production trend

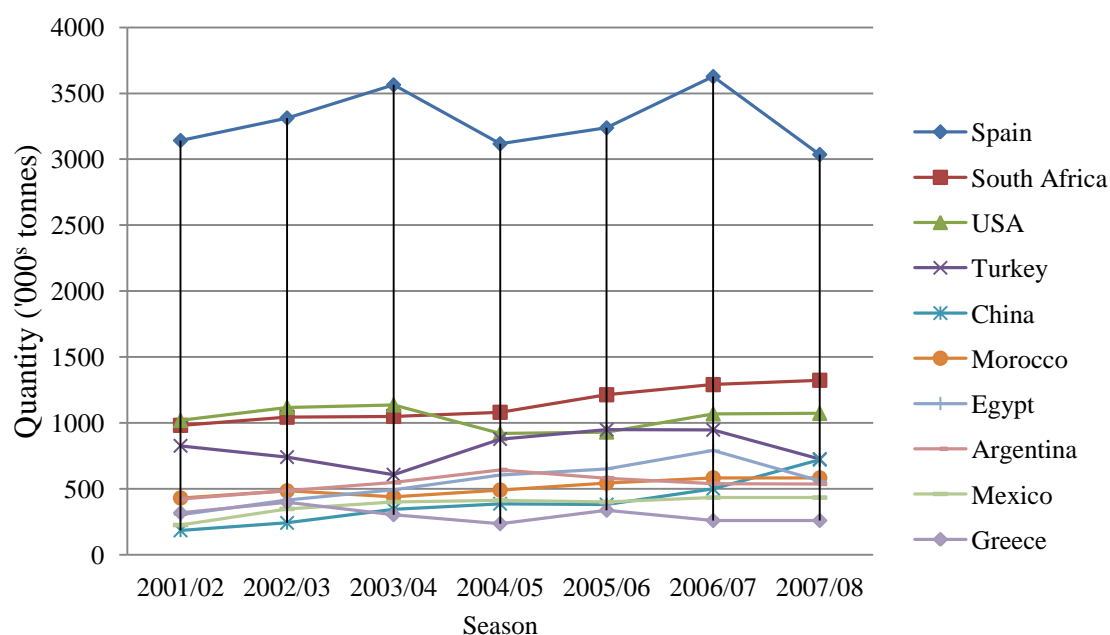


Figure 5. 4: World citrus export trend

Approximately 70% of the total citrus export is orange, 16% grape fruit, lemons 8% and mandarins 6%, with oranges constituting the highest amount of exported citrus fruits followed by grapefruit (Figure 5.5).

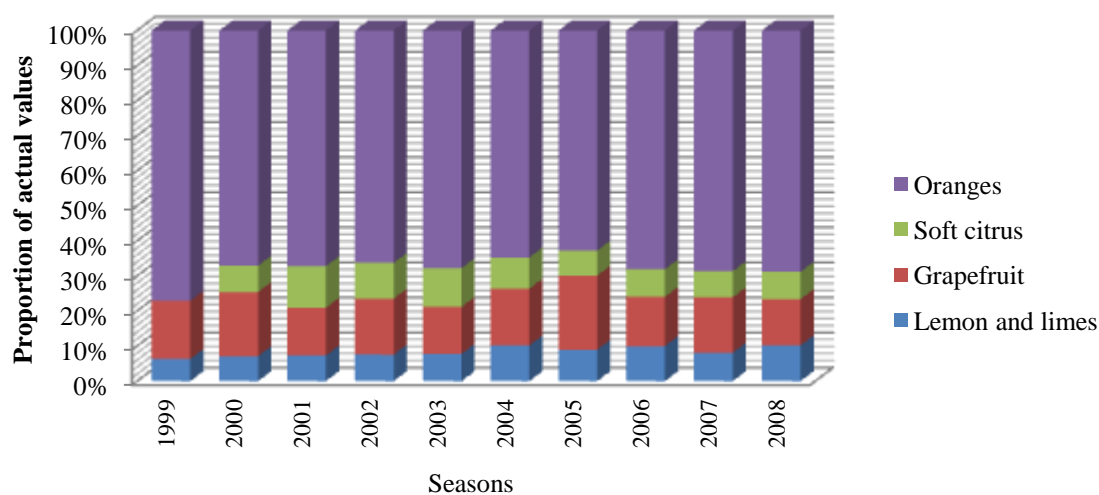


Figure 5. 5: Breakdown of South African citrus fruit export composition (*Trend data according to CGA, 2009a*)

5.6.1 General market access opportunities and challenges

Factors such as traceability, the monitoring of social and environmental standards, the transmission of new technology and good agricultural practices, maintenance of the cool chain and the general logistics all tend to favour larger scale agricultural operations. The investment costs associated with high standards of quality certification make it difficult for smallholders to participate in the export market. The capital required for investment in post harvest processing and the cool chain and the need to ensure rapid and reliable export have also favoured large-scale exporters (FAO, 2007a). This was confirmed by the responses from the small scale producers who cited the high standards of quality certification as a hindrance to their performance in foreign markets.

Value addition in fruit exports involves comparatively little product transformation or processing. It is usually confined to preparation, packing, bar-coding and labelling. Though highly labour intensive, the activities make traceability easier and reduces repacking at destinations (FAO, 2007a). Value addition requires considerable investment in terms of technology, equipment and management systems. This is however, a potential barrier to entry for smallholders and the not so well capitalised exporter or producers.

Adherence to Maximum Residue Limits (MRLs) of pesticides in food and the possession of a phytosanitary certificate are legal requirements for any exporter especially in the UK supermarkets. Many other compliance requirements, such as traceability, adherence to good agricultural practice (GAP) and the possession of a Hazard Analysis and Critical Control Point (HACCP) system are not legally mandated but may be imposed by the buyer. The less demanding (in terms of ethical, social and/or environmental standards) UK and Asian wholesale traders are declining in importance as outlets for exporters (FAO, 2007a). This means that the wholesalers are compelled to impose more stringent requirements if they should remain in business of selling the citrus products.

Public grades and standards are being overtaken by the private grades and standards imposed by the large supermarkets and processors (FAO, 2007a). The affluent consumers in the developed markets have the confidence to demand anything from the market as they are prepared to pay for their demand (Mashinini, 2006). Citrus fruit producers and exporters can no less remain competitive in the market than retailers would remain in business without

meeting consumer demands and anticipations. Neither could loyalty of the consumers and strong relationships be retained without meeting consumer expectations. Despite the rise in private standards, most changes in consumer preferences have been found to be predictable (Mashinini, 2006).

5.6.2 The performance of the industry in the emerging citrus markets

Russia has in recent years emerged as a rapid fruit importer. All citrus products consumed in Russia are imported with the market share dominated by oranges (Promar International, 2006). Citrus is not grown in Russia due to unfavourable climatic conditions but has been imported since Soviet times. Per capita fruit consumption rose from 38 to 61kg in recent years though it's still less than that of the developed nations like the USA with 100kg and Italy with 180kg. Citrus fruit consumption rose from 3.3kg/ capita in 2000 to 6.9kg/capita in 2005 (Promar International, 2006). One of the major drivers to the increased consumption has been cited as the increasing consumer incomes which enable them to increase the volumes of various fruit purchased. However, consumer price sensitivity is very high in the Russian fruit market. Despite the good working relations with the Russian market, the requirements are very difficult and almost impractical for South Africa (Hardman, 2010). Despite as many as 53 fruit exporters into the Russian market, the major competitors for the South African fruit are Chile and Argentina. Chile is competitive in grapes while Argentina is the major competitor for apples, pears and citrus. Chile and Argentina are viewed as committed to the Russian market because of their ability to provide flexible credit facilities (Promar International, 2006).

The Russian market has simplistic demands and limited specifications, with fruit purchases based on price and visual attributes such as large size, regular shape and unblemished skin. The Russian market is a direct contrast of the European consumer with the former characterised by little interest in quality assurance, residues, fair trade and organic products (Promar International, 2006). The strengths, weaknesses, threats and opportunities for the South African citrus industry in the Russian market are presented in Table 5.1.

Table 5. 1: SWOT analysis of the South African citrus industry in the Russian market

Strengths	Weaknesses
<ul style="list-style-type: none"> •The South African citrus fruit is perceived as of high quality in the Russian market. •South Africa also possesses a strong, positive trade reputation in addition to similar transport time and freight rates with other Southern hemisphere suppliers. 	<ul style="list-style-type: none"> •The changing exchange rates impact negatively on the price competitiveness especially in the Russian market. •Lack of brand and country awareness at consumer level and lack of unique or differentiated products compared to other suppliers are some of the weaknesses displayed by SA in the Russian markets.
Opportunities	Threats
<ul style="list-style-type: none"> •Increasing numbers of affluent Russian consumers. •Increasing product awareness and differentiation amongst urban based consumers. •Potential to identify and target higher priced supply windows or market niches. •strong potential to build brand awareness for South African products. 	<ul style="list-style-type: none"> •Low cost competitors from Turkey, Uzbekistan and other nations expanding their supply windows into Russian market. •Increased volume and quality of Russian produced apples, grapes and stone fruit. These fruits can act as substitutes to citrus. •Increased price and quality competition from Chile and Argentina. •Declining exchange rate competitiveness versus other southern hemisphere producers.

Adapted from Promar International, 2006

While the Argentinean fruit is considered of low quality in the Russian market compared to that of South Africa and Chile, the low pricing has made Argentina the largest southern hemisphere supplier of fruit in Russia. Fluctuating exchange rates and other transaction costs in recent years especially transport charges, triggered a rise in South African fruit prices.

The Middle East citrus market is dominated by South Africa. Despite the dominance of the industry in this market, it has been found out that overall demand was not attracting any increases in volumes shipped into the market for the 2011 season (Watson, 2011a). Increases in sales however, have been experienced in Valencia and navel oranges, with grapefruits not performing so well. South African lemons have the competitive advantage of long shelf-life, better packaging, stronger cartons whose alternate layer wrapping keeps the fruit much longer compared to those from Turkey and Egypt. There was also a slight decrease in the price of lemons for the 2011 season. However, since South Africa has no competitor in the lemon supplies, it is hoped that sales may remain good (Watson, 2011a).

The Middle East customers are not as strict as those in the UK and the US as evidenced by their willingness to take minimum class standard fruit, whereas the UK and the US will only take a premium or super standard perfectly shaped and unblemished fruit. Although prices tend to be generally lower than those in the traditional lucrative markets (e.g. UK, Europe and USA), the fixed price the Middle East market offers more security for the growers although prices tend to be generally lower (Watson, 2011b). The strength of the Rand against major currencies such as the Euro and the Dollar has serious effects upon exporters and more so the poor growers. Exporters pay most of the growers in US dollars. A stronger Rand implies a reduction in export quantities while the balance of the produce will be disposed of in the local market (Pearce, 2011).

5.7 The South African citrus industry in the future

There is an increase in new plantings throughout the whole nation. The increase in production area and plantings can be translated into the potential for the industry to grow and thus increase in the export volumes of citrus from SA (CGA, 2009a). An upward trend of the export volumes has been projected till the year 2013. Table 5.2 below is a summary of the exported quantities between 2000 and 2009. Projections made up to 2013 are based on new plantings done in orchards.

The South African citrus industry has made efforts to keep the export market supplied with fruits amidst changes in both the home and international environments. Though there have been challenges with the rejection of fruit by some markets, citing safety and quality problems, the situation has been improving with successive years. For instance, Table 5.3 and 5.4 show the trend in the rejection of South African fruits in South Korea and the USA, respectively. The percentage of fruit rejected in Korea has improved over the years and this is positive indication that the industry is complying with the set standards.

Table 5. 2: Port export volumes (tonnes) summary by commodity and projections till 2013

Sum Volume	Year										
Load Port	Product	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CAPE TOWN	Grapefruit	5098	6037	5171	5226	4775	5364	5500	5500	5500	5500
	Lemons	20282	20709	21562	20771	30639	18515	30000	32000	32000	35000
	Oranges	138453	126737	154033	146232	176521	124823	185000	188000	190000	192500
	Soft citrus	77440	62245	65800	67134	76093	65841	82000	84000	85000	86000
CAPETOWN- sum		241273	215728	246566	239363	288028	214543	302500	309500	312500	319000
DURBAN/ MAPUTO	Grapefruit	197236	259641	157862	216472	188926	206098	215000	215000	215000	215000
	Lemons	29128	31856	22312	23710	37889	29183	40000	41000	42000	44000
	Oranges	409830	464838	406808	555195	543659	481012	560000	570000	580000	590000
	Soft citrus	3646	8536	6781	12917	12242	13364	14000	14500	15000	16000
DURBAN/ MAPUTO- sum		639840	764871	593763	808294	782716	729657	829000	840500	852000	865000
PORT ELIZABETH	Grapefruit	4448	5003	5283	3428	4169	4429	5000	5000	5000	5000
	Lemons	47873	44064	55282	50766	57912	60092	64000	65000	66000	67000
	Oranges	168075	152412	171870	205399	197631	197529	205000	207000	209000	211000
	Soft citrus	10043	13685	18530	23428	21268	20396	25000	26000	27000	28000
PORT ELIZABETH- sum		230439	215164	250965	283021	280980	282446	299000	303000	307000	311000

Data reflects actual values 2004-2009 and tree census estimates 2010-2013 (Source: 2004-2009 from PPECB and 2010-2013 from CRI)

Table 5. 3: Summary of fruit presented to South Korea between 2000 and 2008

Year	15kg Cartons presented	15kg Cartons approved	15kg Cartons rejected	Percentage rejected
2000	270390	173410	96980	36%
2001	144300	91480	52820	37%
2002	206250	134410	71840	35%
2003	422290	297430	124860	30%
2004	462884	432535	30349	7%
2005	325845	243995	81850	25%
2006	321945	308235	13710	4%
2007	177380	169320	8060	5%
2008	237845	230220	7625	3%

Source: MCLI Operational Work Group & One Stop Border Post Meeting. 4th and 5th February 2010. A citrus Perspective”, by CGA- accessed 19 March 2010

Table 5. 4: Summary of citrus fruit cultivars presented to the USA market

Cultivar	15kg Cartons presented	15kg Cartons approved	15kg Cartons rejected	Percentage Approved	Percentage rejected
Clementines	310695	262557	48137	85%	15%
Navels	2021980	1833172	188808	91%	9%
Midknights	354145	329759	24386	93%	7%
Minneola’s	29157	28512	645	98%	2%
Cara Cara	29550	28990	560	98%	2%
Mandarins	14739	10704	4035	73%	17%
Novas	7598	7598	0	100%	0%
Totals	2767864	2501292	266571	90%	10%

Source: MCLI Operational Work Group & One Stop Border Post Meeting. 4th and 5th February 2010. A citrus Perspective”, by CGA- accessed 19 March 2010

The European Union (EU) is the main buyer in the international citrus market, importing more than 2 million metric tons of all categories of citrus fruit in the 2009 (Eurofresh, 2010). Table 5.5 shows the main citrus importers.

Table 5. 5: Main citrus importers for the 2009 season

Country	Quantity imported (metric tons)	Main supplier (in chronological order)
Oranges		
		South Africa
Russia	440 000	Egypt
Saudi Arabia	300 000	US
Canada	190 000	Turkey
Hong Kong	175 000	EU, Morocco
Mandarins		
Russia	540 000	South Africa
Vietnam	360 000	China
Indonesia	230 000	Turkey
Grapefruits		
EU	400 000	US
Japan	180 000	South Africa
Russia	85 000	Turkey
Lemons		
EU	450 000	Mexico
US	400 000	Turkey
Russia	210 000	Argentina
Saudi Arabia	130 000	South Africa

Source: Eurofresh, 2010.

The Middle East is South Africa's fastest growing market for citrus. This has seen a growth in South African citrus exports, especially for 2011 where an increase of about 4% was expected (Freshfruit, 2010). South Africa's adoption of new popular varieties and its improvement in management processes to ensure high fruit quality has made it to positively thrive amidst competition in the global market (Freshfruit, 2010). This is hoped to continue into the future.

The access of the industry's Star Ruby grapefruit, Clementines and Navel oranges into the US market has accelerated growth in market size. This is because of the declaration of some regions to be free of citrus black spot (CBS) disease. An estimated 5% increase in orange exports is expected for the 2011 season, with the Netherlands and Russia being the main recipients. Area under grapefruit is expected to rise by 1% in 2011 due to expanded market access to the US. Export quantities of the same are expected to rise by 6% in 2011 to reach 200 000 Metric tonnes (Freshfruit, 2010).

Though Italy and Canada have taken much smaller quantities compared to those of the 2009 season, quantities exported to Japan and Netherlands have made up for the shortfall as they were the principal receivers in 2010. Area under soft citrus (clementines, satsumas, mandarins and naartjies) will rise by 2% to 5100 hectares in 2011 due to growing demand

from the export markets. The export of soft citrus is expected to rise by 3.6%, with the UK, the Netherlands and Russia being the main receivers (Freshfruit, 2010).

Poor trade relations in Europe during 2009 led exporters to further develop markets in Russia, the Middle East and Far East (Trade South Africa, 2009). This saw the trade volumes increasing from 10% to 22% to the Middle East, 7% to 11% to Russia and from 9% to 12 % to the Asian market. This market diversification may keep the industry performing at a reasonably impressive level that is near and competent since a failure in one market may not necessarily lead to a total collapse of the industry.

The Russian market now imports the whole citrus basket, as opposed to earlier years when mostly oranges were imported (CGA, 2010b). It also serves as a gateway to other Eastern European markets. Trade relations between exporters and importers in the Russian market have so far been fairly good. While Maximum Residue Limit (MRL) environment has disrupted exports from other European countries into Russia, South African exporters need to keep abreast of these requirements to ensure minimal disruptions in the future. However, credit guarantees are still a challenge with the exports to Russia (CGA, 2010b).

The South African citrus industry is considering expanding the marketing of its fruit to the whole of the USA, especially the West Coast and the Midwest regions. In 2009, the South African citrus industry sold 20% of its fruit on the West Coast and 15% in the Midwest states. Despite increased competition from Chile and a tougher economic climate, the industry performed well (Meintjes, 2010). The 2010 sales were pegged at 50% (approximately 50 000 tons) of the total sales in the USA and this would boost the business by 20% on the West Coast and the Midwest. An additional US\$85 million would consequently be contributed toward the rural economy of South Africa, whose huge community of people depends on citrus growing for their livelihoods (Meintjes, 2010).

In 2006, it was noted that a third of South Africa's citrus plantings were less than 7 years old. This gave a projection of approximately 100 million 15kg cartons by 2010, compared to the then 70 million 15kg cartons. It was also discovered that South African citrus growers achieved an average yield of 60t/ha, compared to the Australian 30-35t/ha (Philp, 2006). However, Australia had fruit quality advantage which may grant it price competitiveness in the world markets. Mather (2008) noted that the problem of concentrating on volume rather

than quality was adopted from the single channel marketing system which majored in pooling products on quantity bases. South Africa thus, has a challenge to improve on quality of fruit in order to retain the competitive edge in the world markets.

5.8 Challenges and opportunities in light of long-term viability

Market growth, productivity, and the unrelenting effort by the CGA to gain, retain and optimise market access present opportunities for increased competitiveness in the global market. However, despite the longstanding citrus export history, the South African citrus industry still faces challenges whose complexity and intensity cannot be divorced from the ever-changing business environment. Such include price instability, transport challenges and the direct involvement of retailers in importation.

5.8.1 Opportunities

The industry is bracing itself for competition, especially from the Southern hemisphere rivals, through the delivery of good quality products and service to the US trade (Meintjes, 2010). This is assumed to result in an expansion of sales, based on the existing strong relationships between the US markets and the South African growers. The supermarkets are also increasingly doing direct business with the growers. Plans to perfect all aspects of the supply chain are underway in order to give assistance to both consumers and growers with the most cost effective and efficient supply chain. New orchards of high value citrus cultivars such as Valley Gold are invested in, so as to enhance late season marketing into the US (Meintjes, 2010). The industry has been sponsoring youth soccer tournaments in the US for the past three years as a marketing strategy. This helps promote awareness of the South African citrus industry and the variety of products it offers and may in turn translate to increased competitiveness.

The CGA has a mandate to gain, retain and optimise market access (CGA, 2010d). It uses research and technical inputs as means to achieve its set goals in supporting citrus farmers. Since there is a lot of ground to cover for the CRI staff, there is need for collaboration between CRI and government extension personnel for the provision of extension to farmers (CGA, 2011). The CGA intends to produce modules to help train government extension staff. The citrus research carried out in collaboration with private research institutions, universities

and government research institutions (CGA, 2010d) is bound to be very informative for the industry's long-term viability in the international market.

The CGA argues that in a global environment where phytosanitary and sanitary barriers have replaced tariffs as the tool to protect domestic industries worldwide, a country's global market share is not necessarily measured by the quality of its product, but by the quality of its research and technical abilities. For the South African citrus industry to maintain its competitiveness, it should continue investing in research and market-related standards (CGA, 2010d). Appropriate technology e.g. sorting and grading equipment is not insignificant (Greefa, 2010). With lucrative export markets being the most demanding in terms of quality, phytosanitary and sanitary issues, the CGA is braced to provide product and quality assurance. This is achieved through ensuring fruit quality, food safety, ethical production, environmental conservation, packaging quality and GAP (Good Agricultural Practice) harmonisation of all accreditation of standards (CGA, 2010d). Provision of information on food safety requirements in importing countries is made through the CGA's MRL (Minimum Residual Levels) help desk. The CGA strives for the harmonisation of all standards so as to have production units requiring single inspections through which they receive multiple certifications.

The CGA has made an application of a levy on behalf of grapefruit exporters geared towards financing market development and consumer education campaign for grapefruit, primarily for the British and Japanese markets (Government Gazette, 2010). The levy will be funded by export grapefruit growers, and will be applied for two years. It applies to the growers who are geographically located in South Africa. In the initial year, the farmers will pay R0.60 per 15kg carton of exported grapefruit. In the second year, the amount paid toward the levy will be R0.65 per 15kg carton of exported grapefruit. Since this is geared for market development, the returns are therefore applicable to the citrus fruit industry. The administration of this levy will be handled by the CGA. This is a positive move, considering the idea that the levy is targeted toward market development and consumer education campaign. The greatest challenges in exporting today are the market forces, and this might be a well-planned adventure by the CGA.

South Africa has a productivity advantage resulting from a total orchard management system approach (Philp, 2006). The system includes the use of windbreaks to minimise fruit blemish,

use of regular pruning to get greater light penetration and tree productivity and the pulse irrigation focussed on daily water demand of trees. The high densities of 1 000 trees/ha combined with sophisticated plant nutrition management leads to optimal production. The research, development and extension agency owned and managed by the industry (Philp, 2006) permits provision of a greater alignment of research, development and extension programmes with industry focus.

Despite the threat of the Citrus Black Spot (CBS) disease affecting the exports of citrus, scientific research has proven that the disease cannot be transmitted to the EU countries which are South Africa's largest citrus market. Citrus exports reach the EU when unfavourable climate prevails for the disease to germinate (SADC, 2000). There has never been an occurrence of CBS on European orchards despite the export of citrus to this destination for about a century at present (Gebrehiwet, Ngqangweni and Kirsten, 2007). Any phytosanitary referring to the CBS disease can be simply attributed to protectionism that has no scientific justifications.

5.8.2 Challenges

This main challenges faced by the citrus industry are categorised into the export-market related challenges and those challenges from the production side. The production side challenges are mainly dominated by transport problems.

5.8.2.1 Export market-related Challenges

(a) Cultivar mix

Citrus fruits are composed of a wide range of cultivars including grapefruits, sweet oranges, lemons and soft citrus (Satsumas, mandarins, Clementines and Tangerines). Within these broad cultivar classes are different varieties as well. The global market (consumer demand) is characterised by a continuous change in cultivar preferences with different market shares year after another. Since it takes an average of 7 to 8 years for a citrus tree to break even (CGA,2010d), it means that sudden changes in cultivar preferences can negatively affect the export market. Asset specificity can be a serious transaction cost. Once fruit trees are established the situation cannot be easily reversed. High replacement costs hamper rate at

which the current cultivar mix in the industry can be changed. Should a cultivar suddenly weaken in the market, the citrus industry is likely to suffer large amounts of capital as there would have been an investment in something with no immediate or alternative use.

Cultivar development takes an average of 15-20 years, i.e. with approximately 25 selections. However, natural mutations are noted to be the greatest source of new cultivar development. Open access nature of cultivars has dramatically changed over the last 15 years (Hattingh and Chadwick, 2010). Recently citrus cultivars produced have Plant Breeders Rights (PBR) attached to them. Plant Breeders Rights last for 25 years from date of issue. The owner is entitled to charge royalties and for the first 8 years can restrict access i.e. decision on who may and may not plant the cultivar. The SA citrus industry gained access to new cultivars through the involvement of Outspan's cultivar development department in international sourcing, the local breeding programme operated by the Agricultural Research Council (ARC) and identification of naturally occurring mutations (Hattingh and Chadwick, 2010).

At present, the Citrus Research International (CRI) performs cultivar evaluation, running a natural mutation screening project, international procurement of cultivar rights, accelerated mutation development, breeding, protecting growers' cultivar rights and managing commercialisation of cultivars (Hattingh and Chadwick, 2010). These functions need to be maintained in the future for better performance of the industry in the international market. Of great importance was the CRI's initial policy not to compete internationally for cultivar rights in a way that increases cost of access for growers and non-handling of cultivars that require active management beyond the sale of trees (e.g. cultivars where the owner requires royalties on the fruit sold). Increased involvement of CRI in cultivars (with the blessing of the growers) resulted in the removal of these restrictive conditions (Hattingh and Chadwick, 2010).

Citrus researchers are also planning to develop cultivars that mature very early or late, to avoid competition from other existing cultivars so as to improve quality niche markets (Mabiletsa, 2006). Such cultivars include the seedless and easy-peeling cultivars with very excellent internal and external qualities which are highly favoured in the global market. Research is also examining the potential for miniature varieties with good internal qualities as well as GMO fruits with disease fighting properties.

(b) Foreign market support regimes for fruits

This entails all the efforts by the governments in importing countries to protect or support their own producers from the intense competition associated with free trade. Tariffs and the minimum import price system are two of the most common forms of support. Foreign market support regimes pose a threat to the performance of the industry in the global market. Government support received by the rival producers in the developed nations present an unfair ground for competition, in addition to the supply dependent pricing.

(i) Tariffs

The Common Customs Tariff (CCT) of the European Economic Community (EEC) is applied to all fruits and vegetables. Tariffs are high in periods of community production and lower in the winter season. This is done so as to protect the local producers from high competition (Hinton, 1991). A rise in tariffs automatically increases costs for exporting nations. Concessionary rates for the developing countries (e.g. through Lome, Generalised Systems of Preference) is normally limited by tariff quotas and often by calendar period. The United States (US) tariffs for fruits are frequently scaled to give more protection to the domestic producer in his own marketing season. The US's Harmonised Tariffs for fruits do not penalise less developed countries for citrus. Oranges are given a low general duty. There is a special duty as well as a free duty.

The developed countries have other support services for producers and agriculture in general. The European agriculture receives $\pm 46\%$ of farm level income as government support and subsidy, South Africa records a level of only 3%, Australia 4%, New Zealand 1%, Canada 16% and the USA 26% (Esterhuizen and Van Rooyen, 2006). This distorted environment impacts directly on competitiveness and provides particular challenges to the South African citrus industry as it competes on unfair ground. Factors determining competitiveness of the citrus industry should clearly receive priority attention and should be supported from an economic development and growth viewpoint.

(ii) The reference price or minimum import price system

The reference price is calculated from two methods and the lower figure is often used. Firstly, it is calculated as the average of the producer prices in the 3 preceding years, plus the increase in the current year production costs, less an allowance for increased productivity. Secondly, current year production costs are added to the previous year's reference price, less an allowance for increased productivity. Generally, the later is the lower and, in practical application, the reference prices are below producer prices (Hinton, 1991).

The reference price is applied to all sensitive products among which are citrus fruits (particularly lemons and sweet oranges). The main objective of the minimum import price system is to protect EEC producers during their main marketing periods from low-priced imports from the less developed countries. This discourages imports that are below the minimum (import levels) reference prices (Hinton, 1991). When a product from a certain country representing a significant portion of the imports on a representative community market is priced below the reference price, plus a full rate of the CCT for 2 days, countervailing charges are applied to make up the difference. The charges refer to a particular country and have a cumulative effect for as long as the produce continues to come in below reference price. Charges remain until prices are above reference prices for 2 consecutive market days or when no prices are recorded for 6 consecutive days.

No produce is able to enter the EEC if its price is below the reference price. With respect to foreign supplies into the EEC market, the tariff concession that the EEC grants does not necessarily lead to a price advantage. The reference price is more of a trade barrier to the third countries since it automatically leads to non-price competition (most likely better packaging, promotion, more stringent grading which all amount to raising product quality).

(c) Retailers in direct importation

When the food safety act was passed, many South African citrus cooperatives were not prepared to comply. The majority of the packhouses were constructed with the main focus of handling bulk quantities of fruit from growers. Time allowance between batches of fruits from different growers had to be incorporated in many packhouses thereby affecting efficiency (Mather and Greenberg, 2003). The majority of the cooperatives involved in citrus

export had their pack houses designed to cater for huge quantities of fruit without interrupting the processes of treating, sorting and packing of fruit. Adjustment necessary to accommodate the issue of traceability seriously affected the efficiency and profitability of these packhouses.

It is important to note that food safety is a supply chain issue (Kuznesof and Brennan, 2004). All chain links have the responsibility and accountability for the final delivery of safe food of good quality that meets consumer demands. Producers are normally held responsible for fruit quality and safety up to the point of sale and carry the risk for most of the supply chain without being able to influence the behaviour of other actors (Vermeulen *et al.*, 2006). While fruit quality typically deteriorates throughout the chain due to interruptions in the cold chain and negligent handling, producers have no formal control over the handling of fruit beyond the farm gate. In the bid to ensure purchase of safe food from upstream producers, many retailers increase their involvement in the upstream supply chain (Fearne and Hughes, 2000). Many UK multiples resorted to rationalising the supply base and minimising costs by dealing with fewer food suppliers that are more efficient and ready to respond to innovations after the introduction of the 1990 Food Safety Act. This was a means to ensure greater supply integrity and quality assurance of fresh produce which had to match great control of the supply chain.

(d) Price changes in the citrus market

The prices for citrus, both fresh fruits and juices are determined by demand and supply conditions. The supply factors include the amount of land under cultivation, yields and age of trees, weather conditions and the incidence of diseases (UNCTAD, 2010). Citrus fruit trees are highly vulnerable to weather conditions such as frosts, droughts, wind and hurricanes. These may affect them considerably, resulting in supply disruptions and increases in prices. Accordingly, the availability of citrus fruits may vary markedly from one season to the other. Prices of citrus fruits and of orange juice are therefore highly volatile, while they are relatively sensitive to changes in quantity supplied. Demand depends on income levels, population growth, availability and relative prices of substitute fruits. In recent years, the changing consumer preferences for fresh produce, including health, quality, and convenience or taste characteristics have been dominant determinants of demand in the fruit industry. Consumption preferences, particularly in the developed countries, show an increasing importance of qualitative aspects of the product at the expense of the quantitative factors.

This shows that more focus is given to the value added aspect of the produce, and not only on the price variable (UNCTAD, 2010).

Price elasticity of citrus fruit supply is low as growers require long period of time to reach full productivity of the trees. In periods of oversupply, growers' competence to adjust their production levels from season to season is restricted since costs associated with exit from citrus growing are relatively significant, keeping a downward pressure on prices (UNCTAD, 2010). Advancements in storage and transport technologies allow for almost year round availability of citrus fruits in the Northern Hemisphere. The off-season demand tends to be met by Southern Hemisphere supplies. Nevertheless, prices show a definite degree of seasonality over the year, associated with the harvest seasons.

Prices can be set on the spot market at delivery or during cash forward contracts. The use of citrus fruits and juice futures and options may be incredibly effective in managing the existing price risks associated with the trade of these products. Futures prices in these markets grant valuable yardstick prices for orange juice and citrus fruits (UNCTAD, 2010). Alternatives to defer pricing may incorporate pooling the fruit with other growers in a cooperative, with a private company or consigning the fruit to marketing representatives. The negotiating power of the groupings has to be reinforced together with a greater flexibility to manage the prices on behalf of the producers. The expansion of citrus fruits production during the last decades of the 20th century, together with the slower growth of demand of certain citrus products have resulted in lower prices for citrus products, particularly for citrus fruit growers (UNCTAD, 2010).

5.8.2.2. Transport to export markets

Southern African citrus fruits exports to all major markets have conventionally been exported by Specialised Reefer Ships from all the four major ports; Port Elizabeth, Durban, Cape Town and Maputo harbour in Mozambique. The vessels typically call at all four major citrus export ports to load products and deliver to global markets (CGA, 2009b). An exponential growth of containerised exports to key markets i.e. Europe, Mediterranean and Middle East became eminent since 2004 season. The direct container service to all markets is considered more cost effective. Maputo port does not currently offer direct container services to these key markets, and thus a decline in volume exported through this port. A higher proportion of

citrus is consequently being diverted to the Durban port. Volumes of citrus currently exported from Maputo declined from a historical volume of above 100,000 pallets annually to below 60,000 pallets during the 2008 citrus season. Thus, approximately 40 000 pallets were diverted to Durban for container loading. Maputo currently handles less than 4% of the annual total Southern African citrus crop. The decline in Maputo volume is adding severe pressure on Durban port.

The Maputo harbour was used as an alternative to Durban (CGA, 2010b) especially for the northern regions which are closer to this port than the Durban port. The transport problem faced by the northern region is worsened by the challenges of congestion at the Durban port. Trucks take long (+/- 6-12 hours) at the port. Thus, transport operators charge high premiums for citrus exporters (CGA, 2011), making road transport to the port very expensive. Plans to consider rail as an alternative to road transport may help alleviate the problem (CGA, 2011).

Maputo port is also associated with limited market access. It is very difficult for a single packhouse to consolidate cargo for markets particularly to Maputo. However, a single packhouse can load a single truck with fruit targeted for multiple markets to be shipped through Durban (Brooke, 2009b). Currently, Maputo has a guaranteed service to Europe, Mediterranean and the UK markets for both weekly and bi-weekly exports. The vessels to Russia and Middle East are scheduled on a spot basis, thus service for exporters may not be guaranteed. The major constraint for Maputo is inability to attain the required annual volume throughput. Figure 5.3 summarises the current challenges associated with the Maputo port as a gateway to the export markets.

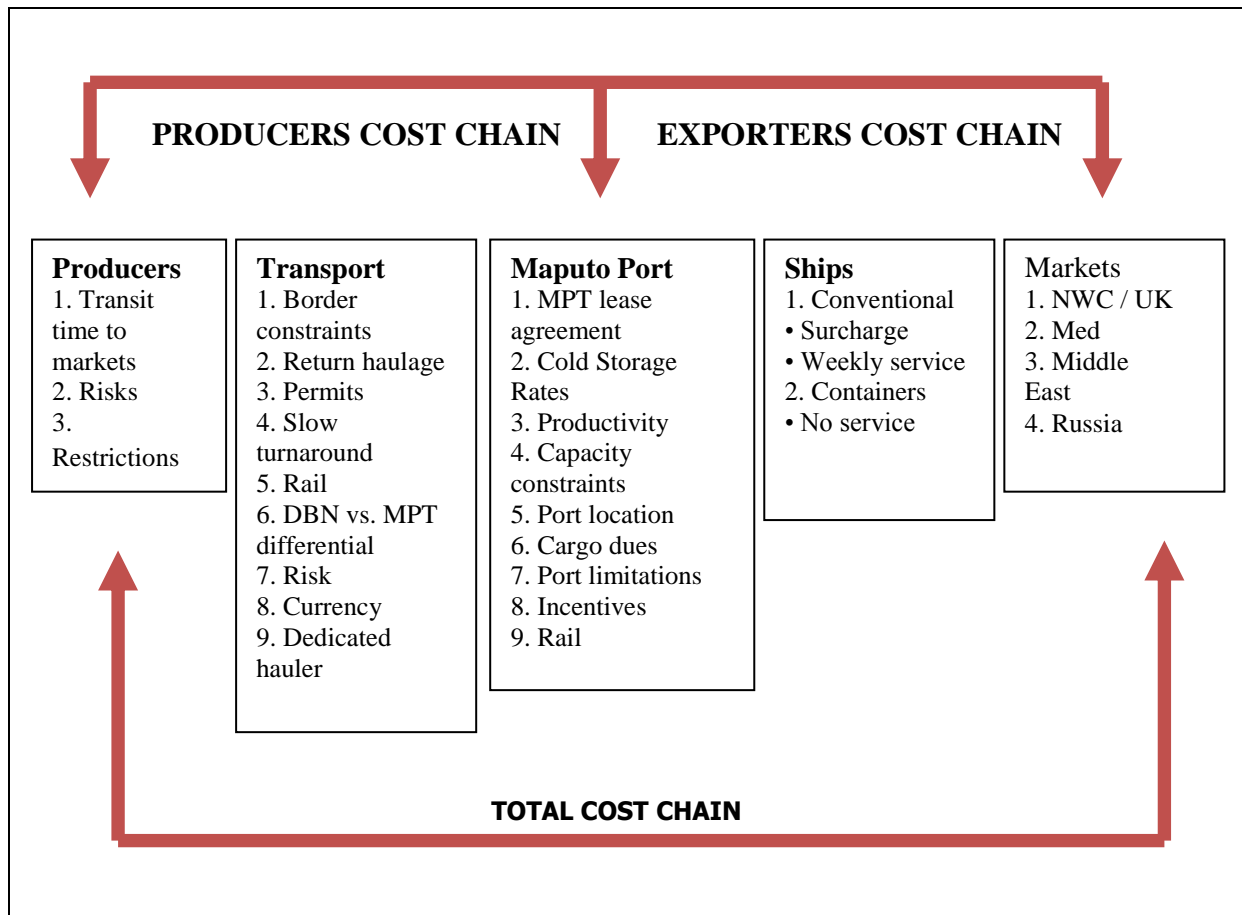


Figure 5. 6: The challenges associated with the Maputo harbour (*Adapted from Brooke, 2009b*)

5.9 The overall analysis of the strengths and opportunities on the citrus industry

Table 5.6 reflects the strengths, weaknesses, threats and opportunities for the South African citrus industry as at year 2010 (DAFF, 2010b). The supply chain present serious challenges to the industry and these are more inclined to the issues of transport and port inefficiencies, and the inherently lengthy chain. The industry may find it very difficult to compete with its southern hemisphere rivals in the already saturated markets amidst a home diamond that has detrimental effects upon timeous conveyance of fruit to the market. The need for research and innovation can be hampered by the deterioration of the research infrastructure (Table 5.6). This is critical as today's consumers demand variety and diversity in products coupled with convenience.

Table 5. 6: The SWOT analysis of the South African citrus industry

Strengths	Weaknesses
<ul style="list-style-type: none"> •The industry's export operations and leading players are well established. •An efficient export infrastructure exists and market access has been improved. •The South African citrus industry is known for excellent overall quality for fruit (strong reputation in major international markets). •Sound communication mechanisms to majority of industrial participants. •High level of investment in current technology within pack houses and cold chain facilities. •Industry has all traceability systems in place, as required by accreditation protocols. 	<ul style="list-style-type: none"> •Production is largely dependent on climatic conditions which can only be partially manipulated by man through irrigation. •Deteriorating research infrastructure and capacity may limit new technology development in the future. •Saturation of traditional export markets. •Reliance on the UK and EU as main export market. •Relatively high input and capital costs. •Volatile fruit prices •An element of fragmentation in the industry. •Lengthy supply chain beyond the pack house. •Lack of industry control on efficiency and productivity in supply chain beyond farm gate and pack house door. •Poor skills and knowledge of the new entrants. •Delays due to degradation of the supporting infrastructure within the supply chain (handling facilities at ports, roads and energy supply). •Commercial and other barriers still exist for new entrants (particularly small scale farmers)
Threats	Opportunities
<ul style="list-style-type: none"> •Increased competition from the Southern Hemisphere counterparts like Chile, Brazil, and Argentina. •Oversupply of fruit into established export markets. •Availability and cost of irrigation water. •Impact of climate change especially in the Western Cape. •Inflation rate with regard to cost of labour and farming and also packing prerequisites. 	<ul style="list-style-type: none"> •Market access initiatives to the Middle East, Asia (India, Indonesia) and China. •Increasing demand due to the consumers demand for healthy diets. •Potential for increased local market consumption. •Increased urbanisation. •Harmonisation of the institutional environment.

Adapted from the Department of Agriculture, Forestry and Fisheries (DAFF), 2010b

5.10 Chapter summary

The South African citrus industry has continued to thrive in the international market over the decades. Notwithstanding the challenges faced in its traditional export markets, for example, the strict food safety and quality requirements in the American and European markets, the industry has seen a rapid growth in terms of quantities exported as it breaks new ground in

the Middle East and Russian markets. The question still remains, whether finding alternative markets still pay dividends enough for the industry to maintain or improve its competitiveness in the international market?

CHAPTER 6

THE BUSINESS ENVIRONMENT OF THE SOUTH AFRICAN CITRUS INDUSTRY

6.1 Introduction

This chapter describes the business environmental elements that directly or indirectly influence competitiveness in the international markets. The elements range from the operating, intra-industry, national and international business forces. In respect, such issues as the operating environment, socio-cultural, economic, political, technological, legal and regulatory, geographical and natural environment as well as the international elements are reviewed herein. The Chapter points out the complexity of the global business environment and its compelling influence on the performance of the industry in the international market. The implications of these elements to the competitiveness of the South African citrus industry are highlighted in the discussions within the chapter. The intensity and importance of these forces upon the competitiveness of the South African citrus industry is the scope of this study and thus this study gathered this information through the opinion of the respondents as to how they evaluate the influence of these elements upon market shares of the industry in the export market.

6.2 Elements of business environment

The industrial environment entails the aggregate of all influences and conditions that affect and can be affected by the industry business and impacts upon its processes and performance, decisions and strategies. Business environmental factors sum up to form the drivers of the industry's competitiveness in the international market (Westgren, Martin, and Van Duren, 1991a). The elements of the business environment comprise the industry's internal, operating, external and international environments (Certo and Peter, 1991; Brooks, 2004a; 2004b) (Figure 6.1). Internal changes (or micro-environment) directly affect the industry's activities. The internal environment directly impacts on the transformation of inputs into usable or consumable products, i.e. the fruit and its by-products in this case. On the other hand, changes in the external (or macro) environment indirectly affect the business but will nonetheless impinge on its performance. The environment-industry relationship is not

unidirectional. While the environment determines the activities of the industry, the industry can also profoundly shape the environment within which it and other organisations operate, (Brooks, 2004a).

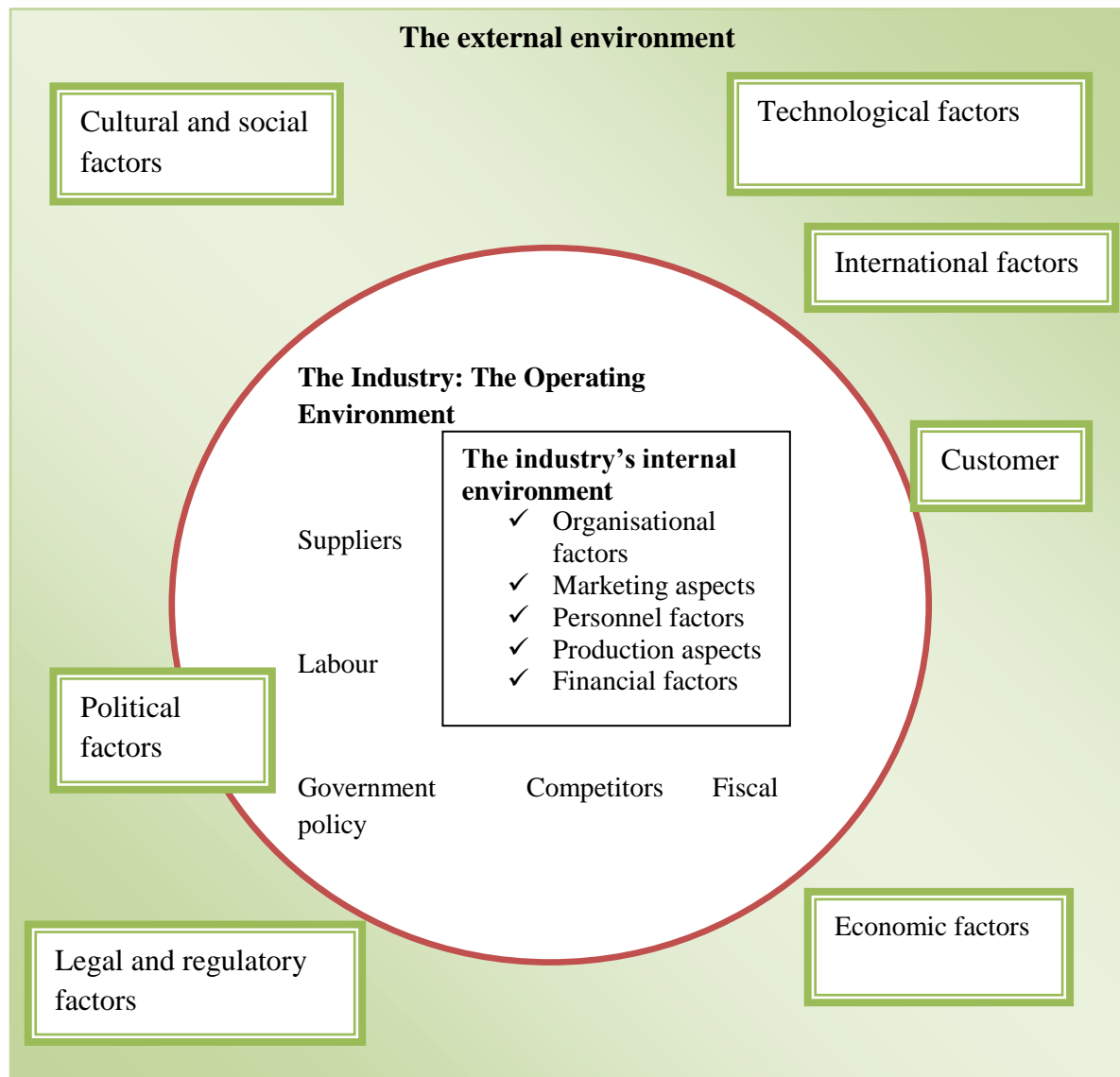


Figure 6. 1: Components of the external and internal environment of an industry (Adapted from: Certo and Peter, 1991)

6.2.1 The external Environment

Many authors have identified political, economic, social and technological (PEST) factors as the key elements of the external or international environment. Others have considered adding the legal and environment aspects (PESTLE) (Mindtools, 2009; Slideshare, 2009). It is however, of great significance to involve the component on the natural environmental factors

and the geographic aspect for an agro-based industry since it largely relies on natural elements.

The business environment continually changes due to several aspects among which are new developments in consumer needs and wants, competitor changes involving new entrants as well as technological changes. In spite of the food safety and health conditions presenting tough competition frontiers for the citrus industry, post-apartheid policy changes and the deregulation of the agricultural fruit industry have also brought with them a lot of challenges and opportunities for the industry. Such changes are in the form of the land reform policy, Black Economic Empowerment (BEE), labour laws and other regulations. Other challenges include, the ever-increasing fuel prices, fluctuating inflation and exchange rates, the natural environment (e.g. affecting plant disease and pest outbreak, drought), HIV and AIDS, among others. The sections below seek to give a brief overview of the external environmental factors impacting upon the performance of business industries.

6.2.1.1 Geographical and natural environment

Agricultural activities are highly influenced by the climatic conditions of an area. These entail the vagaries of nature such as drought, floods, frost, plant pests and diseases. Climatic conditions can pose a threat to certain production areas or countries than others. The recent problem of the outbreak of the Citrus Black Spot (CBS) disease is climate specific and South Africa happens to be one of the affected areas. The disease, which causes substantial economic losses in citrus production, is prevalent in countries that are subject to summer-rainfall (CGA, 2008). The prone areas include the summer-rainfall regions of South Africa, Zimbabwe, Nigeria, Australia, Japan, China, Brazil, Argentina, and Mozambique among others. The Mediterranean regions subject to winter-rainfall like Israel, Italy, Spain, Greece, Cyprus, Chile and California in the USA are not affected (CGA, 2008).

Disease outbreak has considerable financial implications. It apparently threatens the whole industry worldwide if stern measures are not put in place to curtail its spread through export of contaminated fruits and products. The control measures of CBS in the 1995 season amounted to a cost of between R11 million and R16.5 million, while the cost rose to between R30million to R50million in the 1997 season (CGA, 2008). All these costs excluded indirect losses such as spray costs (tractor, spraying equipment maintenance and labour) as well as

rejection of exportable fruit, and the resultant bans (CGA, 2008). South Africa however, has winter-rainfall regions that are not susceptible to CBS. Currently, 16 districts have been cleared of the disease and can export fruit to the US. These include Bredasdorp, Clanwilliam, Caledon, Heidelberg, Ladysmith, Montagu, Paarl, Peketberg, Robertson, Somerset West, Stellenbosch, Strand, Wellington, Worcester, Hermanus and Swellendam.

The South African citrus industry enjoys the benefits attributed to the nation's location and production seasons. Geographically, South Africa enjoys access to all means of transport and of great importance to the citrus industry is the sea transport which is more appropriate for the bulky product. The South African production and marketing season coincides with the window period of the rivals in the northern hemisphere countries especially Brazil, Spain and the EU. This gives the country a better chance on the international markets though quotas may be set so as to protect the producers in the importing nations. The presence of various production seasons allow for the production of the whole citrus basket.

However, the natural and man-made forces coexist in an uncomfortable stability. While some natural forces are independent of human action, other changes in the natural environment are a result from human action. For instance, disease spread across orchards can be perpetuated by human vectors who neglect the phytosanitary and hygienic prescriptions and regulations. Substantial levels of pollution have been experienced in market systems (Sutton and Weatherston, 2000a). For this cause, ethical production and packaging have been partly legislated to curb the problem of pollution.

6.2.1.2 Political Environment

Government intervention in agribusinesses is two-fold, either to pursue political ends or redress the perceived market failures to consumer welfare goals. The protection of the public interests is a responsibility of the government though it is attributed to further constraints (Palmer and Hartley, 2006) For instance; pollution concerns and control may increase costs and render the manufacturing firms uncompetitive in international markets. Government intervention can also be in the form of regulations or state ownership of the business (most common in the UK). The obligations, rules and laws imposed by government on firms may negatively or positively impact upon the competitiveness of the industry (Fairchild, 1988).

Laws imposed by governments with the objective of protecting the home industry from cut-throat global competition are usually achieved through imposing different kinds of tariffs, entering into agreements and signing treaties to protect indigenous industry and promote local trade (Fairchild, 1988). When governments believe that the home industry is affected because of dumping, under Article VI of GATT, they can impose heavy duties to aid antidumping. They can also impose non-tariff barriers and frame regulations on foreign investments to protect domestic industry. Government intervention in agriculture through policy, price support programmes and protection affects the volumes of imports, exports and ultimately the distribution of a nation's commodities (Fairchild, 1988). Such interventions are either beneficial or detrimental to the performance of industries and to business viability.

The most common political variables are competition policy, taxation policy, regulation of financial markets, government stability and government spending (Sutton and Weatherston, 2000b). Legislation such as the minimum wage or anti-discrimination laws, voluntary codes and practices, market regulations, trade agreements, tariffs or restrictions, tax levies and tax breaks, type of government regime (e.g. communist, democratic, dictatorship government type), freedom of press, rule of law, bureaucracy, corruption, regulation/deregulation trends, social/employment legislation and likely political change are some of the common governmental influences (Fairchild, 1988). Government regulations can also be in the form of agricultural, economic and environmental policies exerting influences on all levels of the industry's environment i.e. local, national and global. Compliance with the regulations set by the government is a prerogative for escaping imprisonment, fines and adverse publicity.

The government can either negatively or positively influence other determinants such as factor conditions, demand conditions, related and supporting industries and the industry's strategy and structure through policy and operational capacity (Porter, 1990). In fact, the favourability of the globalisation of economic activities is highly influenced by the political climate (John *et al.*, 1997). The most common government influences that are relevant to South Africa are trade policy, land reform policy, BEE and labour laws and regulations.

(a) Trade policy

The formulation and implementation of the South African trade policy is largely the responsibility of the Department of Trade and Industry (DTI) (Grant, 2006 and Draper,

2003). Due to the wide range of fields covered by the trade policy, the DTI's negotiations on agricultural trade are done with the direct support of various organisations and departments which actively participate in WTO (World Trade Organisation) negotiations, v.i.z. the National Department of Agriculture, the Southern African Development Community (SADC), the Southern African Customs Union (SACU), the Cairns Group and the G20. It also gains indirect support from the Department of Foreign Affairs (DFA), the Treasury and the Presidency.

Since 1994, the South African government has sought for the country to be an active player with many international organisations, thus promoting trade liberalisation (Grant, 2006). This has been the main driving force behind its agricultural policies (Grant, 2006). Many of the South African trade reforms culminated after the Uruguay Round of multilateral trade negotiations. The Marketing of Agricultural Products Act of 1996 was also the product of the Uruguay Round Agreement on Agriculture (Chitiga, Kandiero and Ngwenya, 2008).

The competitiveness of industries in the global market associated with trade liberalisation is believed to promote convergence between the developed and the less developed countries (Draper, 2003). Trade liberalisation is thus, expected to lead to relatively rapid economic growth rates in less developed countries with their economic structures in turn converging towards those found in the developed countries. However, investigations have shown that developing countries have generally remained underdeveloped in the recent decades despite a substantial increase in trade participation. Globalisation has mitigated growing inequality but only for those countries that changed their policies to exploit it (Draper, 2003).

Unilateral and bilateral agreements among nations have however, been associated with the risk of the possibility of trade blocs development, though some analysts rule it out. The members of the inter-governmental organisations seek to implement agreed policy (Palmer and Hartley, 2006) and trade arrangements and agreements indirectly or directly affect firms. The most significant Free Trade Agreement (FTA) negotiated by the South African government to date is that with the EU (Draper, 2003). The EU will fully liberalise 95% of imports from South Africa over 10 years. South Africa will fully liberalise 86% of its imports from the EU over 12 years starting from 2000.

South Africa uses trade negotiations to gain access into international markets for SA companies whilst using reciprocity to discipline them in the domestic market (Draper, 2003). There is however, no thorough understanding of the technical issues entailed in the SA trade policy by groups and individuals due to limited coverage by the media. The debates also involve the engagement of limited circle of participants (Grant, 2006). Nonetheless, an Agricultural Trade Forum comprised of farmers' organisations, government, labour, and consumer groups meets regularly to have feedback on papers on key issues and exchange ideas (Grant, 2006).

Government intervention has lessened since the 1980s which were marked with increase in the reliance on free markets and characterised by competition policy. Incentives programmes introduced by South Africa during the 1970s continued into the 1980s (Chitiga, Kandiero and Ngwenya, 2008). These incentives and other forms of support declined significantly after the Marketing of Agricultural Products Act was passed (Table 5.1). This support was in the form of export subsidies and domestic support. The objective for the reduction of state intervention (liberalisation) in agricultural marketing and product prices was to provide free access for all market participants. These activities were believed to directly or indirectly promote efficiency of agricultural products, improve opportunities for export earnings and augment the viability of the sector, and ultimately lead to economic growth. Table 6.1 shows that SA support for agriculture is very small compared to that of the EU.

Table 6. 1: Support to agriculture (Producer Support Estimate) (in US\$ million)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
SA	871	1 539	989	1 068	631	671	372	140	569	487	
EU	90 180	96 779	93 199	95 318	100 917	107 73	93 338	93 061	96 989	104 474	107 686
OECD	273 570	267 257	254 561	234 373	25 583	27 852	24 971	21 950	22 645	25 675	27 952

Source: Chitiga, Kandiero and Ngwenya, 2008

The reduction of tariff lines from over 12 000 to around 7 800 and the significant reduction in the overall level of protection (liberalisation) are two of the most outstanding reorganisations of the South African tariff structure after the culmination of the Uruguay Round of multilateral trade negotiations (Draper, 2003). Most of the current imports are largely tariff free. However, tariff liberalisation impact on the agricultural sector is difficult to measure due

to data limitations and the difficulty with which effects of tariff reduction can be separated from those of other policy changes (Draper, 2003).

(b) Land reform policy

This is the central thrust of South African land policy which has three aspects, v.i.z, Land Redistribution, Land Restitution and Land Tenure Reform (NDA, 2008). Land redistribution focuses towards addressing the racially skewed distribution of land resources, which reflect a post-apartheid land ownership of 87% and 13% for whites and blacks respectively (Didiza, 2001). Thus, its thrust is on equality. Land redistribution aims at providing the disadvantaged and the poor with access to land for residential and small scale farming purposes. Its scope includes the rural and urban poor, labour tenants, farm workers and new entrants to agriculture. Land Restitution covers cases of forced removals that took place after 1913 (NDA, 2008). This is dealt with by the Land claims court and commission established under the Restitution of Land Rights Act 22 of 1994. The Land Tenure Reform is being addressed through a review of the present land policy, administration and legislation to improve the tenure security of all South Africans and to accommodate diverse forms of land tenure, including communal tenure types.

These three components of land reform programme are aimed at dealing effectively with the injustices of racially-based land dispossession of the past, need for a more equitable distribution of land ownership, need for land reform to reduce poverty and contribute to economic growth. They are also aimed at addressing security of tenure for all and a system of management that will support sustainable land-use patterns and the rapid release of land for development (NDA, 2008).

Land claims made under the restitution programme are viewed as a source of risk and prevent investments in land improvements. The slow progress in which settling of claims is done, negatively impact on the competitiveness of the farms and the whole agricultural industry in turn as it affects investment in land improvements and developments (Ortmann, 2005).

Commercial farms purchased by inexperienced emerging farmers who lack expertise may lose their competitiveness at least in the short to medium terms (Ortmann, 2005). These

farmers also lack mentorship, have poor access to capital, markets training and effective extension services (Groenewald, 2004). However, the CGA is providing mentorship for its small citrus growers (Hardman, 2010)

(c) The Black Economic Empowerment (BEE)

The Black Economic Empowerment (BEE) one of the post-apartheid policies embarked on by the South African government. It is a way of addressing apartheid-era economic issues such as ownership and control of enterprises, income inequalities between and among race groups, and thus target to improve social stability (AFTS, 2007). Among its multiple objectives, the government of South Africa's BEE aims at achieving a substantial change in the racial composition of ownership and management structures and in the skilled occupations of existing and new businesses. The AgriBEE draft document of July 2004 recommended that 30% of the commercial agricultural land should be owned by blacks by 2014. An additional 20% should be leased by blacks by 2014, 10% of existing farmland to be set aside for farm workers' own production, who in turn were expected to achieve a 10% stake in all farm enterprises by 2008 (Hlengani, 2005). Elimination of farm worker illiteracy was set to be accomplished by 2010. The BEE is also aimed at increasing the extent to which communities, workers, cooperatives, and other collective businesses own and manage existing and new businesses over and above increasing their access to economic activities, infrastructure and skills training (Balshaw and Goldberg, 2005).

Many businesses view the broad-based BEE as another compliance cost. Where the BEE has failed, some of the reasons cited are; a lack of effective integration, divergent strategic objectives and an unwieldy decision-making process. In some cases, the problems range from divergent financial objectives, a lack of trust between partners and funding as well as complex financial structures. The implementation of the BEE has been identified with many deals that are not commercially viable, nor are they based on sound business principles. Implementation of employment equity, skills development, corporate social investment and enterprise development can be extremely costly for many businesses. In certain sectors remuneration packages and structures are just not sustainable and the BEE partners need to bring more to the table than the potential of opening doors to lucrative government and

private sector contracts. The processes to deal with performance problems and unrealistic expectations are not being documented.

These findings present a great threat to viability, productivity and thereby impacting on the economy, competitiveness and re-investment unless checked. No matter how good the intentions of any development programme may be, unless it is properly directed, monitored and evaluated, it is bound to yield the unexpected and unintended.

(d) Labour laws and regulations

Changes in the external environment such as employment conditions usually attract government intervention to support and extend employees' and/or employers' rights. This is normally done through labour laws. Several labour laws and regulations affecting the agricultural sector have been effected since the mid-1990s. These include the Labour Relations Act of 1995, Basic Conditions of Employment Act of 1997 and the Employment Equity Act of 1998 (Ortman and Machethe, 2003). These regulations contain restrictions on working hours, compensations and conditions of work. Labour unions are also mandated by the government to negotiate with industries (and farms) on employees' benefits and conditions of work. Labour inspectors are mandated to have the authority to enter, question and inspect as provided by certain sections (section 65 and 66) of the Basic Conditions of Employment Act. Although such laws benefit employees, they result in higher transaction and labour costs for the agricultural employers (Ortman and Machethe, 2003).

The government introduced the minimum wage for farm workers in 2003 with the intention to raise the living standards of farm labourers. The increase in labour costs relative to their productivity decrease the competitiveness of farmers (Gardner, 1972). The minimum wage law of 2003 saw commercial farmers faced with a 10% increase in wages in 2004 and another 10% in March 2005, despite an inflation rate of less than 5% and decreasing real product prices due to the appreciating Rand during these years (Ortmann, 2005).

South Africa is considered to have restrictive labour legislation in which the most recent show that the country ranked 133 out of 139 countries in the survey (Freeman, 2011). The increase in labour costs leads to a reduction of employment on farms. However, it is difficult for farmers to retrench labour and to switch to relatively less expensive substitutes of labour

when one is governed by inflexible labour laws. Coupled with the high population growth, labour substitution with machinery exacerbates unemployment rate (Ortmann, 2005) which has risen from 26.4% in February 2000 to 30% to-date. However, there is an argument that unofficial data estimates unemployment to be higher than it is. The unemployment rate is estimated at 59% to date (Freeman, 2011), against developing country standards that expects at least 60 out of 100 people to be employed. Thus, 41% of South Africans aged between 16 and 64 are formally employed (Freeman, 2011; Mdluli, 2011). The combination of stricter labour laws and liberalisation exposed the agriculture sector to adverse effects of globalisation (Chitiga, Kandiero and Ngwenya, 2008). Lower job creation has also been attributed to global economic recession despite the recovery of the country's economy (Freeman, 2011).

Many industrial responses to changes in environmental conditions have impacted on certain factors such as employment conditions. People are the most vital and most costly resource. In response to the deregulation of the South African agricultural sector between 1985 and 1996, many people lost their jobs. Many of these impacts of environmental instabilities are reflected in overtime, shifts and part time jobs and temporary staff.

The South African labour market is characterised by an oversupply of unskilled workers and a shortage of skilled ones. The provision of unskilled labour can result in compromise with regard to product quality which is the major determinant factor for international competitiveness for agricultural products.

6.2.1.3 Economic Environment

Both national and global economic factors impinge on the performance of the industry. They both have a bearing on the behaviour of consumers, and other supporting and related industries. An economically secure nation is characterised by high stakeholder confidence, high spending power and low employment rates. Also, the attractiveness of a market is a function of the size and growth of demand, which in turn is influenced by the economic wellbeing of the country. Economic conditions have a bearing on demand levels, nature of commodities to be produced among others (Jain, Trehan and Trehan, 2006). In the open global market characterised by high interdependency of the countries, the economic downturn of one nation is likely to have spillover effects upon others.

The growth rate of economic variables is very critical since business considers future survival. The increased productive capacity of an economy leads to economic growth. However, a growth rate of the 2-3% per year is appreciated, whereas a rate faster than this has a high propensity of inflation (Brumfitt *et al.*, 2001). Some of the economic factors include the business cycle stage, growth, GDP, GDP per capita, inflation, exchange and interest rates, unemployment, labour supply, labour costs and productivity, disposable income/distribution, globalisation, likely economic change and the collapse of the world monetary system, fiscal policy and fuel and oil prices.

(a) Fiscal policy

Fiscal policy may be defined as decisions by national government regarding the nature, level and composition of government expenditure, taxation and borrowing, aimed at pursuing particular goals (Calitz and Siebrits, 2008). It is the use of government revenue and expenditure to influence the level of economic activity (Rugman and D'Cruz, 1990).

Fiscal policy is intended to address three major goals, namely, macroeconomic, sectoral and microeconomic goals (Calitz and Siebrits, 2008). The macroeconomic goals of the fiscal policy consist of economic growth, employment creation, price stability, balance of payment stability, a socially acceptable distribution of income and poverty alleviation. It is however, important to note that price stability and balance of payment stability are short term goals. The sectoral goals consist of the development of certain sectors e.g. agriculture, tourism, mining, manufacturing or the financial markets. It also includes the pursuance of social goals concerning sectors such as housing, education, health and welfare (social policies). The microeconomic goals are aimed at a single economic participant or group of participants. They include goals regarding combating poverty through intervening in the market for a particular product and addressing negative externalities to improve efficiency relating to a particular product or activity (Calitz and Siebrits, 2008).

The achievement of the fiscal goals calls for a combination of the fiscal policy with other policies such as the monetary, trade and industrial policy, competition policy and labour policy (Calitz and Siebrits, 2008). Policy mix can have a more powerful impact on the balance of trade (Musgrave, 1986) as the prioritisation of fiscal policy may be in conflict with other tools for pursuing the economic goals (Calitz and Siebrits, 2008). For instance, a tight

monetary-easy fiscal mix raises interest rates and attracts capital inflow. However, it raises the value of the currency on the international exchange. As the value of the local currency rises, imports increase and exports fall off (Musgrave, 1986). The export sector, as well as sectors sensitive to foreign competition, suffers while the opposite change occurs abroad.

Policies that differ in other aspects can be mixed to generate the same effect (Musgrave, 1986). Also, certain policies or policy instruments are more effective in pursuing some goals than others (Calitz and Siebrits, 2008). For instance, an increase in interest rates (a monetary policy measure) may achieve quicker results than a tax increase (a fiscal policy measure) if private spending is to be reduced to fight inflation. The policy authorities must therefore not only decide on the priority of policy goals, but also choose the most effective policy instruments for the task at hand (Calitz and Siebrits, 2008). However, economic globalisation has extensive consequences for fiscal policy formulation, management and evaluation (Abedian, 1998). Potential fiscal problems can be created or aggravated by the mobility of factors of production, particularly capital and skilled labour. In general, integration into the world economy creates additional instability, stimulates more uncertainty, and destabilises the policy environment (Abedian, 1998).

National policies are insufficient and inefficient instruments for achieving optimal outcomes under such global fields as environment, financial markets regulations, trade policies, and taxation. This calls for the need for effective transnational policy coordination as national policies can have substantial negative externalities in a world of integrated economies, transnational production processes and global financial instruments (Abedian, 1998).

A country with sound monetary and fiscal policies and an efficient capital market provides the appropriate financial environment for promoting and encouraging competitive businesses (Rugman and D'Cruz, 1990). In spite of other government expenses, social grants are costing South Africa about R80 billion a year (Freeman, 2011). It is estimated that there are three people collecting social grants for every person paying tax (Freeman, 2011). This is considered to be unsustainable and perpetuating the poverty cycle. The increase or decrease in government benefits influence the behaviour of the recipients (Brumfitt, 2001). Public expenditure also increases inflation (Rugman and D'Cruz, 1990).

(b) Increase in oil and fuel prices

The high and ever rising international oil prices mean unavoidable increases in domestic fuel prices and transport costs. Since September 2007, the price of petrol has increased by a cumulative R2,55 per litre to reach R9,46 per litre in May 2008 (SARB, 2008). Inconvenient price changes and fluctuations are common.

The increases in petroleum prices have raised the cost of producing and transporting agricultural commodities. Freight rates also doubled within 12 months beginning February 2006 due to stretched shipping capacity, port congestion and longer trade routes. Increases in the prices of fertilisers due to rising energy prices have also impacted on the cost of producing food (SARB, 2008).

(c) Inflation

Inflation is defined as a high and persistent rise in price levels (Cook, 2004). Inflation can be caused by an increase in cost of raw materials and other inputs. The increases in input costs raises per unit cost of production of commodities in the economy. Such increases in production cost are passed to consumers in the form of increases in commodity prices. The inflation that is triggered by a rise in production cost is termed cost-push inflation. This cost-push inflation can be imported when the input is imported (SARB, 2008). For instance, an increase in world prices of fuel would lead to increase in fuel prices resulting in imported cost-push inflation in the economy. The increase in cost of production can also be due to higher wages and salaries paid to workers. Cost-push inflation negatively affects competitiveness of an industry in the international market. This is of particular concern where the exporters compete with heavily subsidised and supported rivals like the EU citrus farmers. Though the minimum or reference prices may turn to be the selling prices, the supported group still earns large revenues compared to the South African citrus farmers with little if any support. Inflation can also be a result of an increase in stock of money in the economy as well as an increase in aggregate demand of commodities which might not be matched by corresponding increase in supply.

Inflation reduces the standard of living of people especially those on fixed income like pensioners and others on fixed salaries. As prices rise the value of money reduces (SARB,

2008). The farming enterprises may not cope with wage increases for their employees to maintain a normal standard of living, while the need or urge to do so may lead to an increase in production costs. Poor households in net food importing countries are likely to be hurt more by higher food prices, because they spend a higher proportion of their disposable income on food. Of particular concern to low-income countries are price increases of oilseeds and grains that constitute a large share of their citizens' diets (SARB, 2008).

Inflation leads to a deterioration of the country's balance of payments. As price levels rise, the country's export becomes dearer in the world market (Cook, 2004). This reduces the demand for export products and can widen the gap between exports and imports. On the other hand inflation may be beneficial to borrowers since they will be paying back a loan whose value has decreased. The business community which is not on fixed income may increase their income though, because they will be cashing on a general increase in price (SARB, 2008).

Inflation adversely affects capital formation since money loses part of its value during inflation. Savers are discouraged from saving (SARB, 2008). Thus, in the period of inflation, savings are cut back and any capital formation that occurs may not be the productive type.

From the sample of countries (Table 6.2) in emerging markets such as South Africa and developed countries such as the United States, Japan and the Euro area, food inflation has been higher than headline inflation since 2006. The sharp rise of South African food inflation should be a major concern. Its impact is felt even by export industries like the citrus industry of South Africa.

Table 6. 2: Headline and food inflation in selected countries (%)

Country	2004	2005	2006	2007
China: Headline	3,9	1,8	1,5	4,8
Food (33,6)	10,0	2,9	2,3	12,4
Euro area: Headline	2,2	2,2	2,2	2,2
Food* (15,6)	1,0	0,7	2,3	2,7
Hungary: Headline	6,7	3,6	3,9	8,0
Food (20,7)	11,6	11,6	11,5	11,5
Indonesia: Headline	3,5	2,1	13,1	1 6,5
Food (42,3)	11,0	11,2	11,6	11,4
Japan: Headline	0,0	-0,3	0,3	0,1
Food (27,3)	0,9	-0,9	0,5	0,3
New Zealand: Headline	2,3	3,0	3,4	2,4
Food (17,4)	0,8	1,4	3,0	3,9
South Africa: Headline	1,4	3,4	4,7	7,1
Food** (21,0)	2,3	2 7	7,2	10,3
Tanzania: Headline	4,9	4,4	6,2	7,0
Food (55,9)	5,9	5,9	8,0	7,0
United Kingdom: Headline	1,3	2,0	2,3	2,3
Food (9,0)	0,7	1,5	2,5	4,5
United States: Headline	2,7	3,4	3,2	2,8
Food (13,9)	3,4	2,5	2,4	4,0
Venezuela: Headline	21,7	16,0	13,7	18,7
Food*	25,0	25,1	25,6	26,0

Note: Weight of food prices in CPI in brackets

* Food and non-alcoholic beverages

** Food excluding soft drinks

Sources: South African Reserve Bank, 2008

(d) Exchange rates

The fluctuations of the rate (exchange rate) at which one currency can be converted to another have key effects on both the costs and profitability. The exchange rate is indispensable whenever trade with other countries is involved (Brumfitt *et al.*, 2001). When a nation faces economic challenges, it may not be limited in the extent to which it can use interest and exchange rates for its monetary policy for as long as the currencies between the trading partners are different. For the South African citrus industry, costs are in rands while the revenues are usually in US dollars. Thus, the fluctuations of the rates of exchange between these two currencies affect profitability. A fall in the value of local currency makes the local goods cheaper, leading to a rise in exports and a fall in imports. The opposite is true for a rise in the value of the local currency (Brumfitt *et al.*, 2001). The day-to-day exchange rates are determined by market forces and the government has limited control over the value of the currency. However, in instances where fixed exchange rates are used, they yield 2 advantages. First, the resultant business stability promotes long-term contractual

arrangements between businesses (Cook, 2000). This also leads to a disciplined fiscal policy as there are no alterations on the rate. Inflation is in turn arrested.

Agricultural trade is very sensitive to exchange rate fluctuations relative to some other industries because agricultural goods are more homogeneous (Erickson *et al.*, 2002). It is easy for consumers to switch from one supplier to the next offering a substitute product. Export profits can be reduced significantly with highly fluctuating exchange rates. This is particularly so when there is change in the rate between the time of the contract and the actual time of payment. Exchange rate fluctuations increase uncertainties that result in a great proportion of short-term contracts (Cook, 2004). Of recent, the South African rand has been depreciating in value against the dollar, thus affecting profits made by the local industries in the international markets. Fluctuations in exchange rates imply fluctuating income and expenditure projections as well. Industry's set objectives, goals and mission may be seriously affected. Re-investment is also negatively affected.

(e) Interest rates

Interest rate is the cost of borrowing money (Swales, 2004). The effects of the change in a nation's interest rates are summed up in Table 6.3 below.

Table 6. 3: Effects of interest rate changes

Increase in interest rates	Decrease in interest rates
Cost of borrowing rises and consumers have less money to spend	The cost of borrowing falls and consumers spend more money
Businesses face higher lending costs and are forced to raise prices	Businesses costs fall and higher profits are earned
Businesses put off their investment decisions because of the cost of loans	Businesses bring forward their investment decision
As mortgages and prices rise, employees ask for higher wage rises	Consumers feel wealthier and there is reduced pressure on wage levels
Overseas investors attracted by higher returns, put money into the nation. This causes the value of the money to rise	The nation's investors go overseas for a better return and the value of the money falls

Source: Swales, 2004

(f) Global Economic Recession

The global economic recession has had a substantial impact on many countries ranging from the developed to the Less Developed countries (LDCs). The most common of the impacts is a negative growth of the GDP (Coleman, 2009). In SA, the impact of the recession was noted in a variety of industries and sectors. Generally, the local industry was hard hit making it a “deep real economy and jobs crisis”. Global economic recession resulted in a sharp fall in oil and mineral prices. Aggregate demand and credit to companies decreased substantially. Rural poverty deepened and a worldly approximate of 50 million people were estimated to have been made jobless (Coleman, 2009). In SA, the Expanded Public Works Programme (EPWP) was used by the government to ease out unemployment. The child grant was also increased to age eighteen. Unemployment Insurance Fund (UIF) and strengthening of cooperatives were also enhanced.

Unemployment increased from 21.9% in the fourth quarter of 2008 to 23.5% in the first quarter of 2009 in SA (Mail and Guardian, 2009). About 179 000 job losses were recorded for the first three months of 2009 while an additional 267 000 were experienced within the second 3 months of the same year (Coleman, 2009). Job losses have a strong bearing not only on the wellbeing of the public but also upon the nation’s business sector. Job losses in one sector affect the performance of other sectors. Besides increasing crime and violence rates, unemployment can lead to political instability which will be precipitated by lack of trust in administration and the government. The resultant decline in spending power adversely affects the economy. In February 2009, the government however, offered to help the poor and companies in distress in addition to a training lay-off scheme to avert retrenchments (Du Plessis, 2009). The Congress of South African Trade Unions (COSATU) insisted in the need for an overhaul of the economy by the government.

By November 2008, the current account deficit had remained “unsustainably high” at R170-billion while the economic outlook of the next few quarters pointed to continuing sluggish performance. The Independent Development Corporation of South Africa Ltd (IDC) made R6 billion available over two years to companies that had fallen into distress due to the recession. Eleven financing applications totalling R743 million were approved by 9 April 2009 (Coleman, 2009). The DTI had a new Industrial Policy Action Plan (IPAP) underway; which

was expected to be ready by January 2010. This entails a three year rolling programme, aligned to the medium-term expenditure framework (Mail and Guardian, 2009).

6.2.1.4 Socio-cultural Environment

Culture can be defined as the unique set of shared values, attitudes, beliefs, assumptions and behaviour of a society or group of people (Brooks and Weatherston, 2000). While it is the way of life of a society or group, not everyone in a particular culture thinks and acts the same way. Though the individual group seeks their own identity, individual differences do exist. While culture is passed down between generations (Palmer and Hartley, 2006), it is however, subject to change over time. Socio-cultural differences are basically on such issues as religion, language, values and attitudes, technical and material culture, social organisation, politics, law and aesthetics. Other social environment aspects include population growth/age profile, health, social mobility, employment patterns, attitudes towards work, press, public opinion and taboos, lifestyle changes, likely socio-cultural changes. It may also include ethnic mix, labour market participation rates, and attitudes toward technology. The individual groups seek their own identity. Thus, social environment involves the factors which shape who we are and our attitude, opinions and interests.

Lifestyle changes has become a significant variable for consideration as there are increasing consumer sophistications, human mobility, access to information and a greater appreciation of the link between food safety and health. Dealing with foreign markets demands an understanding of different cultures or else run the risk of ruining an otherwise successful business strategy. The understanding and appreciation of the cultural values as well as the processes of gradual change in markets is important as it informs preparedness to satisfy the changing needs of customers (Palmer and Hartley, 2006). While one may think that the global village will result in culture convergence, significant national differences have been noted (Brooks and Weatherston, 2000) as nations are political units.

HIV/AIDS is a major social and economic challenge for any economy. In spite of straining health, welfare and education systems, HIV/AIDS can have an impact on productivity, labour turn-over rates, recruitment and training costs, employee benefit costs, company or industry profits, the pricing, investment and employment decisions of industries (Ellis, 2006). Increased absenteeism, lower labour productivity and other HIV/AIDS related costs have a

negative impact on both yields and revenue of an industry. To some extent industries may be encouraged to invest in technology, machinery and equipment in order to reduce their dependence on labour. This in turn has a bearing on unemployment rates within the nation (Ellis, 2006).

6.2.1.5 Technological Environment

Jain, Trehan and Trehan (2006) define technology as the systematic application of scientific or other organised knowledge to practical tasks. Technology is a product of research efforts. It often entails information and communications technology (ICT) (John *et al.*, 1997), genetic engineering (agronomic practices associated with new plant varieties) (Swailes, 2004), R&D spending, the internet and biotechnology, production of chemicals, machinery, transportation, infrastructure such as the internet and other information exchange systems including mobile phones, portable computers, use of soft and hardware. It is the aggregate of the knowledge or methods that are necessary to carry on or to improve the existing production and distribution processes, marketing, financing of commodities or processes. The acceleration of processing times has replaced labour and changed the nature of work that employees need to do (Swailes, 2004).

Research can either be done by the industry in question or it will be affected by the spillovers of the competitor, supporting industry or global research. In either case, the industry responds through the formulation of strategies that will either promote or maintain its competitive position. This type of environment is complex, fast changing and may render some hard-earned investments and developments obsolete, to the detriment of a business.

Technology is mostly characterised by the desire to cut on costs of production, efficiency and improved product quality. It also permits better traceability, which is mostly demanded by the global consumer. Improved transportation systems lead to an improved distribution process (John *et al.*, 1997).

Technology has both beneficial and non-beneficial effects on the agricultural sector. The technological interventions that have manipulated the production of early and late maturing varieties of citrus fruit have helped the producers to serve the market over a fairly extensive period of time, curbing the food insecurity problem. On the supply side, technological

improvements such as packaging and transportation are a great improvement for the reduction of contamination throughout the whole supply chain through reduction of further handling of the fruits between the farm-gate and the retail level. The use of soft and hardware has enhanced management, transmission and recording of information respectively. This improves coordination among various key players in the supply chain.

Technology has enhanced the timeframe for information exchange between and among stakeholders (John *et al.*, 1997). Global information systems allow for rapid dissemination of sensationalised news alerting both the consumers and producers. Instant results of an interaction are possible and marketing is better improved especially with the rise of internet. Internet is a distribution channel, a communications tool, a marketplace, and an information system. Significant industry restructuring is possible due to the reduction of transaction costs associated with developments in computers, networks, communications and data storage. Economic development can be attained especially when a sector achieves growth as a result of competitive prices in international markets influenced by technological change (Swales, 2004). The internet connects the buyer to the seller and thus the possibility of eliminating intermediaries such as brokers and sales personnel in business transactions. Better systems and better information can also allow customers to compare products from different sellers thereby reducing costs and increasing price competition between the suppliers. Seller can reach more consumers and communicate more effectively in addition to gathering better data. Internet takes account of the impact of emerging technologies, impact of reduced communication costs, impact of technology transfer and likely technology change. Companies can offer different types of services and build customer loyalty over the internet.

Genetic engineering has also seen the emergence of the seedless citrus fruits (which are highly preferred in the international market) and also the slowing down of the degeneration of fruits, thereby increasing their shelf life. Sixty percent (60%) of the fruits and vegetable products in less developed countries is lost between time of harvest and consumption (Rusike and Matanda, 2000). The lengthening of shelf life can therefore increase the availability of fruits and enhance not only food security in less developed countries but also their ability to reach the export market in a fresh state.

However, some technological developments have been found to have unacceptable effects on the environment as well as on the people and animals e.g. chemical residues on fruits, leached

chemicals and fertilisers in water reservoirs. Increased globalisation and the rise in new technologies encourage environment instability. Technological change has attracted ethical aspects, especially those related to issues such as the science of cloning and science of genetically modified foods (Swales, 2004). The key ethical questions raised are employee working conditions, amount of information held on people by organisations and impact business activities on the natural environment.

Genetic engineering makes it possible for multiple varieties of citrus from one supplier to compete against each other while presenting a barrier to upcoming suppliers. For instance, there are different preferences by consumers to different traits or attributes of citrus fruits (e.g. seediness, easy peeling *etc*). Such aspects can present a barrier to upcoming suppliers since the citrus trees take long to establish and yield. Economies of scale may come into play under such conditions, as well-established industries may invest in R&D and technology to meet market demand. Non-the-less, technology use and disposal may require a time of adaptation. Some barriers may be innocent e.g. through absolute advantage (Rusike and Matanda, 2000).

The analysis of the manner in which different technological advancements affect industrial organisation is necessary as technology can be a source of competitive advantage (Brooks, 2004a). The choice of technology for a company should complement the firm's competitive advantage. The technology chosen must be in sync with the firm's overall strategies. A thorough analysis of all the firm's available technologies is necessary to identify areas where there is scope for cost minimisation or product differentiation. For citrus producers, R&D that focuses on product characteristics that are on the rise, especially from the market side, should be preferred.

6.2.2 The internal environment

This environmental aspect consists of the forces which an organisation can control. It is commonly viewed as an analysis of organisational factors, marketing aspects, personnel factors, production aspects and financial factors (Certo and Peter, 1991). The main factors in this environment aspect include suppliers, entrants, direct competitors, indirect competitors and immediate buyers, labour and financiers. The industry analysis unveils the power relationships among key players in the industry. These power relationships shape price levels,

profitability and investment in the industry. As a result, the internal environment is important for corporate level staff for setting performance standards.

Citrus is produced and marketed in vast areas, regions and countries throughout the globe. An increase in the number of rivals or industries whose commodities are considered an immediate substitute in the market increases competition, impacting negatively on profits. As concentration levels in the market rise, competition also rises and market shares are also affected. Though the global market may have an innumerable number of key players, high volumes of produce make competitive pressures in the market tight. High intensity of competition implies low profitability for the industry and may consequently attract chances of barriers to entry.

Easy entry by competitors implies low profitability. Barriers to entry generally safeguards industrial profit margins. Barriers to entry include access to distribution channels, economies of scale, knowledge and capital requirements. Barriers deliberately erected to restrict entry are usually in the form of introduction of new technology, increase in expenditure on Research and development (R&D) (Weatherston, 2004) and predatory pricing e.g. reference pricing or minimum import price system applied by the EU government to protect the European Economic Union (EEC) producers (Hinton, 1991). Imposing deliberate barriers to restrict entry can also be in the form of tariffs since these are scaled to give more protection to the domestic producers in their own marketing season. These trade barriers do not lead to trade advantages for foreign suppliers because they automatically lead to non-price competition. Most often they are in the form of better packaging, promotion, more stringent grading which all amount to raising product quality (Hinton, 1991). While the Sanitary and Phytosanitary (SPS) regulations were introduced with the intention to protect human and animal, or plant life and health, in some cases they have been used as a tool to protect domestic agribusinesses and producers from competition (Erickson *et al.*, 2002). Low profitability of the industry is a barrier to entry of its own while high profitability is an incentive to entry.

Profitable markets can however, attract substitutes or indirect competitors. Substitutes for the citrus industry can be other fruit e.g. apples, pears, bananas, and fruit juices. Substitutes are usually characterised by new technology with high cost early in its life cycle but impacting on basic quality. The combination of market reform and technological advancement has

vastly increased the threats posed by indirect competition. However, the threat of indirect entrants has lesser effects than that of direct competitors.

The pressure exerted by suppliers depends upon the importance of their input product as a percentage of the total firm costs. High dependency signifies the bargaining power the suppliers will have upon the industry.

Though it is within the powers of the industry management to influence and shape the internal environment, certain issues may be a focus for government intervention. Employment conditions usually attract government intervention to support and extend employees' and / or employers' rights.

Institutional and organisational changes are indispensable in today's global open markets. These are arrangements including legal systems, grades measures and enforceable contracts (Porter, 1990). North (1990) defines institutions as arrangements among economic agents that attempt to decrease uncertainty and costs in exchange and ownership, i.e. they comprise rules, laws and conventions that govern economic behaviour.

The global food system has radically transformed. The increasing consumers' health consciousness and safety sensitivity (resulting in the need for product traceability) has seen the agro-food industry embarking on a marked increase in vertical coordination e.g. between the agro-food firms and farms. This result in changes in institutional (rules of the game) and organisational changes and for the industry to be competitive there is need to comply and adhere to changes that affect the whole global market. Institutions such as strategic partnerships and labour contracts may be necessary for a reduction in production costs and promotion of access to new export markets for the commercial farmers (Ortmann, 2005).

6.2.3 The international business environment

Globalisation has made competition with foreign businesses for products and services inescapable. Most of the elements of the external (local) environment can have an influence on a trading partner-nation's business industries as previously discussed. For instance, economic situations, government intervention and the social elements have spill over effects on international business. Differences in farmer support by different governments make the

playing field uneven for the exporters. Subsidies reduce production costs. The price reference system for horticultural crops (including citrus fruit) in the EU markets (Hinton, 1991) makes it very costly for the unsubsidised exporters to compete in such markets. Automatically, the subsidised foreign farmers can sell at lower prices, attracting more consumers, all things held constant. When business revenues are lower, the best move is usually to focus on ways of cutting costs. Reduction in wages and salaries paid to employees is usually one of the main approaches to cutting costs. The subsequent increases in retrenchments will lead to a rise in unemployment. The last resort of course, will be the close down of the business.

Access to technology has made competition very stiff since a competitor can have a consumer from any part of the globe. Businesses are compelled to keep abreast with development in technology especially communication technology. This kind of strategy however may not only be costly of its own self, but the cost of continuously training staff may be high as well.

6.2.4 The competitive environment of the business

Porter (1980) identifies five forces that determine the industry's state of competition and the ultimate profit potential. These are rivalry among competitors, threat of entry, threat of substitution, bargaining power of buyers and bargaining power of suppliers. The state of competition is determined by the collective strengths of these five forces.

More rivalry leads to more competition and reduced profits. The number and relative size of competitors within an industry, the rate of growth, cost conditions, lack of product differentiation and high exit barriers determine the intensity of the rivalry (Weatherston, 2000). Market entry by new organisations is attributed to the attractiveness of the high returns received by the incumbents. New entrants lead to increased competition and ultimately lower profits. Threat of entry can be lowered by barriers and to entry. Some of the most common barriers are capital requirements, access to distribution channels, legal barriers, economies of scale and absolute cost advantage, product differentiation and threat of retaliation (Weatherston, 2004).

Substitutes refer to the products that can be used to satisfy the demand of a different product (Chopra and Meindhl, 2003). High profits attract substitutes, and thus the threat of substitutes will impose a price ceiling (Weatherston, 2000). The propensity of the buyer to substitute, switching costs and the relative price and performance of substitutes will determine the extent of the threat of substitution. Lastly, the bargaining power of buyers and suppliers is very influential. Suppliers are the organisations or individuals from which an organisation procures inputs for business activities. Suppliers can reduce prices and increase quality which in turn reduces margins (Weatherston, 2000). The buyers of the organisation's outputs have bargaining power has the potential to lower prices and increase quality which in turn put a downward pressure on profit. The power and price sensitivity of the buyers is influenced by low switching costs and the importance of the product to the buyer. The proportion of the total costs and product is purchased in high volume (Weatherston, 2004).

The changes in the elements of the business environment particularly consumer behaviour, technology and globalisation have profoundly impacted on the conduct of agribusiness. These have also influenced the nature of business. The open global market has intensified competition and the South African citrus industry has to face the challenges with minimal government influence and support. Service activities such as information gathering and analysis, contract management, marketing, finance and asset acquisition tend to take much of the farmers' time, unlike in the past where more time was spent in the farms (Esterhuizen, 2005). Esterhuizen (2005) citing Standard Bank (1999) has described this as a new economy within which the South African agribusiness operates. The most important changes in the South African business environment were thus summed up as shown in Table 6.4.

Table 6. 4: The changes in the business environment

<p>The transition from an industrial/ producer driven business to an information community: For thousands of years the major source of economic power was rooted in the ability to accumulate land to extract agricultural and mineral commodities from that land. Then, 250 years ago, the Industrial revolution changed civilisation in virtually all respects, and physical resources- factories, equipment and capital- became the new source of economic power. Today the major source of economic power is embodied in ideas, information, technology and knowledge (Roux, 2002).</p>
<p>The change from national economy to a world economy: The opening up of trade and the reduction in import tariffs in terms of World Trade Organisation (WTO) agreements have exposed South African agribusiness to competition. The Trade, Development and Co-operation Agreement (TDCA) between the European Union (EU) and South Africa (SA) as well as the establishment of a free trade zone in SADC will have a profound impact on the South African agribusiness sector (Poonyth, Esterhuizen, Ngqangweni & Kirsten, 2002).</p>
<p>The Change from hierarchy towards a “network economy”: The emphasis is shifting from a pyramid structure to a horizontal one, where strategic alliances, co-operation, supply chain agreements and specialisation are facilitated. Networking empowers individuals and nurtures innovation and unity (Doyer, 2002).</p>
<p>The change from regulation and institutional help to self-help: The deregulation of the agricultural sector has resulted in a greater number of entrepreneurs, who add value, as well as more differentiation and a greater volume of exports. The scaling down of domestic support and export subsidies according to WTO regulations will generate an increase in business opportunities and trade between countries (Van Rooyen, Esterhuizen and Doyer, 2001).</p>
<p>The changes from a producer focus to a consumer focus: Because of a diverse population with individual preferences, consumers have become discerning, and open economies have increased the number of alternatives and variables. The conventional producer focus has therefore changed to a consumer-driven focus (consumer individualism) (Doyer, 2002).</p>
<p>The changes from a product focus to an experience focus: The satisfaction of a product is no longer only in the quality of the physical product but also in the experience in buying the product, for example the quality of a restaurant is no longer only in the food it serves, but also in the whole experience in eating there (Van Rooyen, 2005).</p>

Source: Esterhuizen, 2005 (as adopted from Standard Bank, 1999)

6.5 Chapter Summary

This chapter has discussed the elements of the business environment. The global village has contributed to the complexity of the business environment forces as the impact of spillovers is unavoidable. In spite of the spillovers, some international forces will automatically have a bearing on the performance of nations and industries e.g. the international economic situations as well as the fuel and oil price changes have a bearing on production costs and revenues. With the increase of the intensity of ensuring compliance with ethical codes of

conduct, South Africa may find itself with no option but to implement the basic codes though they may have high implementation and auditing costs.

The environmental factors are less predictable such that organisational planning has turned out to be a more adaptive, flexible and responsive process. Many organisations have been restructured internally, improved technological positioning, improved customer service and made focused strategic changes to their management control systems in response to turbulence in the business environment and in an intentional effort to manipulate the environment (Brooks, 2004a).

The removal and reduction of many protective trade barriers has led to intense competition between nations and industries. South Africa is not immune to such global trends and phenomenon. The increased vulnerability of the South African citrus industry to intense competition may affect its share in the global market. This calls for active participation and involvement of the government for the competitiveness of its industries engaged in international trade. The responsive nature of planning by today's industries involved in international trade makes the decision-making process more difficult and increases transaction costs amidst the ever changing and unpredictable business environment that is characterised by spillover effects that are closely intertwined.

CHAPTER 7

METHODOLOGY AND MODEL SPECIFICATION

7.1 Introduction

In this chapter the framework for analysing the competitiveness of the South African citrus industry is presented. The chapter discusses the procedure followed in the determination of the competitiveness of the South African citrus industry. The chapter presents the conceptual framework as well as the steps undertaken to establish how competitive the industry is in the international market amidst the ever-changing business environment and circumstances and the stringent private food safety standards. The unit of analysis, sampling frame and sample size are also specified. The Constant Market Share methodology and Porter's diamond models, as the main tools of choice to evaluate the performance of the industry, are discussed. The choice of the Constant Market Share model is also supported by the definition adopted for this study.

7.2 Measuring competitiveness

This study measures the competitiveness of the South African citrus industry between 1987 and 2009 against its major rivals; Spain, USA, Turkey, China and Morocco. The main thrust of the study is to establish the performance of the industry in the international market. Thus, the focus is on the competitive concept. Due to the changes in the business environment that affect the flow of products within and between countries, the factors affecting the performance of the citrus industry are in state of flux and ever changing and are thus necessary to track and establish. Due to the complexity of the competitiveness concept, the choice of methodology for the measuring of the South African citrus industry is anchored upon the operating definition of this study which is “...*the ability to create, deliver and maintain value and constant market share through strategic management of the industrial environment or competitiveness drivers*”.

7.3 Materials and Methods

In this section, the theoretical framework, study area, sampling frame and data are described. Competitiveness in the international market is highly influenced by a diverse array of business environmental forces. In addition to the home-diamond forces, the market side challenges directly and indirectly affect the competitiveness of the industry of which changes in consumer preferences and private food safety standards are the most prevalent. Figure 7.1 shows the 3 levels of the linkage of the determinants of competitiveness. The determinants exert both negative and positive influences on the competitiveness of the industry in the export market.

7.3.1 Theoretical framework

Figure 7.1 is a presentation of the theoretical framework for the measurement of the competitiveness of the South African citrus industry. Figure 7.1 indicates that approaches to the analysis of competitiveness differ widely depending on the level of analysis (overall economy, sector or firm and single product). While the assessment is also dependent on the objective of the analysis, the operating definition of competitiveness is also influential. The competitiveness of a single product can be done at national, regional or international levels. Whatever level of analysis is considered, the measurement can fall into three categories namely, competitive performance, competitive potential and competition process. The performance measures are concerned with past performance of an industry relative to its rivals. Typical performance measures include profitability, market share and balance of trade. Competitive potential considers the availability of factors that can promote superior performance. Competitive process is concerned with the measurement of management process or how competitive potential is converted into competitive performance. Competitive process is qualitative in nature and examples of this process include commitment to international business and marketing outlook. Competitiveness is a function of the interaction of the business environmental forces. Figure 7.1 shows the theoretical framework that this study adopts.

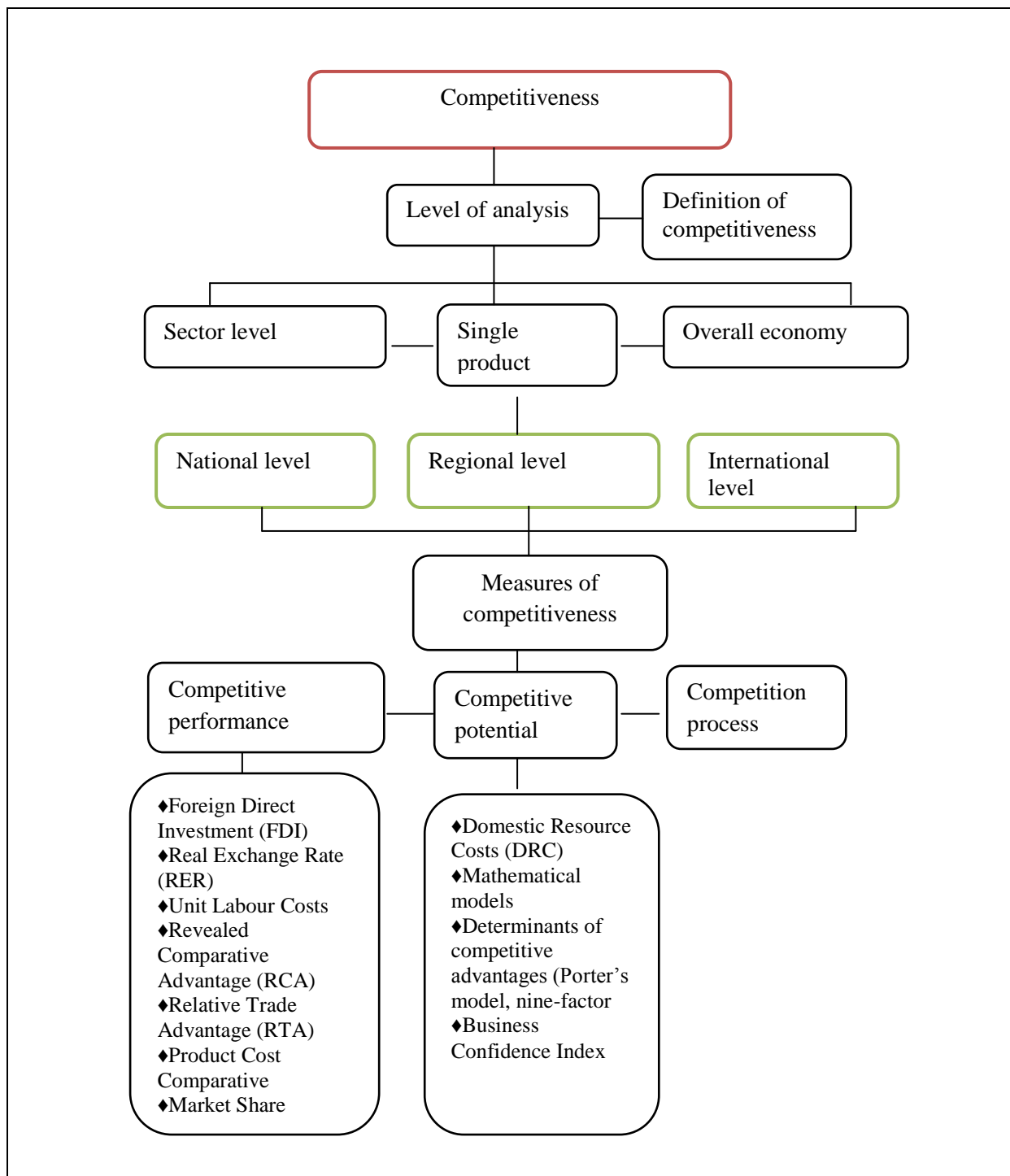


Figure 7. 1: Theoretical framework of competitiveness

Figure 7.2 is a schematic of the process followed in analysing competitiveness of the citrus industry.

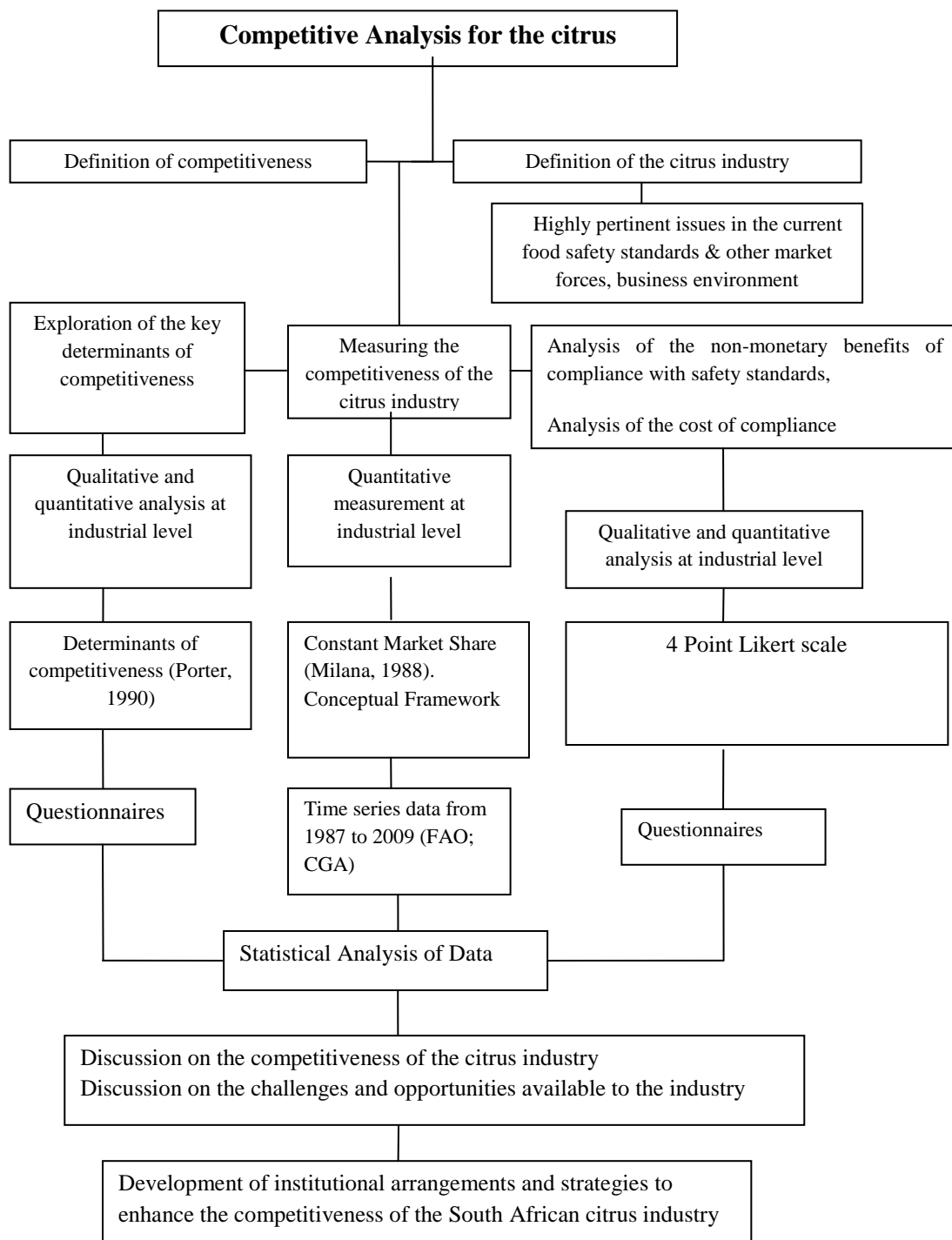


Figure 7. 2: A framework for analysing the citrus industry competitiveness

The measuring of the competitiveness of the South African citrus industry is influenced by the operating definition as stated in section 7.2. The quantitative measurement made use of the Constant Market Share model. Data for the model included trade figures between 2000 and 2008. Time series made use of data ranging from 1987 to 2008. The questionnaires were extensively used for the determinants of competitiveness. The costs and benefits of

compliance were captured through the questionnaire. The recommendations made by this study were thus drawn from the results from these approaches.

7.3.2 Sampling frame

Basically, the study was focused on the citrus industry of South Africa. The population of interest was all citrus producers. For the purposes of this study, only the export citrus farmers were considered for the sampling frame. There are about 1400 citrus growers distributed across the nation including those in Zimbabwe and Mozambique.

7.3.3 Data

A wide array of data was gathered for the purposes of analysing the competitiveness of the South African citrus industry. Data on citrus fruit cultivars and the quantities exported over time were extracted from the Citrus growers Association (CGA). Primary data such as access to credit, availability and access to extension and other support institutions, the challenges impacting upon the competitiveness of the citrus industry ranging from natural, national, intra-industry to international forces, and cost of compliance with the food safety and health standards over the past few years were obtained through the use of a semi-structured questionnaire. The trend of these costs (increasing, decreasing or neutral), possible benefits of complying with set standards and any possible strategies to enhance the competitiveness of the industry were captured. The variables under consideration are shown in Table 7.1.

Table 7. 1: Hypothesised relationship between the response and dependent variables

Response Variable	Predictor variable	Hypothesis	Expected outcome
Farmer support	-Access to credit -Information and training sources -Institutions supporting local citrus farmers -Extension services -Infrastructure supporting farmers	These are accessible and internationally competitive	Positive
Major challenges	-Local or supply-side challenges -Market side challenge	These have an impeding impact	Positive
Opportunities for sustained competitiveness	-Current and potential customers preferences -Strengths of the competitors -Weaknesses of the competitors -Strategic changes for sustainability -strengths and weaknesses of the industry in the global market	There are great opportunities in the international market for the local citrus industry There are more strengths outweighing weaknesses	Positive Negative
Impact of compliance	-Trends in citrus demand and exports -Trends in fruit rejection -Cost of compliance (in non-monetary terms)	Increased demand Increased rejections Cost of compliance has increased	Negative Positive Positive
Non-price benefits of compliance with safety standards	-Benefits other than price competitiveness	There are many non-price benefits associated with compliance	Positive

7.3.4 Data Collection instruments and procedure

The unit of analysis for this study are farmers producing citrus fruit and products for the export market. Both primary and secondary forms of data collection were used in this study. Primary data were gathered from export citrus farmers using questionnaires. Due to the limitations in time and resources especially finance, the study made use of emails for data collection from the export farmer clientele throughout the whole nation. Questionnaires were emailed to the export farmers through the Citrus Growers Association (CGA) and physical administration was carried out only in the cases of the easily accessible farmers within the Kat river citrus growing area. Questionnaires were used because they are inexpensive, permit anonymity that may result in more honest responses and eliminate bias due to phrasing questions differently with different respondents.

Emailing to all exporting farmers was meant to cater for any non-responses and try to maintain the possibility of obtaining usable data to the maximum extent possible. The population of interest included both the smallholder, emerging and large-scale farmers. However, there are instances where only the smallholders would be considered for analysis and these instances are plainly and the accompanying justifications are specified. A large list

of respondents was meant to make a good representation of the growers scattered throughout the different climatic regions, translating into different citrus varieties grown and different natural environmental factors affecting production e.g. pests and diseases. The farmers' ratings of the perceived level of benefits of complying with the private food safety standards, the degree to which identified business environmental forces impact upon the citrus industry's competitiveness in the international market and cost of compliance with the private standards were analysed using Porter's diamond model. One hundred and fifty one respondents were used for this study and 87 of these were smallholder farmers.

Secondary data were basically the trade figures and destinations to which the fruit and other citrus products were marketed internationally. Available export and import data were obtained from the database of Food and Agricultural Organisation Statistical office (FAOSTAT) and the Citrus Growers Association (CGA). Trade data ranging between 1987 and 2008 was considered for this study. The use of secondary data is inexpensive, because data are already in existence. Available data also permits examination of trends over the past years. However, some data are not always easily accessible. It is possible that ethical issues concerning confidentiality may also rise and information may be imprecise or incomplete.

7.4 Data analysis

To measure the competitiveness of the South African citrus industry, it was necessary to evaluate the changes in the quantities traded to the top lucrative international markets and the most prominent upcoming ones like the Middle East. The change in traded quantities was important since the focus of this study entailed the investigation into the business environmental factors impacting upon the industry, including market-side challenges with special focus on private food safety standards. This was also important since the study was particularly concerned with the determinants of international competitiveness of an agro-based industry and its fruit range which is territorial and the production remains geographically biased, while marketing can be channelled to any part of the world. Due to the frequency of changes in trade restrictions and stringent private food safety requirements associated with export markets, there are fluctuations in quantities exported, and exporters are frequently forced to look elsewhere to sell their produce. For this purpose, citrus export quantities from South Africa, import volumes in selected markets and the proportions traded

to various markets were used to evaluate the performance of the industry in the international market.

Since the thrust of the study was to evaluate the environment within which the South Africa citrus industry operates, with special emphasis on the market challenges, particularly the standards, the Constant Market Share (CMS) was found to be most appropriate. The interpretation of the CMS model is based on the presumption that changes in market share reflect purely competitive conditions. Interpretation is thus a description of past trading pattern. Inevitably, inferences regarding the forces underlying the country's export performance may be the end result, thereby, resulting in an interpretation that is diagnostic. The CMS model does not describe the causes for any gains or losses of market shares. This aspect was however complemented through the use of Porter's diamond model.

Discrepancies in quantity and quality attributes demanded, as well as prices offered for each citrus cultivar led to the separation of the different types of citrus fruits in the analysis of the competitiveness of the South African citrus industry. Each type was considered separately. The CMS analysis adopted the following categories; oranges, grapefruit, lemons and limes as well as soft citrus. Various cultivars within each category were ignored. Also the citrus fruit juices were not considered for the analysis of the competitiveness of the industry.

Porter's diamond model (Porter 1990; 1998) was used for the identification of the major environmental factors influencing competitiveness and the extent to which they impact upon the performance of the industry. The advantage of the diamond model is that it evaluates all participants in the supply chain (Porter, 1990; 1998). While the approach points out the weaknesses and strengths of a sector, it also identifies critical success factors in the supply chain to which special attention can be paid with the objective of developing and sustaining competitiveness as successfully as possible in years to come. It was thus imperative to identify key players (suppliers and other value chain members) in the citrus industry and apply this model in order to determine individual player and chain differentiations. A 10 point likert scale was used to indicate the degree to which each of these factors affected competitiveness or performance of the industry. Scores ranging between 0 and 10 against each determinant factor were awarded with a higher score indicating a more enhancing factor, and similarly a lower score denoting the more constraining a factor is for the competitiveness of the industry. Most of the market side factors were categorised as demand factors within the

diamond model e.g. SPS standards and import licensing. The important factors within each category are listed in detail in Table 7.2 below.

Table 7. 2: The factors considered under each classification of the diamond model

Factor endowments	Cost of production, Labour (labour relations, productivity, worker skills levels, staff training, worker literacy, aptitude, worker attitude, availability of skilled employees, quality of labour), natural factors (climatic conditions, abundance, quality accessibility and cost of water), infrastructure (type, location, user cost e.g. transportation, communication systems, payments or fund transfer) Capital (cost, availability), Knowledge (cost, quality, availability of scientific, technical and market knowledge), Technology (cost, quality, availability, technical information flow, availability of scientific research)
Demand Conditions	Market size, market information, quality of products, market growth, size and growth in the local market, international market large enough to obtain economies of scale, economic stability, political stability, price stability, crime, SPS regulations, trade specifications, the challenges of management in an international environment, Non-tariff barriers <ul style="list-style-type: none"> -quality and packaging requirements -import licensing -quotas -Sanitary and Phytosanitary regulations - Global Partnership for Good Agricultural Practice (GLOBALGAP) - Hazard Analysis and Critical Control Points (HACCP) - Codex Alimentarius Commission (Codex) -import duties Foreign market support regimes for fruits <ul style="list-style-type: none"> -The reference price or minimum import price system -The reference price system for citrus fruits in the EEC -subsidies and price supports (by Canada, USA, Japan and the EC)
Related and supporting industries	Financial institutions, research institutions, transport companies, suppliers of packaging materials, agricultural input suppliers, Electricity, related industries & organisations (nurseries, CGA, Exporting companies e.g. CapeSpan, CRI, PPECB, FPEF)
Firm strategy, structure and rivalry	Adaptability, Culture, Structure, flexibility, pricing strategy, managerial capabilities, market power of buyers, market power of suppliers, threat of substitutes, threat of new entrants,

Government	Indirect support, Trade Policy, Land reform policy, Labour policy, Fiscal policy (general economic policy), Education policy, Agricultural policy, Environment policy, Financial and taxation policy, Property rights issue, SA's BEE and transformation policies, impact of the tax system on investments and risk taking
Chance	Crime HIV/AIDS The US plant quarantine Act Oil and fuel prices, Fluctuations in the exchange rates, Inflation, Cultivar mix Global Economic recession 2010 FIFA World Cup hosting by SA

This study focused on five levels of addressing the competitiveness of the South African citrus industry. The levels were aligned to the research objectives which are to: determine the state of export competitiveness and the overall business environment in which the citrus industry operates, determine the major challenges for sustained competitiveness of the citrus industry, determine the opportunities for sustained competitiveness of the South African citrus industry, determine the impact of compliance with food health safety and environmental standards on citrus export revenues and to make recommendations on the institutional arrangements for the sustainability of the citrus industry.

Step 1: Analysing the competitiveness of the South African citrus industry.

Step 1 focused on the measurement of the competitiveness of the citrus industry. The Constant Market Share model was used. It is believed that while complying with the ever-changing environmental factors, the industry has to at least maintain its market share in the international market. The study considered the competitiveness of the industry over the period 1987 and 2008 to allow for the establishment of the industry's performance pre and post-deregulation of the fruit industry as well as post the bulk of the policy changes influencing the agricultural environment, economic transformations, fluctuations in exchange rates and many others which came after 1994. However, performance in specific markets was established for the period 2000 to 2008 since specific quantities traded to each market were not obtainable for the period before 2000. The CMS model is stated as:

$$\Delta q = \sum_i \sum_j S_{ij}^o \Delta q_{ij} + \sum_i \sum_j Q_j^o \Delta S_{ij} + \sum_i \sum_j \Delta S_{ij} \Delta Q_{ij}$$

Where,

q = target country's citrus exports (value)

S_{ij} = An exporter country's export market share of product i (where there are more than one selected products) in country j (more than one selected countries)

Q_{ij} = Total imports of market j

Δ = annual change

0 = base year

Step 2: Analysing the impact of the business environmental factors on the competitiveness of the industry

Box 7.1 sums up the basic sub-questions related to the evaluation of the influence of private food safety standards and other business environmental forces.

Box 7. 1: The environmental factors influencing competitiveness

Conceptually, this question sought to identify the following:

- Determination of possible environmental factors influencing the competitiveness of the citrus industry
- The degree to which the environmental factors and private food safety standards impacted upon the performance of the industry.

The key determinants were identified through the reviewed literature. Provision was also made through a semi-structured questionnaire for the exporters to provide additional determinants. The key determinant factors were categorised into the following sections: firm strategy, structure and rivalry, factor endowments, demand conditions, related and supporting industries, government and chance events (Porter, 1990; 1998). Unveiling the environment within which an industry operates offers a basis for sound formulation of strategies leading either to maintaining or improving the competitiveness of the industry. The rate was established through summing up the individual scores by respondents and dividing them by the total number of respondents.

Step 3: Establishing the cost of compliance with the stringent food safety standards

Box 7.2 describes the analysis of the costs of compliance with the private food safety standards.

Box 7. 2: What are the costs of compliance with the standards?

It is generally believed that tightening quality and safety standards by developed countries is a general barrier to agricultural exports from less developed countries and hurt in particular the smallest farmers and poorest households. Thus, this is considered as a barrier to continued success of Less Developed Countries (LDCs) (Jaffee and Henson, 2004). These barriers are characterised by variations in terms of requirements for fruit quality and volumes to be supplied, production practices and accreditation, and governance structure. Compliance attracts costs in most instances. This question refers to non-monetary cost incurred from compliance with the standards. A few cases relating to export markets of choice were added to show some trends in monetary losses through fruit rejections.

The non-monetary costs of compliance with the stringent private food safety standards were identified and provision made in the questionnaire for any additional ones from the respondents. The non-monetary costs included challenges involving the need for additional investments in the business for instance, the upgrading and maintenance of facilities, training of staff and running costs of traceability. Costs directly linked to fruit rejections associated with lack of compliance included safety measures acting as barriers to market entry, decline in export quantities and a rise in market value of rejected fruit among others. The costs were rated on a 3 point Likert scale, requiring the respondents to choose one of the following options: increasing, neutral and decreasing. A few cases relating to monetary costs incurred by the industry in complying with the private standards in specific markets were based on secondary data from the CGA database.

Step 4: Establishing any non-price benefits of compliance with set standards

This step sought to establish the possibilities of non-product price benefits that exporters gain through the compliance with the ever-changing international food safety and health standards. Box 7.3 describes the analysis in detail.

Box 7. 3: What are the non-price benefits of compliance to the standards?

This question related to the possibility of benefits obtainable from compliance with the standards besides product quality and the resultant returns. Weights were assigned to each possible non-price benefits experienced by citrus exporters. A 4-point Likert scale was used to rate the level of satisfaction with any of the benefits experienced from complying with the quality requirements of the citrus fruit industry. In this regard, the questionnaire required the respondents to select one of the following options: strongly agree, agree, strongly disagree and disagree to a positive statement regarding the expected benefit.

The benefits of compliance with the standards were pre-determined in the questionnaire with provision also for additional benefits from the respondents. Such benefits include enhanced relationships among supply chain players, increased incomes, access to new markets, reduction in product losses, increased consumer and buyer confidence, elimination of additional efforts for the business, access to remunerative markets and supply chains as well as repression of crisis due to better functioning traceability systems among others.

Step 5: Determining institutional arrangements and strategies to enhance long-term competitiveness of the industry

This step sought to present the strategies that the industry and producers can implement to promote competitiveness. Details of what is entailed in this step are described in Box 7.4.

Box 7. 4: Institutional arrangements and strategies for long-term competitiveness?

Based on the results of the analysis, the strategies chosen should target sustained profitability, ability to reinvest, innovate, expand and perform in an unfair environment. Thus, the strategies and institutional arrangements should uphold an industry's ability to win today, tomorrow and in the future (Esterhuizen and Van Rooyen, 2006).

Answers to the following sub-questions were elicited:

- Identification of the current and potential customers, their prevailing and anticipated needs and preferences.
- What are the competitors' key strengths and weaknesses with respect to their marketing programmes (e.g. products (cultivar mix), distribution, promotion and pricing?
- What are the probable changes in the external environment of the industry?
- What strategies will help give the industry a sustainable competitive position?

The inquiry into the probable changes in the business environment, the strengths and weaknesses of the competitors and the current and potential customers are essential for the identification of strategies for long-term competitiveness in the international market. The questionnaire also made provision for the respondents to give their input in the foreseeable strategies and institutional arrangement necessary for the competitiveness of the citrus industry internationally. Table 7.3 summarises the measurement criteria and approaches used in the five-step analysis of the competitiveness of the South African citrus industry.

Table 7. 3: Data analysis and proposed measurement criterion

Variable	Description	Measurement criterion or indicator
Export competitiveness	A microeconomics concept since it focuses on a single industry Static concept Deterministic (measures costs, prices, market shares <i>etc</i> , which are observed and reflect actual performance)	Market Share Analysis
Major environmental challenges	Dynamic concept of competitiveness which is based on the identification of the determinants of trade Ex post nature of concept	Diamond model (Porter, 1990, 1998) 10 point Likert scale
Opportunities for sustained competitiveness	Stochastic (a number of other variables, which are deemed to determine the competitiveness according to models of a stochastic nature) Ex ante nature of concept	These variables were used as data in statistical analysis of the unobservable indicators
Cost of compliance	Ex post nature of analysis	3-Point Likert scale rating
Non-price benefits	Ex post nature of analysis	4-Point Likert scale rating
Institutional arrangements and strategies	Ex ante nature of analysis	Proposed based on the result findings of the competitiveness of the citrus industry.

7.5. Chapter summary

The competitiveness of an industry is strongly linked to the environment within which it operates. Establishing the nature of the influence and the degree to which each determinant of competitiveness impacts upon the industry is very important for the formulation of strategy for better performance. Continued innovation and outstanding performance is the survival means in the highly competitive international market though sometimes the playing field may

not be even. The level of influence of other key supply chain players is not insignificant as the global business is fast becoming more vertically integrated.

This chapter has discussed 5 steps in the analysis of the competitiveness of the South African citrus industry. These five steps form the pillars of the objectives addressed in this study. The Constant Market Share model was an appropriate tool for this study as it shows the shifts in market shares. The probable causes are complemented by Porter's diamond model as it identifies key problem and enhancing factors. Strategies can thus be formulated knowing which markets have declining shares and strong points for sustainable competitiveness. The evaluation of the influence of supporting organisations and industries help motivate and advocate for a competitive supply chain management.

8.1 Introduction

This chapter presents the research findings. The supply side is characterised by an increase in hectareage under citrus and volumes of fruit produced nationwide. Thus, the capacity of the nation in terms of volume guarantees its long term survival in the market when all things are held constant. The South African citrus industry has been continuously increasing its export quantities to the global market over the past years. This though has been characterised by changes in quantities to different traditional markets and also entry into new markets like the Middle East. The share of the South African citrus fruit in different markets has been marked by both fluctuations and increases, with rises and falls in revenues as well.

The business environment presents challenges for the producers especially the forces from the home diamond. High production costs rule out price competitiveness as an alternative option for the industry in the oversupplied market. This is also a problem in the lesser demanding markets like Russia whose consumers have high bargaining power. The quality of the products is seriously compromised by the transport and harbour inefficiencies despite the efforts made by the producers.

8.2 The general status of the South African citrus industry in the export market

A greater proportion of the citrus products are exported, while the balance is either consumed locally as fresh fruit or processed (Figure 8.1), confirming that the South African citrus industry is export oriented. While a greater proportion of the fresh fruit is exported, it is important to note that part of the processed fruit (especially juice) is also exported. So, the export market is the largest market for the South African citrus producers. Oranges form a greater proportion of the exported citrus products (Figure 8.2).

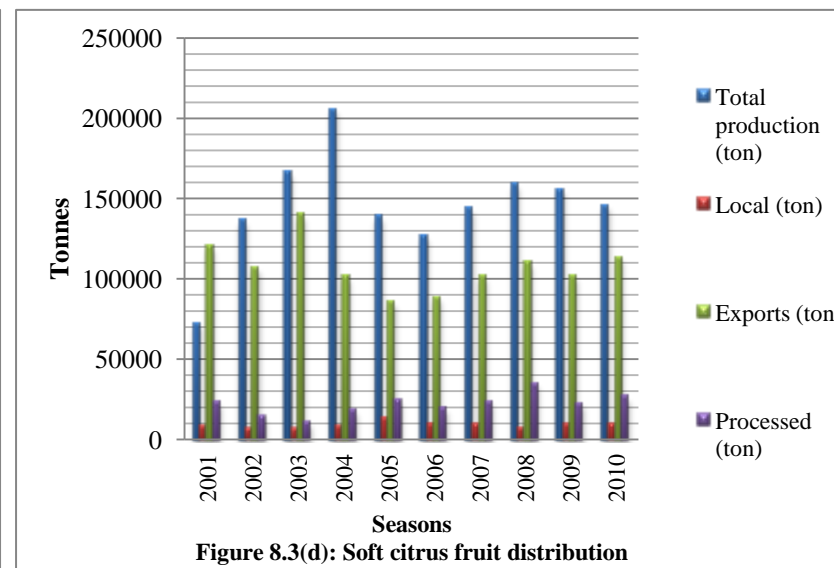
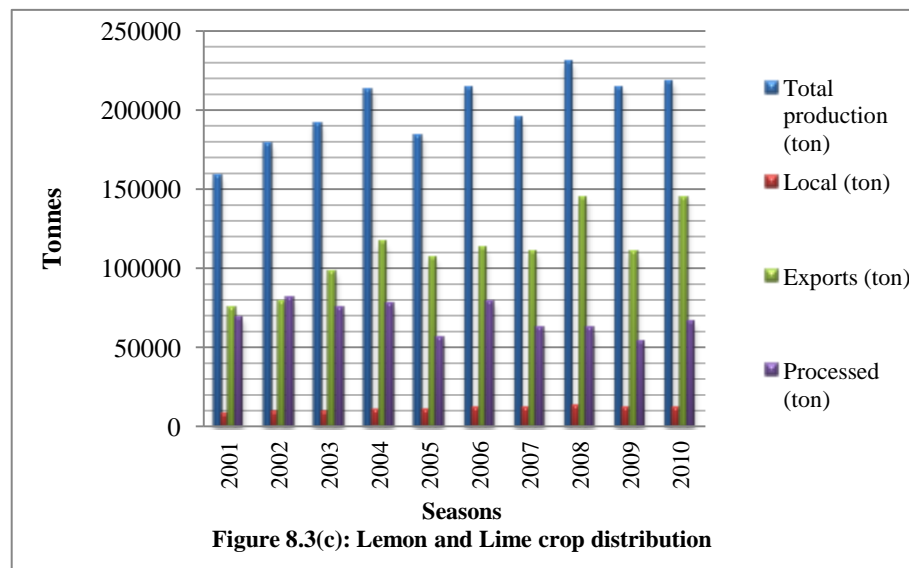
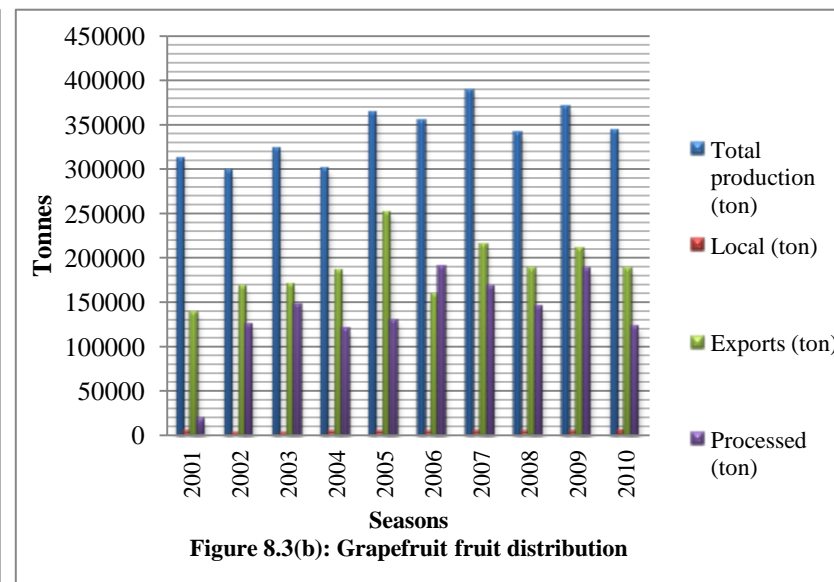
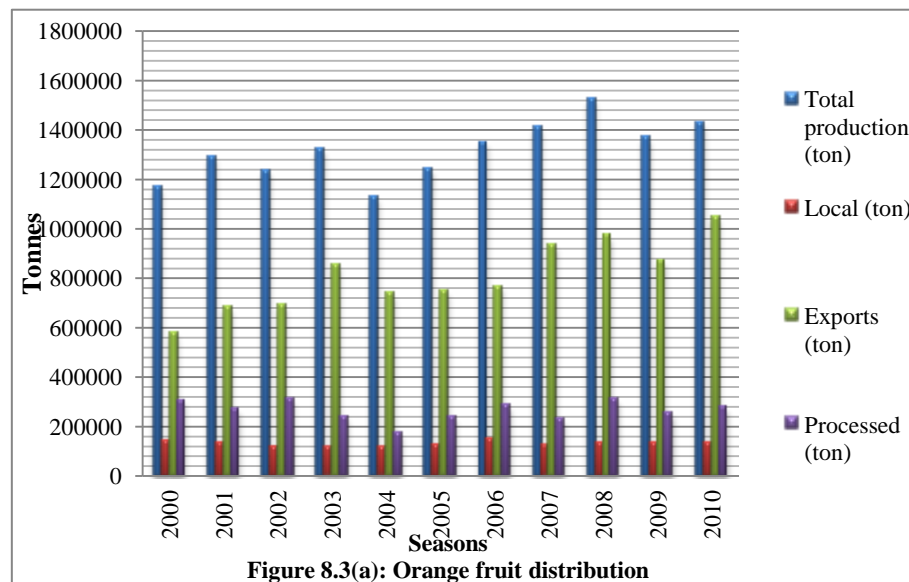


Figure 8. 1: Citrus fruit distribution (Source: Calculated using data from CGA, 2011)

8.3 Market side challenges against export performance

Many factors have been found to impede the competitiveness of the South African citrus in the export markets, in turn negatively impacting on gains. Figure 8.2 below illustrates some of the major challenges working against the profitability of the citrus business in the export market.

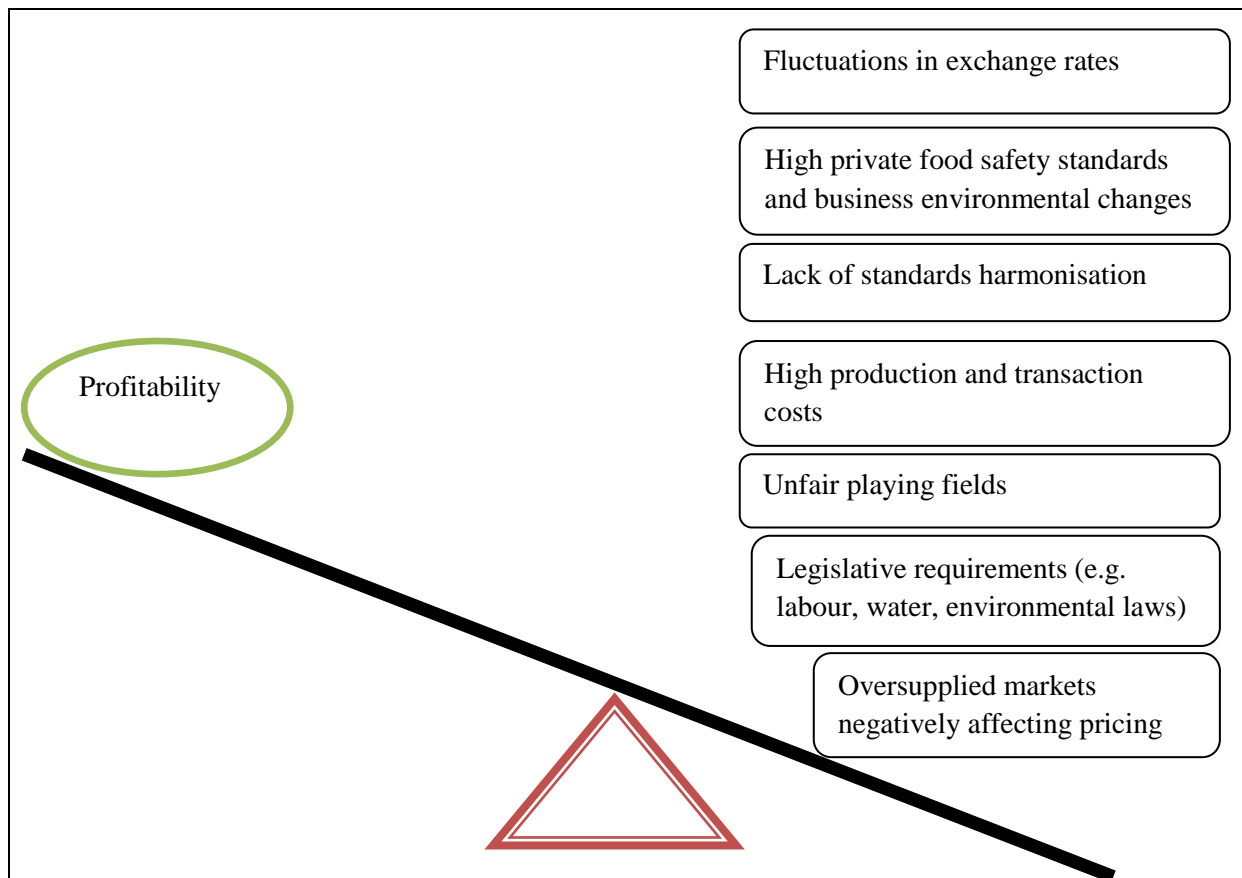


Figure 8. 2: Factors affecting the profitability of the citrus enterprises

Production costs have been on the rise and these are exacerbated by the additional requirements associated with food safety and traceability, adding to the cost of administration load. The costs are also raised by the lack of harmonisation of the global good agricultural practices (GAP) and food safety standards. In spite of rendering the smaller farming units more unsustainable, price competitiveness becomes very difficult for the industry especially for processed citrus products (DAFF, 2010b). The profitability of the citrus industry is also compromised by legislative requirements such as environmental, labour laws and skills development requirements.

8.4 Supply side challenges

Farming involves higher investment in capital requirements that are associated with high risks. Considerable levels of uncertainty surrounding the land tenure systems (land redistribution and restitution) and the security of those still tilling the land is a factor seriously affecting investment. While the land issue has been staggered to unfold for years to come (till year 2013) (CGA, 2009a), any meaningful developments on farmlands may be hampered by unforeseeable uncertainties. Land tenure arrangements that protect land use rights and encourage investment on a long term basis are important for the development of sustainable farm enterprises. A predictable way of acquiring farmland e.g. short-listing and gazetting of targeted farmlands, year of acquiring and compensation arrangements and agreements may be useful. South Africa should learn from its neighbouring Zimbabwe on how fast the agricultural sector can collapse if land acquisition, ownership and title deeds security are not properly handled and defined. Related to this issue is the high crime rate associated with commercial farmers and other farm dwellers within the country (SAPS, 2003). Land security will not only benefit the incumbents but it will save the government through attaining maximum land utilisation. Though gazetting may lead to none-investment in the farm by the current incumbent, the effects may be the same as with living in uncertainty and the risk averse may not upgrade the infrastructure, technology and innovations at the rate and to the level they would have under guaranteed land ownership.

The health of the home diamond has a strong bearing on the performance of a nation's industries. The export sector of the citrus industry is faced with not so few challenges from the production side that negatively affect competitiveness in the export market. These include the supply chain anomalies and logistic challenges among others.

8.4.1 Supply chain challenges

The most critical links in the supply chain include the production unit, packhouses, transporters, cold stores and exporters. Each kind of the chain link has multiple players within it, impacting seriously on coordination. The bulk of the challenges associated with the citrus supply chain are attributed to the increased number of role players that came with the deregulation of the industry (Mather and Greenberg, 2003). The environment has also

drastically changed since 1997, yet certain systems in the supply chain have remained unchanged (Crickmay and Associates, 2010). The major challenges are discussed below.

8.4.1.1 Losses associated with logistics

There is a general lack of good supply chain information on which to base decisions, making the scheduling of vehicles extremely difficult. Increased rates paid for transport impact negatively on profitability and ultimate business sustainability. The rise of the transport cost accounts for 30 – 40% of the price of getting a piece of fruit to the market (DAFF, 2010b). Transport logistics need to be addressed as truck charges take into account the time wasted during waiting, over which the farmers have no control. This is another source of raised costs as the growers and packhouses become ‘price-takers’ (Crickmay and Associates, 2010). Large-scale infrastructural investment in adequate internal road systems and in port handling facilities or cold storage at airports cannot be borne by the producers/exporters alone (FAO, 2007a).

Improved transport efficiency has a propensity of saving costs. Figure 8.3 reflects the potential cost savings per route that the citrus producers will benefit when logistics are addressed. The savings are particularly associated with a specific production area in relation to a port used for exporting fruits. The cost savings are a difference between the current costs paid for transport and the potential to be paid based on reduced delays in ports and better management of backhauling opportunities. An estimated total cost savings amounting to R154 384 833 is expected when transport inefficiencies are addressed (Crickmay and Associates, 2010).

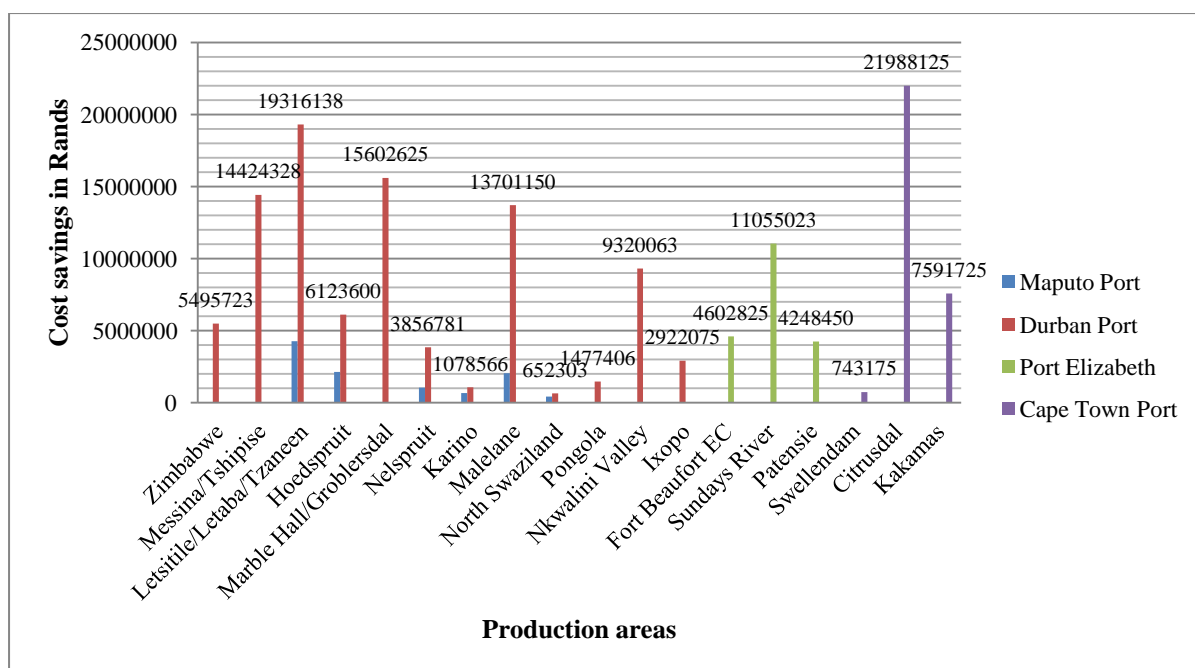


Figure 8. 3: Estimated transport cost savings per route per annum (*Own calculation based on data from Crickmay and Associates, 2010*)

8.4.1.2 Fruit quality assurance

Consumer concerns with regard to product quality and food safety are part of the high ranking influential factors of change in fruit consumption patterns together with higher incomes, improved transport and trade relations (Mashinini, 2006). South African fruit quality is compromised by the delays in transport, raising the quantities of fruit liable to be rejected and in turn impacting negatively on revenues, the reputation of the citrus industry over and above jeopardising the relationship that has been built with the fruit importers. This also has a negative bearing on the profitability of the citrus farming business. Costs are also increased for the cooling of fruit that has remained for longer periods of time in trucks as it will ultimately need long durations of cooling (Crickmay and Associates, 2010). Costs incurred in producing, conveying the fruit subject to rejection and the ultimate value of rejected fruit can never be recovered. Despite the efforts by producers to deliver fruit of high quality, delays within the supply chain attributed to transport problems can render all these investments null and void.

Culled fruit not meeting the fresh fruit market grade is sold to processors. This is usually used for juice extraction. Bulk juice is moved to concentrate plants for evaporation and freezing

into frozen concentrate or to canning plants for retail packaging. However the processed products are heavily taxed in the export market compared to the original whole fruit.

8.4.1.3 Information impacts

Despite the availability of sufficient and good information, there is little adherence to data and information standards. The use of different formats and transfer mechanisms worsen the problem, making it difficult to synchronise data into a coherent set of information (Crickmay and Associates, 2010).

8.4.1.4 Contractual agreements and/arrangements

Farmers make contractual agreements with certain supply chain links like packhouses, cold stores, shipping lines (binding them to certain terminals, as some shipping lines transport containers and others transport break-bulk fruit), importers and fruit sellers (Ortmann, 2005). These contractual arrangements require the delivery of predetermined volumes of fruit to a particular link in the supply chain. However, farmers and exporters may incur losses on selling fruit in certain markets just to maintain their share of the market in anticipation of profitability in future years (Ortman, 2005). There is need for improvement of the marketing channels to allow flexibility for the exporting farmers. Market and marketing channel research should be done in order to explore more opportunities with better offers. Improvement of the transport system especially the harbours may help alleviate the challenge. This is especially important as other sectors of the South African economy can benefit from the improvements channelled towards the citrus industry (Ortman, 2005).

8.4.1.5. Social and safety impact

Illegal and unsafe activities such as excessive working hours, over speeding and truck overloading are resorted to by some operators so as to compensate for the inefficient environment. Consequently this aggravates road accidents, withdrawal of quality operators from the business and denting the image of the industry. Mistrust among supply chain members is not uncommon (Crickmay and Associates, 2010).

8.4.1.6 Environmental impact

The increased stop-start terminal times and resistance to upgrade to newer technology owing to the low margin environment increases carbon footprints (Crickmay and Associates, 2010). Disposing fruit that has failed the certification process presents a risk of greenhouse gas emissions.

8.4.1.7 Integrity

Reactive decision making is seemingly ineffective. Throughput obligations at packhouses, transport, cold stores and terminals are not being fulfilled. There remains an ill-convincing knowledge of the capability and capacity of the citrus supply chain to deliver (Crickmay and Associates, 2010).

8.4.2 Threats of bad international image

Within the two years of adopting the ethical trade codes in the South African citrus industry, the Human Rights Watch has come up with an industry survey that denotes very negative compliance levels with the ethical trading codes. The report touches a variety of entities including the government and citing its failure to promote housing, health and labour rights for farm workers in the Western Cape Province which the report arguably declares to be the better province compared to others (Human Rights Watch, 2011). Very sensitive issues such as the lack of hand washing facilities, toilets and lack of access to drinking water have negative implications on the image of the fruit industry and any claims for the delivery of fruit and fruit products of good quality and safety to the international market. Besides, such cases have a direct implication on health issues associated with international trade which prompted the need for such issues as ethical trade, packaging and traceability among others.

The labour inspectors' failure to comply with health and safety regulations contravenes ethical trade as the best practices in agriculture are not promoted (Human Rights Watch, 2011). The report may have far-reaching implications especially considering the recommendations to international consumers which include the inquiry into the human rights and labour rights conditions on farms that grow the products they purchase and the need to push retailers to only purchase from farms with working conditions that meet international

standards (Human Rights Watch, 2011). Another forceful recommendation to consumers is the need to ask for ethical trading initiatives including strong assurance measures, including independent third-party audits down the supply chain, so that consumers can be confident that “ethical trade” products they purchase are in fact made without the exploitation of workers. The retailers are urged to put pressure on suppliers to comply with the law and to improve labour, health, and housing conditions (Human Rights Watch, 2011). In fact, the title of the report itself is forceful to any reader: “Ripe with abuse!”. Considering the sensitivity of the report coupled with the power of the consumers and retailers in today’s global trade environment, serious consequences may befall the industry if stern measures are not put in place. Serious losses might be incurred especially considering the share of the produce destined for the export market.

8.5 Organic fruit production

South Africa is one of the estimated 30 countries that produce and export organic citrus. Despite the South African citrus industry ranking second in overall citrus export worldwide, it has lesser contribution towards the organic citrus products exports, after Italy, USA, Brazil, Costa Rica, Greece and Spain, in their decreasing order (Lui, 2003). This corresponds to the amount of production South Africa has compared to other top organic citrus producers. The main organic citrus products exported by South Africa are oranges and grapefruits. Output growth has been noted. The potential growth linked to the South African citrus products have a potential to yield benefits in the future as the retail sales of the main markets have been noted to increase by more than 20% per year since 1998 (Ferguson, 2004). However, the following challenges associated with organic citrus product exports have to be taken into account when considering expanding the production and supplies to the developed nations.

- (a) strict requirements of the target markets such as packaging, consistency, quantity and quality requirements and the SPS measures.
- (b) acceptance of organic certification in the target market (Ferguson, 2004). Exports from South Africa attract certification of the input by the destination country as the country in question’s Laws and Regulations dictate (Barrow, 2006).
- (c) the profit margins in terms of production costs and various price premium scenarios (Ferguson, 2004).
- (d) the burden of additional administration loads and costs (Barrow, 2006).

(e) certification fees of consumer safe produce.

Italy and Spain together supply over 95% of all the exported fresh organic citrus consumed in the European Union (Ferguson, 2004). The remaining 5% is supplied by other nations including South Africa.

8.6 Competitiveness of the South African citrus industry

This section presents the changes in quantities traded to top lucrative markets and the emerging ones such as the Middle East. The trends (in percentage) of the share of the South African citrus fruit in selected international markets indicate fluctuations and in some instances a decline between 2000 and 2008. The general trend of the value of the South African citrus fruit in world markets between 1987 and 2008 generally corresponds with the trend of the fruit quantities traded. The Constant Market Share analysis results are also discussed in detail in the subsections 8.6.3.

8.6.1 The composition of South African citrus fruits in different export markets

The major export market destinations for South African citrus products for the previous 5 seasons are Middle East, South East Asia, UK, Central Europe, Americas and Africa. However, the South African citrus products are not evenly distributed among these major destinations. The composition of the South African citrus exports (in volume terms) to different countries of destination is summed up in detail in Table 8.1. There has been a general downward trend (percentage terms) of the share of oranges between 2000 and 2008 in most markets though fluctuations are evident for markets such as the Netherlands, Asia and Spain. Grapefruits show a mixed trend between a fluctuating behaviour and an upward trend between the year 2000 and 2008. An upward trend is reflected in Africa, Portugal, Italy and Japan markets though there are marked surges for some seasons. This is also a common reflection for the soft citrus and lemons and limes. It is important however to note that the values presented by FAOSTAT are at times estimates based on trends, official and semi-official data. This may give a compromise on the actual fact underlying the trends in export volumes and the corresponding market shares. Nonetheless, it was the best source for world trade data available and not all data was estimates. The anomalies may be responsible for outliers such as are found in the Belgium and Spain orange markets for the season 2000 as

well as the Qatar 2003 lemon market where South Africa scored a very high share which has not been reached in each of the other years.

Table 8. 1: Composition of South African citrus exports to different markets

Country of destination	Share of total South African fruit exports (%)								
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Share of total South African orange fruit in export markets									
Belgium	60.0	31.6	20.6	18.2	17.7	18.9	17.8	35.9	21.7
France	2.7	3.1	2.3	2.5	2.3	3.6	2.6	1.8	1.8
Germany	0.1	2.5	2.2	1.9	1.6	1.8	1.2	1.6	2.1
Italy	14.4	25.7	30.3	22.6	22.3	72.7	47.9	38.0	35.2
Netherlands	31.1	33.3	28.2	26.8	37.9	45.6	36.8	28.6	39.1
Portugal	6.2	3.9	3.7	3.1	3.4	3.6	12.9	14.9	19.0
Spain	62.7	25.6	35.6	25.6	36.9	38.7	37.8	40.6	34.0
United Kingdom	33.4	27.4	28.2	21.0	17.4	25.0	20.3	22.9	27.7
Africa	44.4	63.5	69.2	69.1	66.0	9.7	55.6	57.4	59.6
Americas	9.5	10.1	11.0	12.7	12.9	30.3	17.8	11.1	13.5
Asia	15.7	15.5	17.2	14.1	13.4	55.2	37.8	22.5	29.9
Oceania	0.0	2.3	0.5	0.0	0.2	0.1	0.9	0.8	0.2
Eastern Europe	4.2	9.5	10.9	12.5	11.3	8.9	11.1	16.1	11.9
Northern Europe	0.1	0.1	0.0	0.1	0.1	0.4	0.2	0.1	0.2
Southern Europe	1.1	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.2
Share of total South African grapefruit in export markets									
Belgium	30.0	21.2	15.4	11.5	20.0	24.6	12.2	45.7	10.0
China	0.0	0.0	0.7	0.8	0.2	1.6	1.1	1.4	1.3
Hong Kong	14.3	12.8	14.4	14.3	6.8	91.5	48.8	26.8	20.3
Denmark	0.0	0.0	0.8	0.0	0.0	9.1	1.1	10.4	20.0
France	3.5	1.7	3.9	3.5	5.0	7.4	5.9	5.3	3.6
Germany	0.6	5.0	6.9	5.3	5.7	6.6	4.7	2.6	3.2
Italy	11.7	22.5	26.8	40.1	31.9	42.4	43.5	40.5	31.4
Japan	10.7	16.7	13.8	23.7	25.6	22.1	21.5	31.2	32.4
Netherlands	29.9	20.7	30.5	36.1	61.3	67.2	24.0	27.1	32.5
Republic of Korea	2.2	0.0	0.0	0.0	0.0	0.0	18.4	0.4	0.0
Sweden	0.0	0.0	0.0	1.2	1.8	4.1	44.1	20.5	7.4
United Kingdom	29.6	20.8	37.4	31.6	31.7	43.8	32.2	31.9	42.9
Americas	6.0	3.6	5.3	4.8	3.9	31.4	9.0	5.0	4.5
South-Eastern Asia	6.0	2.9	15.5	13.7	11.7	19.6	11.9	23.0	10.0
Eastern Europe	0.3	2.0	3.2	4.8	4.9	6.2	10.9	10.2	7.3
Northern	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1

Europe									
Share of total South African lemons and limes in export markets									
Qatar	0.0	0.0	8.9	59.8	0.0	34.7	15.7	14.6	11.5
Americas	0.0	0.0	0.1	0.4	0.2	0.2	0.2	0.4	0.5
Europe	0.0	0.0	2.9	5.7	4.5	5.9	4.3	2.9	6.3
Country of destination	Share of total South African fruit exports								
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Oceania	0.0	0.0	0.0	0.0	1.4	0.4	0.0	0.3	0.0
South-Eastern Asia	0.0	0.0	15.3	12.1	13.6	39.3	30.8	26.9	22.6
Share of total South African soft citrus in export markets									
Czech Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Ireland	2.3	0.5	0.3	0.9	0.2	0.4	3.9	9.2	16.3
Netherlands	7.7	21.4	8.0	8.2	8.5	6.9	3.8	8.0	9.8
Spain	0.2	35.9	1.3	7.4	3.2	5.9	3.1	18.3	5.6
United Kingdom	14.2	19.3	14.6	13.9	11.1	14.7	12.7	18.8	17.5
Africa	75.2	62.6	63.0	22.2	27.2	29.5	26.5	20.0	17.1
Americas	6.1	4.9	4.0	5.4	6.4	7.0	10.3	4.8	3.9
Asia	3.2	3.7	2.4	1.7	1.9	2.0	2.0	2.2	2.0
Eastern Europe	0.1	0.3	0.3	0.6	1.3	0.6	0.7	0.6	1.4
Northern Europe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Own calculations based on FAOSTAT and DAFF, 2010b

Figure 8.4 below is a graphical demonstration of the trend of the share of the South African citrus fruit in selected export markets. The percentage of fruits supplied to the traditional markets show fluctuations over the years. A decline in percentage shares can either reflect a stable supply of the South African citrus to markets relative to the increases in their import quantities. It can also indicate a decline in the South African volumes to markets with stable import quantities. The latter however was not found to be likely as there have been an upward trend in the import quantities of most markets. Only the Constant Market Share model can help identify the underlying evidence of the trends shown in different markets.

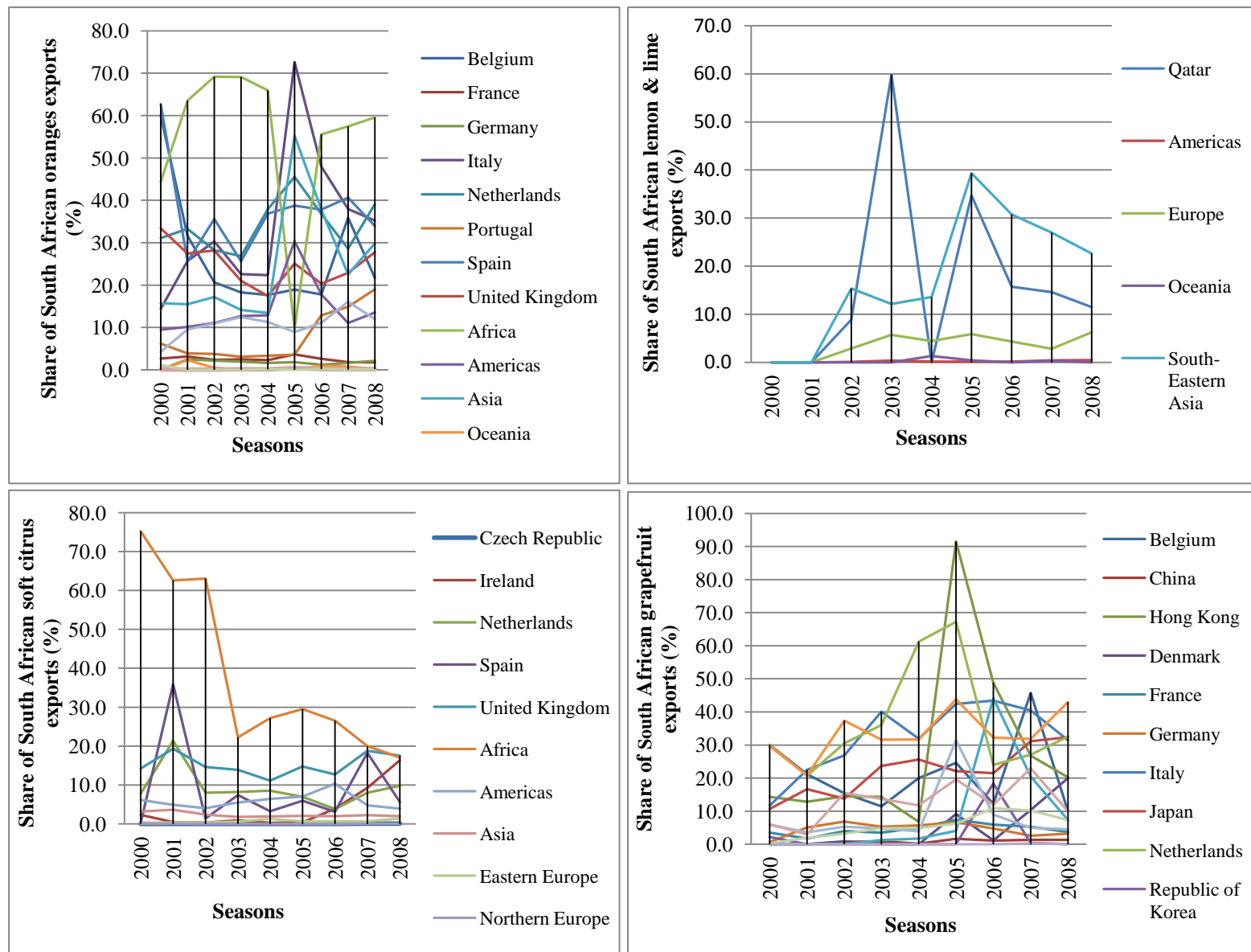


Figure 8. 4: Share of total South African citrus exports

8.6.2 The general trend of the value of SA fruit in world markets

The trend of both the market share of export value and quantities exported show a general surge for all the four varieties of citrus fruit in the period 1994 to 1996 as reflected in Figures 8.5 to Figure 8.8. This corresponds to the deregulation phase of the South African fruit industry. It is important however to note that though there has been changes in markets especially the focus towards Middle East and the growth of the Japanese and Russian market for South African citrus fruit, the general trend of total value (revenues) obtained corresponds to the general trend of the share of volumes exported. In general, not much might have been lost in switching markets in terms of gains obtained from exports. Porter (1990) argues however, that serving unattractive markets may lead exporters to resort to incremental volume in order to improve overall cost position.

The share (as a percentage of world totals) of South African lemons and limes export quantities and value for the period 1987 to 2008 is presented in Figure 8.5. The market share has shown a general upward trend between 1996 and 2005, after which it dropped in 2005 and rose abruptly in 2008.

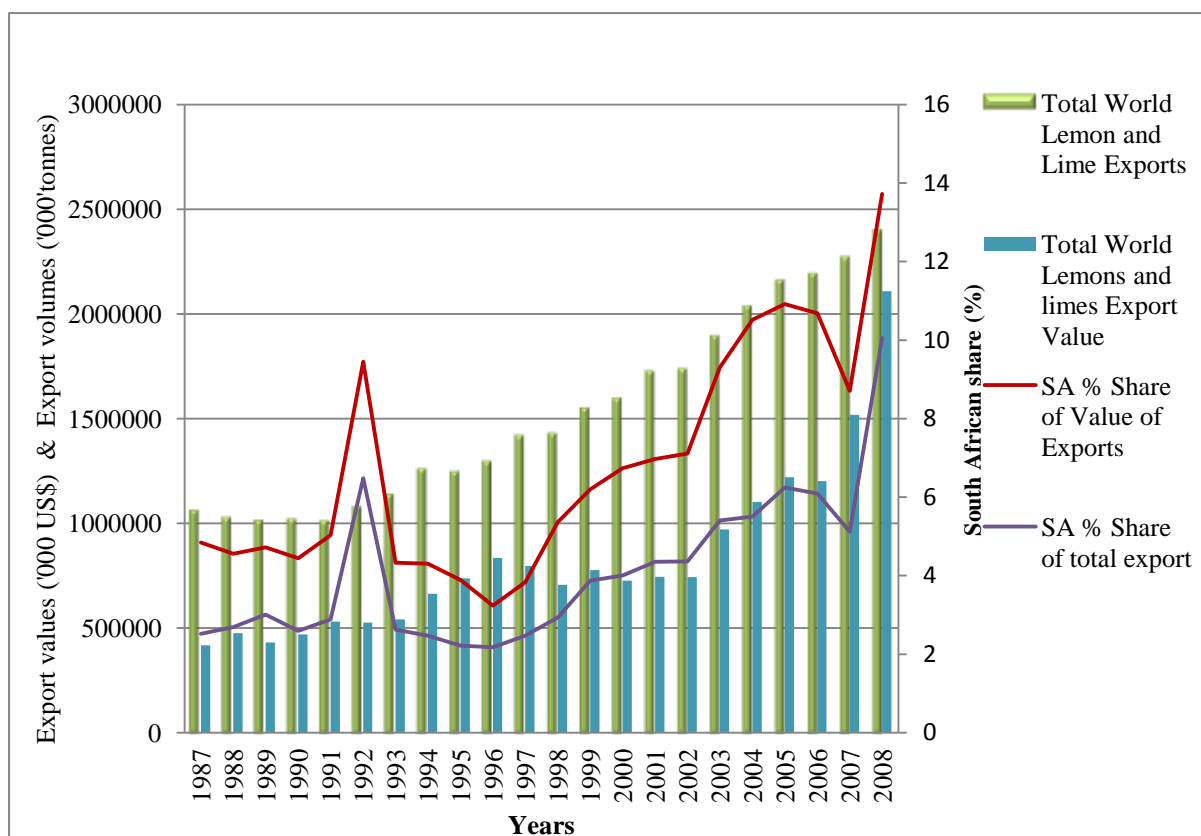


Figure 8. 5: Lemons and limes trends between 1987 and 2008(Own calculations based on data from FAOSTAT, 2010).

Soft citrus shows a surge in the period 1994 but then the trend in both the share and revenues exponentially rose with some significant marked fluctuations between 1999 and 2002 (Figure 8.6). The trend of soft citrus gently rose after 2002. However, revenues do not reflect a corresponding behaviour. Generally, there has been a positive increase in the share of the soft citrus in world markets, from almost zero by 1987 to nearly 3% in 2008.

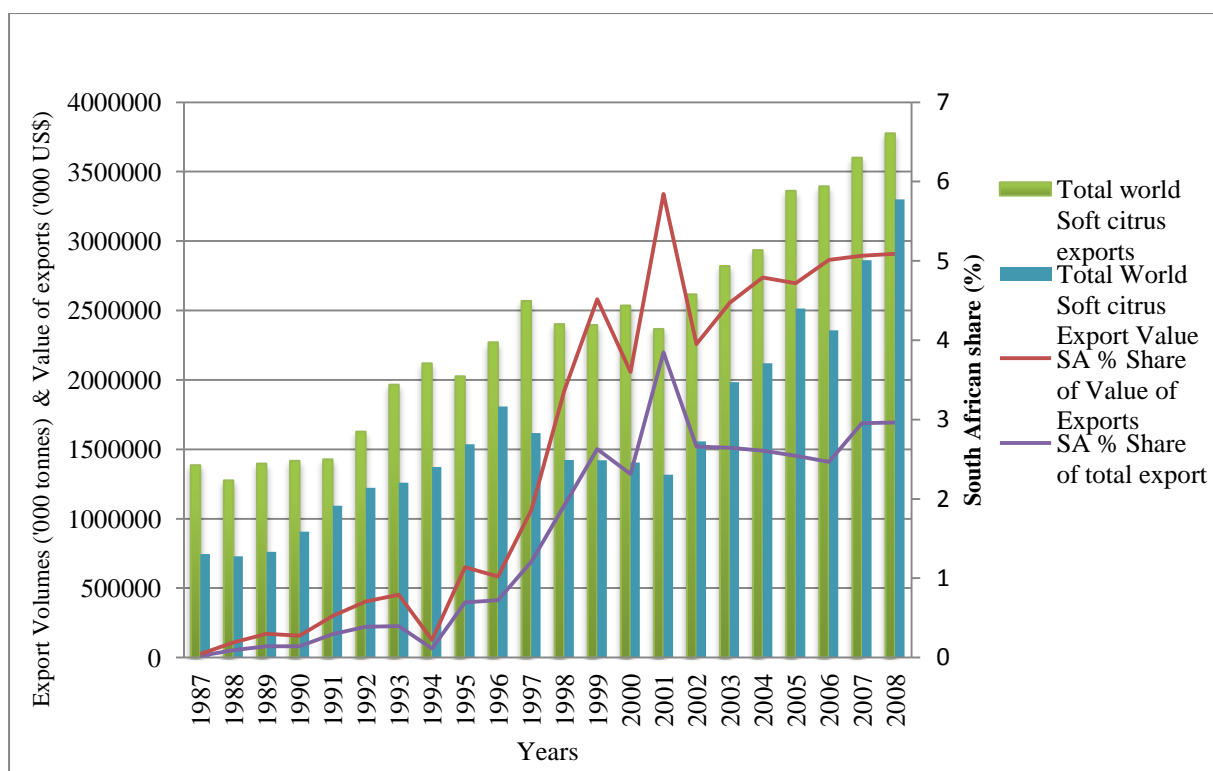


Figure 8. 6: Soft citrus trends between 1987 and 2008 (*Own calculations based on data from FAOSTAT, 2010*).

The general trend of the world export volumes for Grapefruit and Pomelos has been fluctuating since 1987 (Figure 8.7). Despite a general rise in South African grapefruits from 1996, a sharp decline in the export market share (as a percentage) has been recorded from 2005 to year 2008. The ban of SA exports to the US market on the basis on Citrus Black Spot disease (CBS) might account for this since the US is the largest consumer of South African grapefruit. Since the ban has been lifted following the confirmation of 16 districts to be CBS free (CGA, 2008) the volumes of grapefruit to the US are expected to rise and thus raise the share of the nation's fruit in the world market.

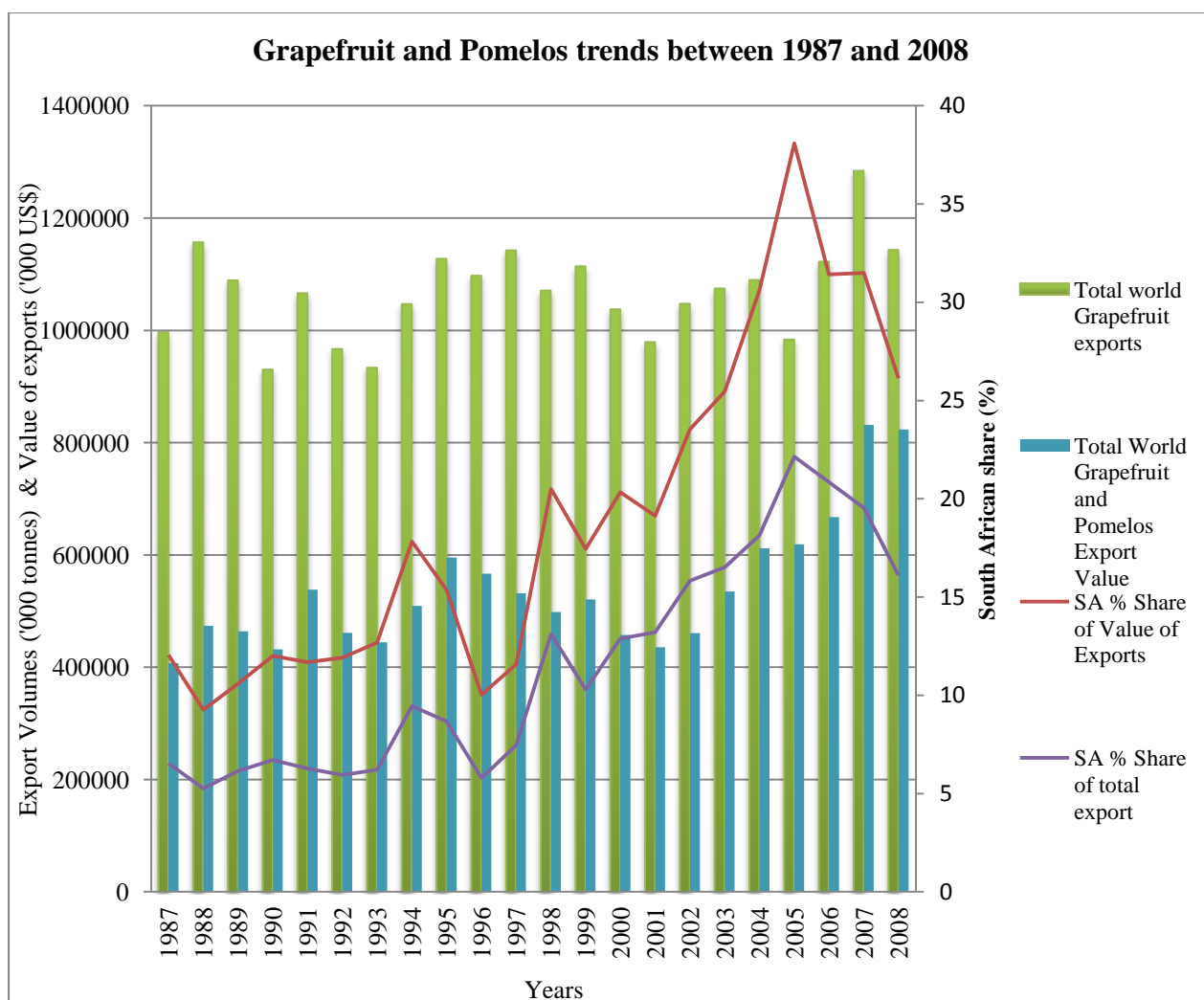


Figure 8. 7: Grapefruit and Pomelos trends between 1987 and 2008 (*Own calculations based on data from FAOSTAT, 2010*).

World trend of the export of oranges between 1987 and 2008 and the market share for SA does not differ so much from the trend portrayed by the grapefruit and pomelos (Figure 8.8). Though a steady rise is shown after year 2002, the 2007 share of both the value and export volumes fell. World statistics were however not available for the period beyond 2008 for an analysis of the current share of the industry in world markets.

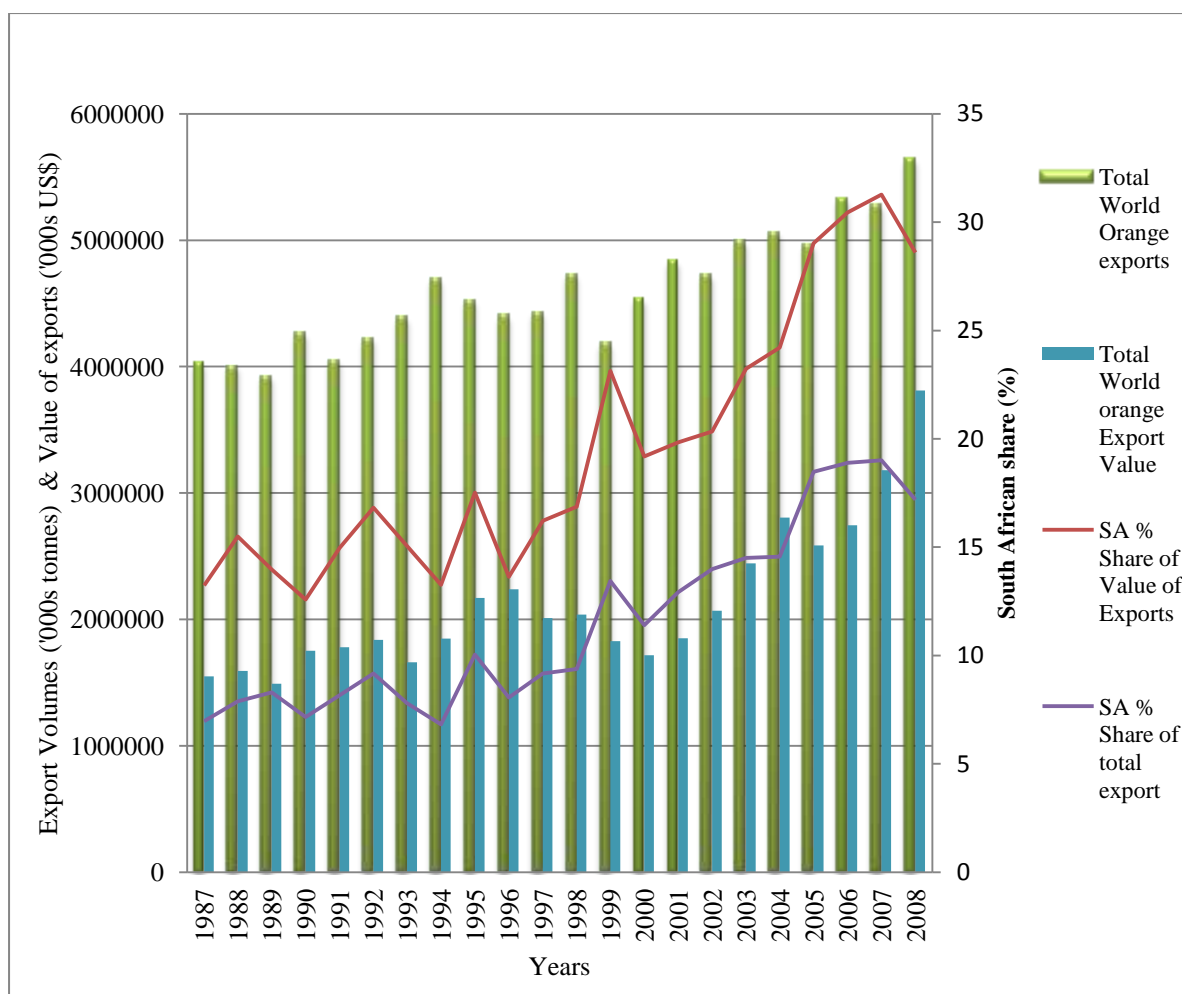


Figure 8. 8: Orange trends between 1987 and 2008 (*Own calculations based on data from FAOSTAT, 2010*).

8.6.3 Results of the Constant Market Share (CMS) Analysis of the South African citrus fruits

The three factors used to explain the reasons for the growth of a country's exports were analysed through the use of the Constant Market Share analysis (CMS). These are the factors relating to the growth of the export market relative to the world export growth (structural effect), improvements in competitiveness of the exporting country (competitive effect) and the combined effect of competitiveness and structure (second order effect) (Barbaros, Akgungor and Aydogus, 2007). A positive index denotes a competitive scenario.

The competitive effect contributed positively to the increase of orange exports in Greece, Italy, Portugal, United Kingdom, Asian and Northern Europe markets (Table 8.2). However, South African oranges were not competitive in France, Spain and Eastern Europe markets.

Table 8. 2: The Constant Market Share Analysis of the South African oranges (2000-2008)

	2000- 2004			2005- 2008		
	Structural Effect	Competitive effect	Second order effect	Structural Effect	Competitive effect	Second order effect
Belgium	-0.05	-0.18	0.01	-0.07	0.02	-0.01
France	1.43	-0.03	-0.61	-1.64	-0.05	-1.59
Greece	0.08	-0.85	-0.18	-0.06	0.19	0.00
Italy	1.18	0.14	-0.33	-0.72	0.22	-4.00
Netherlands	-0.02	0.05	-0.02	0.40	0.01	-0.14
Portugal	-0.81	-0.11	-0.69	3.60	0.63	0.62
Spain	0.51	-0.10	-0.42	0.03	-0.01	0.02
United Kingdom	0.10	-0.12	-0.01	-0.14	0.08	-0.03
Africa	1.00	0.12	0.11	0.25	-0.04	0.08
Americas	0.19	0.09	0.03	0.50	0.02	0.96
Asia	0.17	-0.04	-0.03	-0.02	0.26	-0.08
Eastern Europe	1.58	0.42	1.22	1.78	0.04	-0.50
Northern Europe	39.05	0.10	10.61	-24.09	0.18	-204.09
Southern Europe	13.69	-0.21	-9.02	0.36	-0.01	-0.96

Source: Own calculations based on data from FAOSTAT, 2010 and DAFF, 2010b

While there is a positive general competitiveness of the South African lemons and limes in the Americas, the changes in the import quantities had a greater influence compared to the general improvement on competitiveness (competitive effect) of the industry (Table 8.3). The lemons also performed positively in Oman and Africa for the period 2000 to 2004. However, the performance declined for the period 2005- 2008. The competitiveness of the South African lemons and limes deteriorated in the European, South Eastern Asia and Oceania despite the positive Constant Market Share indices.

Table 8. 3: The Constant Market Share Analysis of the South African Lemons and Limes (2000- 2008)

	2000- 2004			2005- 2008		
	Structural Effect	Competitive effect	Second Order effect	Structural Effect	Competitive effect	Second Order effect
Bahrain	0.91	0.42	0.22	-0.64	0.01	0.10
Kuwait	-6.59	0.79	-6.40	6.00	0.45	573.67
Oman	5.03	1.74	63.48	-7.31	5.77	-255.46
Qatar	-3.18	0.46	-1.57	3.56	-0.10	-0.49
Saudi Arabia	-0.25	0.62	-0.17	0.53	-0.37	-0.82
United Arab Emirates	0.20	0.28	-0.01	0.53	0.00	-16.82
Africa	0.01	0.42	0.04	0.25	-0.24	-0.87
Americas	82.65	0.30	9.72	51.56	0.78	129.05
Europe	1.23	0.38	0.69	1.19	0.16	0.49
Oceania	0.64	0.25	0.64	0.61	-0.25	0.43
South Eastern Asia	0.18	0.22	0.28	0.18	0.15	0.03

Source: Own calculations based on data from FAOSTAT, 2010 and DAFF, 2010b

South Africa was able to increase its grapefruit exports to Eastern Europe, Germany, Denmark and South Eastern Asia (Table 8.4). South African grapefruits have shown an upward trend of competitiveness in China, Hong Kong and Denmark between 2000 and 2008. The growth was mainly attributed to the growth of the imports in these markets as reflected by the rise in structural effect. However, the competitive effect in markets such as France, Greece, Italy, Netherlands and Spain show a downward trend.

Table 8. 4: The Constant Market Share Analysis of the South African Grapefruits (Including Pomeelos) (2000- 2008)

	2000- 2004			2005- 2008		
	Structural Effect	Competitive effect	Second Order effect	Structural Effect	Competitive effect	Second order effect
Belgium	-0.29	-0.08	0.05	0.21	-0.08	0.00
China	-9.43	0.06	1.29	-6.62	0.39	0.25
Hong Kong	-0.57	-0.13	0.36	0.00	0.24	-1.64
Denmark	-0.61	0.00	-6.29	1.71	5.91	44.86
France	-0.57	0.10	0.37	-0.82	-0.10	-0.32
Germany	-5.25	2.03	-19.50	9.17	-0.99	-26.41
Greece	0.51	0.00	0.24	-0.04	-0.23	0.62
Italy	0.13	0.44	0.45	-0.39	-0.31	-0.11
Japan	0.14	0.35	-0.12	-0.90	0.16	-8.81
Netherlands	-0.34	0.26	-0.09	0.47	-0.24	-0.21
Republic of Korea	-0.34	-0.25	-0.01	20.06	0.00	-156.56
Spain	0.84	0.35	-0.20	0.82	-0.30	2.27
Sweden	6.99	0.35	3.82	3.36	1.12	-49.78
United Kingdom	-0.14	0.02	0.05	-0.23	0.10	-0.02
Africa	0.13	0.23	-0.17	-0.05	-0.25	-0.22
Americas	-0.47	-0.08	-0.21	0.11	0.02	-2.13
Asia	0.26	0.25	-0.11	-0.78	0.13	-4.66
S.Eastern Asia	0.49	0.24	-1.16	2.16	-0.07	-1.75
Eastern Europe	61.60	4.53	135.65	100.97	2.35	452.70
Northern Europe	0.00	0.00	0.00	-365.25	3.53	-3366.58

Source: Own calculations based on data from FAOSTAT, 2010 and DAFF, 2010b

No fruit was exported to Czech Republic between 2000 and 2004 (Table 8.5). The change in exports to the United Kingdom market declined between the periods 2000- 2004 and 2005- 2008 as manifested by the structural effect. While the South African soft citrus fruit showed some significant competitiveness, the amounts exported to the UK market did not increase in proportion to the general rise of the soft citrus imported in the same. Increase in the import volumes in Eastern Europe impacted positively on the South African soft citrus exports as indicated by the rise in the structural effect from 80.53 to 269.46 between the periods 2000- 2004 and 2005- 2008. Increases in Asian soft citrus imports contributed to the positive export performance of the South African soft citrus as marked by the structural effect index rising from -0.19 to 8.39.

Table 8. 5: The Constant Market Share Analysis of the South African Soft citrus (2000-2008)

	2000- 2004			2005- 2008		
	Structural Effect	Competitive effect	Second order effect	Structural Effect	Competitive effect	Second order effect
Czech Republic	0	0	0	-57.03	0.07	69.08
Ireland	1.67	-0.23	-3.24	8.41	1.75	13.78
Netherlands	1.95	0.03	1.10	1.22	0.04	-0.76
Slovenia	-1.70	-0.02	0.17	1.56	0.00	0.00
United Kingdom	0.82	-0.06	-0.03	-0.32	0.11	-0.05
Africa	0.11	-0.16	-0.01	0.49	-0.03	-0.02
Americas	-0.26	0.01	0.25	0.87	-0.17	0.06
Asia	-0.19	-0.10	-0.09	8.39	0.01	-0.28
Eastern Europe	80.53	3.18	361.20	269.46	0.41	-944.71
Northern Europe	344.47	0.00	-31.72	-3.35	0.30	24.55

Source: Own calculations based on data from FAOSTAT and DAFF, 2010b

South African trade data to the newly emerging markets (Middle East, Russia, Japan) was not available for the period ranging 2000 to 2008. However, Figure 8.9 shows the current share of volumes exported to these markets in relation to the other markets during 2008 and 2010. The percentage of oranges exported to the Russian market rose from 11% in the 2008 to 14% in the 2010 seasons (CGA, 2010b; 2009a). For the Middle East market the percentage of oranges rose from 18% to 23% for the two seasons.

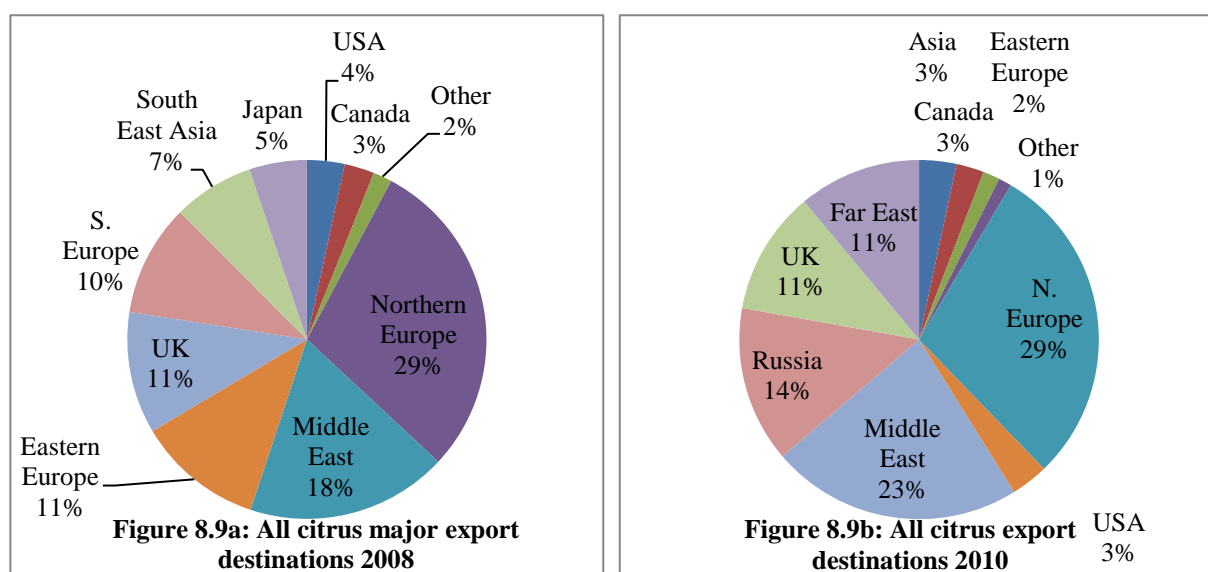


Figure 8. 9: All citrus destinations for the year 2008 and 2010 (Data from CGA, 2010, 2009a)

The South African citrus industry has been on export of its fruit for over a century now and has established reputation and close relationships with most of its traditional market destinations. This could account for the reason it has withstood the test of the changes in the home base environmental factors such as land reform and deregulation. These environmental elements have had serious impacts on the agricultural industries during their infancy stages with many job losses experienced in the sector (Mather, 1999; Mather and Greenberg, 2003). Export quantities were also seriously affected partly due to the deregulation and inexperience of the consequent newly emerging exporters. Since the CMSA proved that the competitiveness of the South African citrus industry's orange fruit in markets such as Italy, Portugal, the UK, Asia and Northern Europe (between the period 2004 and 2008) is due to its inherent outstanding performance, it is most likely that the shock of deregulation, land reform and other home diamond forces may be easing out. It is most likely that due to the asset specificity nature of the industry, the best alternative left to the producers was to step-up management strategies and infrastructure developments focused towards ensuring fruit of good quality for the non-quitters.

8.7 The Costs and benefits of compliance with food safety standards

Since smallholder farmers are the most affected by food safety standards, this study investigated the perceptions of this class of producers about the impact these forms of environmental factors have on trade. Both the costs and benefits were noted.

8.7.1 Cost of compliance

The producers noted the general significant trends in the costs associated with the stringent standards (Table 8.6). The costs are either on the increase (+), decreasing (-) or just stable or average (+/-). Cost of compliance with the standards, running costs of traceability systems, cost of facility maintenance and food safety measure used as trade barriers are on the increase. These are the most recommended for exporters to prove in order to remain sustainable in the export markets. These may present barriers to performance in the international markets without external intervention especial for the financial and capital resource challenges groups of producers especially the emerging and smallholders. Costs of staff training programs, audit and certification as well as decline in export quantities are not

as severe as they show an average trend. However costs of fruit rejected on the basis of exceeding MRL and facility upgrading are on the decrease.

Table 8. 6: Cost of compliance with the safety standards

Cost of Compliance	RATE
Staff training programs	+/-
Audit and Certification	+/-
Phytosanitary issues (disease/ pest eradication or control)	+
Facility upgrading	-
Investments targeted at enhancing the capacity in production and distribution systems	+/-
Market value of products rejected due to poor quality	-
Market value of products rejected due to exceeding MRL	-
Maintenance of facilities	+
A rise in product prices impacting negatively for poor consumers	+
Food safety measures (unintentionally) acting as trade barriers	+
Running cost of traceability systems	+
Net additional cost of compliance e.g. production costs	+
Decline in export quantities	+/-
Trade name switching	+/-

+ = *increasing* - = *decreasing* +/- = *Average*

There have been some significant fruit rejections from the export markets. A few examples picked for this study include rejections from the Korean, Japanese and the US market. These are discussed below.

8.7.1.1 Fruit rejections in selected markets

The Korean and American markets show an analysis of the sub-varieties (e.g. cara cara, midnights, deltas, valencias) within the main class used throughout this study (oranges, soft citrus, lemons and limes as well as grapefruits). This however does not present a problem as the main focus is the revenue lost in either case not the differences among the varieties. Fruit rejection in the Korean market for the 2008, 2009 and 2010 seasons is shown in Figure 8.10. Midnights have an almost stable rejection rate, while the navels improved to full compliance after a 19% rejection percentage in 2008. Valencias have a low rejection rate in the Korean market.

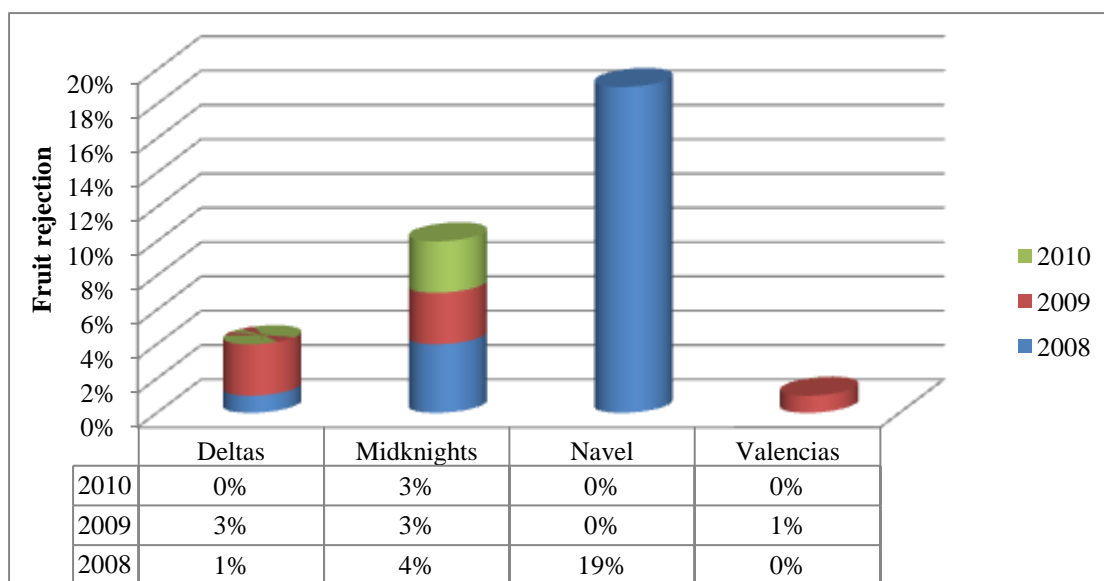


Figure 8. 10: SA fruit rejections in the Korean market for the 2008- 2010 seasons (*Own calculations using data from CGA Statsbook, 2011*)

There was no rejection of the lemons in the Japanese market for year 2008 and 2010, save for the 1% rejection for year 2009 (Figure 8.11). Grapefruits and oranges have significant rejection rates in the Japanese market though an improvement from 8% in 2008 to 4% in 2010 for the grapefruits and 13% in 2008 to 5% for year 2010 for the oranges is reflected.

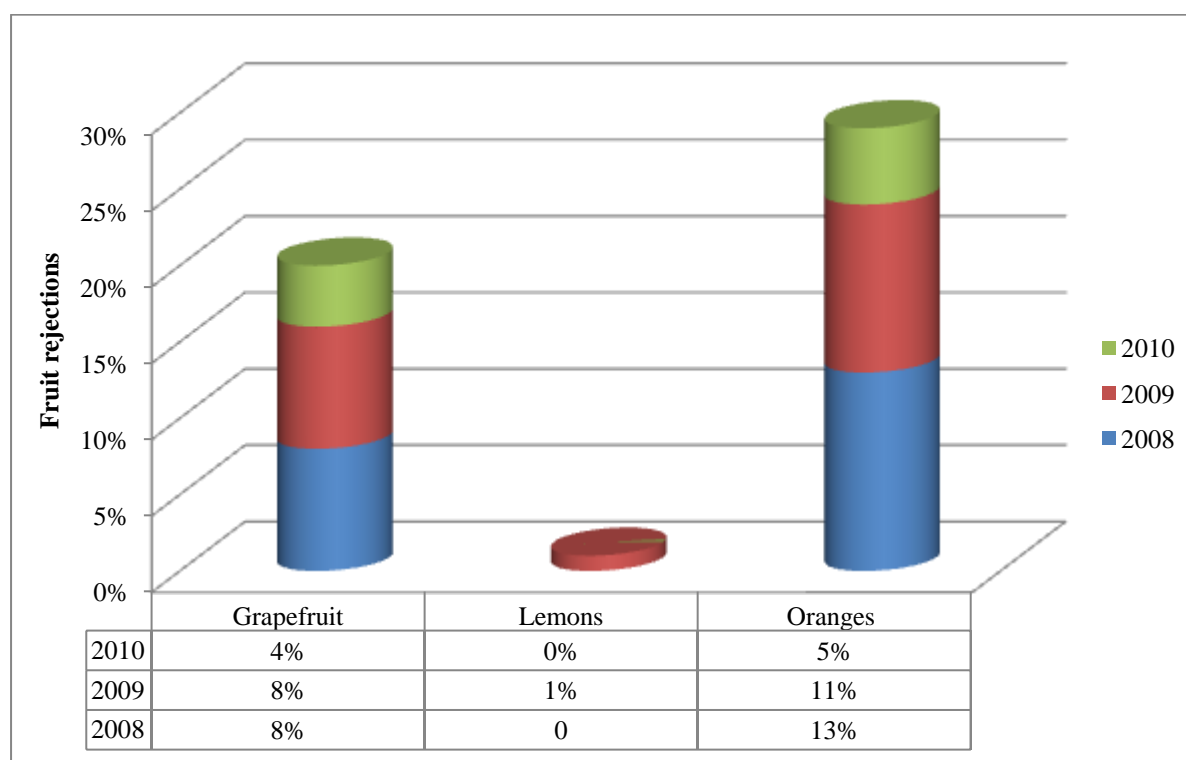


Figure 8. 11: SA fruit rejections in the Japanese market for the 2008- 2010 seasons (*Own calculations using data from CGA Statsbook, 2011*)

Rejection of the South African citrus fruit in the American markets are on the rise for most cultivars especially Cara-Cara, mandarins, Minneola and novas between 2008 and 2010 (Figure 8.12). Mandarins reflect a sharp surge between two high rates of rejections of 2008 and 2010. The bulk of these rejections have been linked to blemishes, insufficient colour and collective deviation. This shows the need to improve on quality, especially for the American market as it is characterised by high rejection rates.

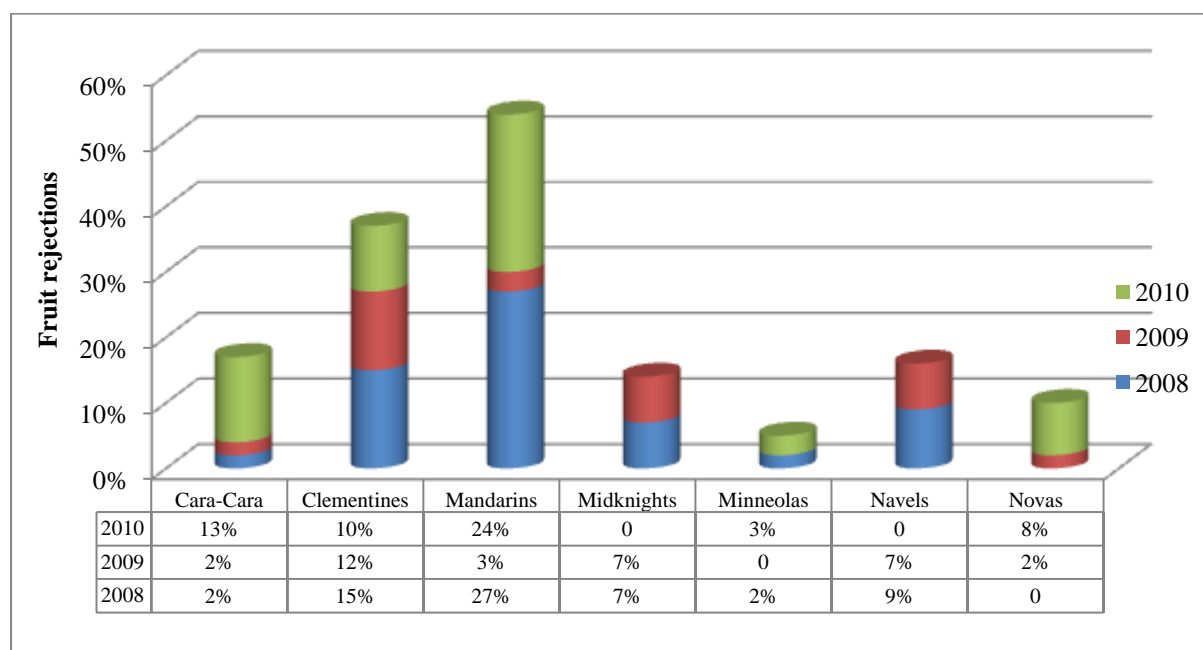


Figure 8. 12: SA fruit rejections in the American market for the 2008- 2010 seasons
(Own calculations using data from CGA Statsbook, 2011)

8.7.1.2 Revenues lost through the rejections in the selected markets

Figure 8.13 below shows the amount (in Rands) of revenues lost in the Korean market resulting from fruit rejection. There is generally a decline in the total amount of revenue lost between year 2008 and 2010, with the highest amount lost in 2008. More improvement is needful to reduce value lost through the rejection of deltas and midnight cultivars in this market.

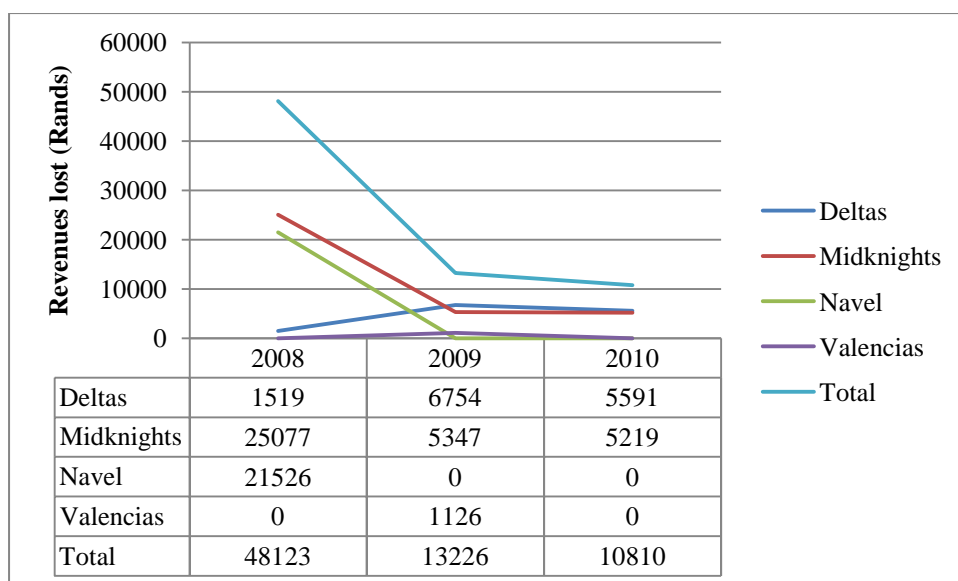


Figure 8. 13: Amount of revenues lost through fruit rejections from the Korean market
(Own calculations using data from CGA Statsbook, 2011)

Figure 8.14 below shows the amount (in Rands) of revenues lost in the Japanese market. Despite the decline in total amount of revenues lost in the Japanese market, the figures are too high and the industry may need to work around strategies geared towards reducing the high losses. Grapefruits show the highest losses.

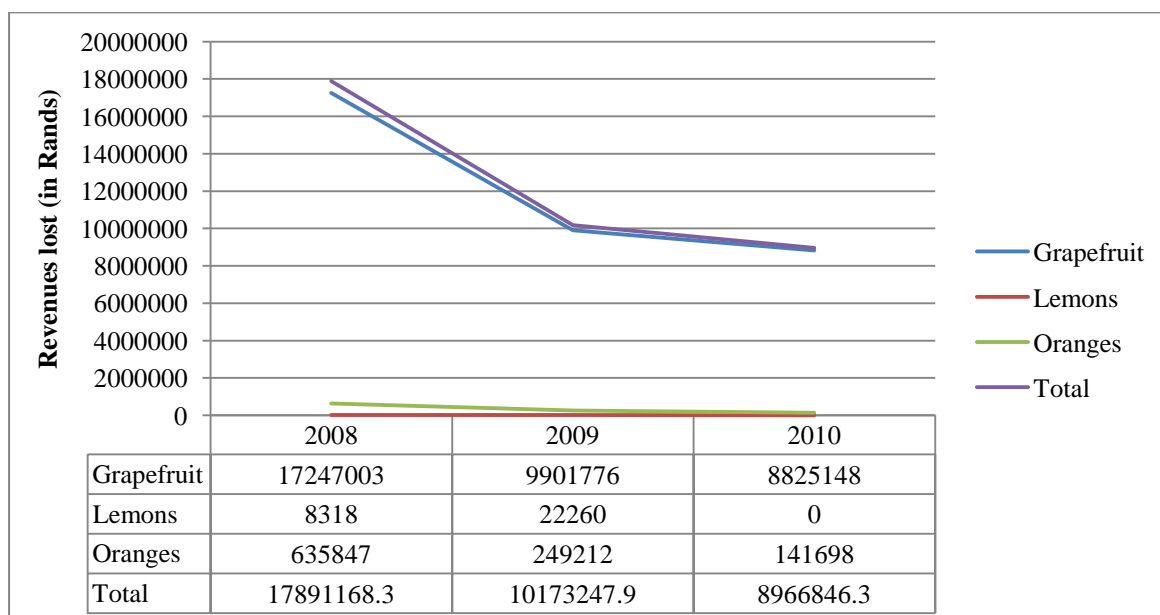


Figure 8. 14: Amount of revenues lost through fruit rejected in the Japanese market
(Own calculations using data from CGA Statsbook, 2011)

Figure 8.15 shows the amount lost through the rejections of fruit from the USA fruit market. The total amount of revenues lost through rejected fruit is on the rise. Clementines, Novas and Cara Cara cultivars have the highest and escalating rejections from the USA market. There are fluctuations with figures lowering and rising for the majority of fruit cultivars delivered to this market especially for Mandarins and Minneolas. Only the losses through Midknights have shown a downward trend.

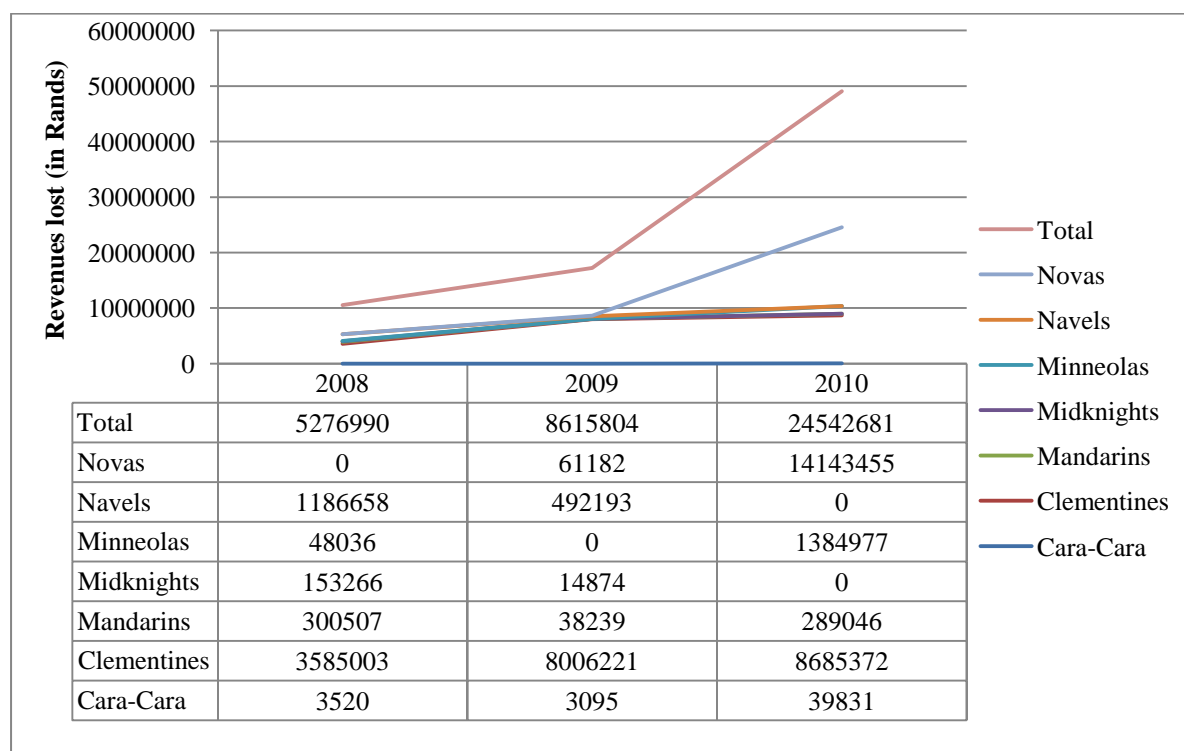


Figure 8. 15: Amount of revenues lost through fruit rejected in the American market
(Own calculations using data from CGA Statsbook, 2011)

8.7.2 Benefits of compliance with the standards of the export market

In spite of the increase in the cost of compliance, the producers noted some benefits from the stringent export market conditions. Thus, they acknowledge that while there are costs of compliance with stringent food safety standards and regulations, there also are advantages gained from such environmental conditions in trade. Table 8.7 reflects the highly significant benefits associated with compliance with the food safety standards. The results are measured on a four-point Likert scale. The most important benefits obtained from compliance with the food safety standards among which are enhanced commitment and responsibility in the management towards the production and supply of safe products (3.86), increasing incomes

(3.86) as well as the provision of detailed information on market development and requirement changes by clients (3.84), inclusion of very detailed guidelines to exporters in the safety specifications (3.71). However, it is not currently evident that local consumers have the same view of the local citrus products as shown by a score of (1.45). Job security for the employees in the supply chain and within the production system and reduction in operational expenditure have low scores of and 2.33 and 2.14 respectively. Variations of the producer levels of satisfaction imply that though there are benefits associated with compliance with food safety standards, they do not come as a complete package with the same level of satisfaction.

Table 8. 7: The benefits of compliance with the standards of the export market

Benefits of compliance	Average Score	Strongly Disagree (% of respondents)	Disagree (% of respondents)	Agree (% of respondents)	Strongly Agree (% of respondents)
1. Increased Consumer and Buyer confidence	3.16	0	0	83.67	16.33
2. Compliance leads to a reduction in product losses and business liabilities (thus, it can act as a preventative approach)	3.14	0	0	85.71	14.29
3. Enhances commitment and responsibility in the management towards the production and supply of safe products	3.86	0	0	14.29	85.71
4. Effective and efficient government and customer oversight enabled thorough and proper record-keeping	3.71	0	0	28.57	71.43
5. Unimpeded access to new markets (or particular market segments) leading to additional exports	3.12	0	6.12	81.63	12.24
6. Access to more remunerative markets and supply chains	3.18	2.04	8.16	71.43	18.37
7. Value of avoiding loss of reputation of industry and/or country in existing markets	3.16	0	4.08	79.59	16.33
8. Increasing incomes	3.86	0	14.29	81.63	4.08
9. Establishment of policies that provide equal access to markets and resources	3.20	0	0	79.59	20.40
10. Domestic health and welfare	3.14	0	0	87.76	12.24
11. Expanded or increased demand	3	0	0	100	0
12. Consistent demand in subsequent years	3.57	0	0	42.86	57.14
13. Provision of detailed information on market development and requirement changes by clients	3.84	0	2.04	16.33	81.63
14. Safety specifications include very detailed guidelines to exporters, including	3.71	0	0	28.57	71.43

examples of good practice					
Benefits of compliance	Average Score	Strongly Disagree (% of respondents)	Disagree (% of respondents)	Agree (% of respondents)	Strongly Agree (% of respondents)
15. Reduced wastage in production processes	3	0	0	100	0
16. Increased focus and ownership of food safety	3.69	0	0	28.57	71.43
17. Enhancement of product quality and consistency	3.14	0	85.71	14.29	0
18. Repression of crisis due to better functioning traceability systems i.e. prevention of a cause for banning the country as a supplier	3.71	0	0	28.57	71.43
19.Opportunity to examine overall efficacy of controls	3	0	0	100	0
20. Local consumers will have same view of the local citrus fruit products as with the imported	1.45	69.39	16.33	14.29	0
20. Reduced level of product inspection and detention abroad	3.43	0	14.29	28.57	57.14
21. Compliance with current regulations can eliminate additional effort for the business	2.29	0	71.43	28.57	0
22. Improvement and enhancement of relationships between supply chain players, customers and enforcement agencies	2.31	0	69.39	30.6	0
23. Job security for the employees in the supply chain and within the production system	2.33	0	71.43	12.24	16.33
24. Reduction in operational expenditure	2.14	0	85.71	14.29	0
25. Enhanced morale of inspection or production staff	3	0	0	100	0

Rated on a Scale of 1 – 4(1=Strongly disagree; 2=Disagree; 3=Agree; 4= Strongly agree)

Source: Own data

8.8 Factors affecting competitiveness of the citrus industry

Export farmers face challenges from both the market and the production side. The business environmental factors impacting upon the competitiveness of the industry were measured using Porter's diamond model. Results were divided into factor conditions, demand conditions, related and supporting industries, strategy, structure and rivalry, government and chance events as indicated in Table 8.8 to 8.12.

8.8.1 Demand conditions affecting the competitiveness of the South African citrus industry

Table 8.8 shows that foreign market support systems, non-tariff technical barriers to trade (TBT) and trade specifications impact negatively on performance. Foreign market support regimes render the playing field unfair and price competitiveness for the citrus industry will not be a favourable option for the South African citrus industry. Compliance with trade specifications leads to additional expenses. Some trade specifications and certification demand the engagement of third parties whose payments is borne by the exporters (DAFF, 2010a), thus, evoking additional expenses to producers. Today's consumer and retailer controlled and influenced export market may present very critical challenges for producers that may attract the intervention of other stakeholders such as nongovernmental organisation and the government. Such critical demand issues may include importing licensing, use of quotas and competing against heavily subsidised rivals (Table 8.8). Despite the challenges from the demand side, market availability, the size of the market, market information and possibility to obtain economies of scale have a positive influence on the competitiveness of the industry (Table 8.8). The business environmental challenges that uniquely influence the performance of the small and emerging farmers include the accessibility to support programmes from the government and other role players, credit policies of various financial institutions and the use of title deeds as a form of collateral.

Table 8. 8: Demand conditions affecting South African citrus industry competitiveness

Determinant of competitiveness	Rate
Market availability	7.5
Market size	7.6
Market information	7.2
Strict quality measures in the export market	5.6
Changes in consumer preferences	5.1
Market growth	7.4
Size and growth in the local market	5.5
Retailers in direct importation	6.5
Global supply chain integration	5.1
Competitive rivals from the developed nations	5.8
International market large enough to obtain economies of scale	6.5
Trade specifications	3.5
The challenges of management in an international environment	2.5
Non-tariff barriers (-quality and packaging requirements	1.5
-import licensing	2.5
-quotas	1
-Sanitary and Phytosanitary regulations	2.5
Global Partnership for Good Agricultural Practice (GLOBALGAP)	3.3
Hazard Analysis and Critical Control Points (HACCP)	3.4
Codex Alimentarius Commission (Codex)	3.1
Foreign market support systems for fruits	1.6
-The reference price or minimum import price system	1.7
-Subsidies and price supports (by Canada, USA, Japan and the EC	1.2
-import duties	2.5
Cultivar mix	1.3

Rated on a Scale of 1- 10 (10= most enhancing; 1= impeding)

8.8.2 Related and supporting industries influencing the competitiveness of the South African citrus industry

The highly influential supporting and related organisations, institutions and departments for the citrus industry are agricultural input suppliers, the CGA, Citrus Research International (Table 8.9). The CGA and the CRI are actively involved in the activities of the citrus growers. The two organisations are more of an axil upon which the competitiveness and performance of the industry revolves. This may be due to the fact that they are a citrus farmer representative organisation. The CGA has marketing promotion and provision of market

information as one of its key functions. These are vital services for an industry engaged in international marketing. The importance of research and innovation cannot be overemphasised and thus the role of the CRI as a research wing is paramount. South African financial institutions and the National Department of Agriculture were deemed not to promote the competitive advantage of the export farmers. The influence of research institutions, transport companies, and suppliers of packaging material is slightly above average (6.0, 6.7 and 6.5 respectively. Transport charges are however, still considered as too high (CGA, 2010a).

Table 8. 9: Related and supporting industries influencing the competitiveness of the South African citrus

Determinant of competitiveness	Rate
<i>Supporting industries</i>	
-Financial institutions	3.5
-Research institutions	6.0
-Transport companies	6.7
-Suppliers of packaging materials	6.5
-Agricultural input suppliers	7.3
-Electricity Suppliers (ESKOM)	8.2
<i>Related industries and organisations</i>	
-Nurseries	2.5
-Citrus Growers Association (CGA)	8.6
-Agricultural Research Council (ARC)	0.5
-Citrus Foundation Block (CFB)	1.5
-Exporting companies (<i>specify</i>) e.g. CapeSpan	7.1
-Citrus Research International (CRI)	8.2
-Perishable Products Export Control Board (PPECB)	6.5
-Fresh Produce Exporters Forum (FPEF)	2.2
-National Department of Agriculture (NDA)	4.5
-Institutes of Higher Learning e.g. universities	3.0

Rated on a Scale of 1- 10 (10= most enhancing; 1= impeding)

8.8.3 Chance events affecting the competitiveness of the industry

All factors that could not be classified within the above given categories were treated as chance events. The consideration was that their influences is sporadic and are subject to

serious turns. All the aspects considered as chance events impacted negatively on the smallholder citrus producers' performance (Table 8.10). The World Cup worsened the transport problem as the event coincided with the peak harvest times and some of the roads blocked for World Cup usage were the major roads to the ports (Hardman, 2010).

The citrus growers are faced with challenges of lower farm-gate returns that result from strong and appreciating local currency versus dollar and Euro and the rising production costs and local inflation (Solomon, 2010). The political uncertainty associated with land redistribution impedes likely investments in farms.

Table 8. 10: Chance factors influencing the competitiveness of the South African citrus

Determinant of competitiveness	Rate
Economic stability	3.5
HIV/AIDS	2.5
Political stability	3
Price stability	3.5
Crime	3.4
Oil and fuel prices	2.8
Fluctuations in the exchange rates	1.2
Inflation	1.5
2010 World cup hosting by SA	1.5
Global economic recession	1.1

Rated on a Scale of 1- 10 (10= most enhancing; 1= impeding)

8.8.4 Factor conditions affecting competitiveness

Table 8.11 shows the impact of selected factor conditions on the competitive success of the smallholder citrus producers. Most factors are above average in enhancing the performance of the producers. However, cost of production, access to scientific research, problems of citrus diseases, worker skills, literacy and the availability of skilled employees are major factors negatively affecting the competitiveness of the smallholder producers. The employment of personnel with the rightful skills may be very expensive for the emerging farmers and in turn impact negatively on production costs. Nonetheless, it has to be addressed if these producers will be significant players in the citrus export market.

Table 8. 11: Factor conditions influencing the competitiveness of the South African citrus

Determinant of competitiveness	Rate
Cost of production	4.5
Labour -labour relations	7.0
-productivity	5.7
-worker skills levels	4.5
-staff training	5.3
-worker literacy	4.4
-worker aptitude	5.1
-worker attitude	6.3
-availability of skilled employees	3.6
-influx of Zimbabweans (and other nationals) into the country	0.5
Natural factors -climatic conditions	6.5
- Accessibility and cost of water	6.5
- Citrus diseases e.g. CBS	4.3
- Pests	5.5
Infrastructure -type	5.9
-location	6.8
-user cost e.g. transportation	6.4
-communication systems	5.0
-electricity	4.5
Capital -cost	5.2
- availability	5.5
Access to Knowledge -cost	6.1
-quality	7.7
-availability of scientific, technical and market knowledge	7.5
-extension capacity	8.0
Access to Technology -cost	6.9
-quality	7.1
-availability	6.3
-technical information flow	6.5
-scientific research	4.2

Rated on a Scale of 1- 10 (10= most enhancing; 1= impeding)

8.8.5 Government and firm strategy, structure and rivalry conditions

Government influence has been deemed to have negative influence on the export performance of the industry (Table 8.12.). The education policy, environmental policy and tax system on investments and risk taking have been found to have a slightly above average impact on the competitiveness of the South African citrus industry. The threat of new entrants, substitute cultivars, price strategy, adaptability and flexibility were found to impact negatively on competitiveness. Producers and exporters have no direct influence on the effects of governmental factors, yet they affect business sustainability. Business processes, performance decision making and strategies are not independent of the influence of the government factors. While market access may not impede performance, government support may be very critical especially in uneven playing fields where competitors are heavily subsidised and receive other forms of indirect support from their government e.g. the

minimum price reference system. Labour policy attracted a very low rating. Increase of labour costs against real product prices and high inflation rates decrease competitiveness (Gardiner, 1972; Ortman, 2005). Investments in land improvement and developments are negatively affected by slow progress in settling land claims, hence impacting negatively on competitiveness (Ortman, 2005). This is supported by the low rating for the land reform policy.

Table 8. 12: Government and firm strategy, structure and rivalry conditions affecting citrus competitiveness

<i>Firm strategy, structure and rivalry conditions</i>	<i>Rate</i>
Adaptability	3.5
Culture	4.5
Structure	5.6
Flexibility	3.5
Pricing strategy	2.6
Managerial capabilities	6.1
Market power of buyers	6.5
Market power of suppliers	6.2
Threat of substitute cultivars	3.7
Threat of new entrants	2.5
<i>Governmental factors</i>	<i>Rate</i>
Indirect support	4.5
Trade Policy	4.6
Land reform policy	3.5
Labour policy	2.5
Fiscal policy (general economic policy)	3.1
Education policy	5.5
Agricultural policy	4.9
Environment policy	5.5
Financial and taxation policy	3.7
Property rights issue	2.5
Impact of the tax system on investments and risk taking	6.3

Rated on a Scale of 1- 10 (10= most enhancing; 1= impeding)

8.9 The competitors' key strengths and weaknesses with respect to their marketing programmes

Rivalry for an industry engaged in international trade goes beyond the borders of the nation. In the southern hemisphere, South Africa competes with Australia, Argentina, Egypt and Brazil. In the northern hemisphere, it competes with Europe, USA, Turkey and Spain. The northern hemisphere competitors have an advantage of low transport costs to South Africa's conventional markets. South Africa's northern hemisphere competitors also have an advantage of heavy government support making the competition field uneven. The subsidies received by the farmers in these nations lower their production costs. Also, the reference and

minimum prices in the EU markets present strength to the heavily subsidised EU farmers and a disadvantage to the exporting South African competitors.

While price competitiveness is a problem highly associated with Russian fruit market, it is also possible to be indirectly in play where subsidies for the producers in the importing nations are high. The subsidised group can make profits at the lowest market price while it will be very costly for the least supported South African fruit exporters. Australia has the strength of high fruit quality compared to SA (Philp, 2006). Also, labour costs are high for the South African farmers compared to their Australian rivals (Philp, 2006). High labour costs add to an increased cost of production while the lower quality compared to key competitors can hinder good performance in the export market which is characterised by high and stringent quality demands.

8.10 Likely changes in the set of competitors

The external and international environment is very unpredictable and ever-changing. The global economic situation and other international economic elements present a threat to the performance of the industry. Such forces include the changes in oil prices and fluctuating exchange rates. Chance events such as natural disasters e.g. the recent earthquake attack on Japan have implications on the size of the demand in affected nations. While the industry has no control over such vagaries of nature and other international business environmental forces, market diversification and differentiation can help the industry since it would have not put all its eggs in one basket. Consequently, consumer changes in one market may not adversely affect the performance the industry. However, as the environmental forces have different impacts upon different players, triggering different reactions, the set of competitors may change.

The competitors for the citrus industry go beyond the citrus range of producers. Other fruit types can be substitutes for the citrus fruits. Fruit juices can also be substitutes and compete with whole fruits especially with the need for convenience rapidly growing in the global consumers especially those in the developed countries.

8.11 Chapter summary

The main purpose of this chapter was to present the results of the investigation into the competitiveness of the South African industry in order to make statements about the possible performance of the industry and the main challenges as well as opportunities faced. From the findings of this research, the South African citrus industry is still significantly active in export markets. This is indicated by stable competitiveness in most markets. However, the stringent food safety measures associated with other markets, especially the lucrative, still pose a challenge for the producers especially the emerging and small farmers. The home diamond forces are also impacting negatively on the competitiveness of the citrus exporters in the global markets. The combination of the influence of the production side forces eliminate price competitiveness as an option for competitiveness in most markets especially against the rivals with low production cost advantages. The market side forces influence market access, retention of market share and ultimately the performance of the industry in the international market. While the strict safety measures impact negatively on export performance, there are however, other challenges which were found to be market specific. For instance, the Russian market is highly price sensitive despite its relaxed quality measures, which are more to the physical aspects of the fruit. Productivity is a positive development for the long-term activity of the industry in the export market. This is an indispensable part of the developments needful for competitive advantages. However, challenges within the supply chain impact negatively on the performance of the industry.

9.1 Introduction

The study had a central purpose of evaluating the competitiveness of the South African citrus industry in the export market amidst the business environmental challenges and the strict private food safety standards. As was pointed out at different instances, increasing pressures of the changes and uncertainties associated with the agro-food industry, especially the stringent safety standards, influence market shares. The changes in the business environmental elements are not ineffective in impacting upon the performance of the industry in the global market. Though world trade is driven by inherent industry competitive advantage in the production of commodities, the influence of the changes in the business environment cannot be undermined. Today's consumer driven market poses challenges that affect trade of fruits, including the traditional exporters of such. The fluctuations and annual changes in traded fruit quantities to the export market attest to the influence of business environmental forces against the goal of each business, which is profit maximisation.

9.2 Summary

The main body of the dissertation was divided into 8 chapters which covered the introduction and background of the study, the theoretical issues of the food safety standards and regulations, the theories behind international trade and the methodologies for measuring competitiveness, a review of the South African citrus industry and its general performance in the international market. The study also reviewed the business environmental factors and the framework for the analysis of the competitiveness of the citrus industry. The results estimation of the competitiveness of the industry in various markets is also presented. The sub-sections below present the highlights of the issues covered.

9.2.1 Private food safety standard issues

Safety concerns for the final user of the agricultural product are very vital. The globalisation of the food safety standards helps protect the consumers from unsafe food and curb the

spread of animal and plant diseases across borders which can otherwise put at risk the whole agricultural industry. However, while this is a positive move, the rise in private standards has seen a more complex trading environment due to their diversity and goals of interested parties. The failure of producers and exporters to comply with the set standards affects trade flows and access to certain markets which otherwise would offer more economic returns for exporters.

The distance between the producer and the consumer in the global village coupled with the involvement of numerous supply chain players has seen the rise in traceability schemes. There also has been a rise in the involvement of retailers in the procurement of the fruits and other agricultural products from abroad. Consumer power and control of the market is not insignificant either. These challenges are not without cost. The associated costs are mostly borne by the producers who have to ensure compliance with all the diverse specifications yet they do not have direct influence upon the product beyond the farm-gate.

The stringent requirements by the export market have been extended into directly influencing the production process, labour relationships and the impact of certain practices on the natural environment among others. Not only have these posed challenges in production costs and increased competition, they have also caused major local and international structural changes in the agro-food industry. The stringent quality and safety controls have prompted institutional arrangements that coordinate production and processing aimed at the reduction in transaction cost and an improved coordination among key supply chain players. The quality assurance and safety controls are also a key element of traceability and more rapid information transmission between various links in the supply chain for the coordination of industry activity.

The stringent food safety standards prevent smallholder producers from building capabilities essential to participate in global value chains. Their lack of economies of scale even limits capacity building options such as restricted access to information and financial support services. Limited investments with regards to technology, development and training are thus attributed to the higher costs of these important services, in turn impacting negatively on productivity and competitiveness. Fair access to markets is likely to become tenuous for the smallholder and emerging farmers translating into increased poverty.

9.2.2 The general performance of the citrus industry

The South African citrus industry has been significantly active in the export market for over a century despite all the varying changes in the market side conditions. In the context of this study it was apt to establish the general performance of the industry over the years amidst some of the significant changes in the home diamond such as the land reform and mid 1990s deregulation of the agricultural and fruit industries. The performance of the industry in the export market could not be viewed without a reflection on such crucial developments. An almost equal challenge for the producers and exporters are the rises in the market-side private food safety standards which are often associated with lucrative markets. The motivation for these considerations was the capacity of these changes to affect the flow of citrus volumes to the stringent lucrative as well as the less demanding fast growing and newly upcoming markets such as Russia and the Middle East.

The South African citrus industry is export oriented. In the context of the objective of this study, it was befitting to evaluate the previous and present activity of the industry in the international market. The future challenges and opportunities were also worth noting. The South African citrus industry has and is still establishing new markets most of which are fast growing in terms of import volumes. The challenges of the home diamond especially the transport costs and high production costs affect the performance of the industry in the price sensitive but otherwise not stringent markets.

The most striking thing is the reluctance of the government to increase support for its farmers whose developed countries rivals are heavily supported to remain in production. It becomes more interesting to comprehend how the industry has remained so significant in the international market. In the context of this study the verification of the shares of South African citrus fruit in the top most lucrative markets was expedient to evaluate the trend in the traditional markets like Europe and the US.

9.2.3 Business environment

This study made recognition that the food safety standards cannot be viewed in isolation from the general business environmental forces. The external, international and internal variables

of the business environment were discussed since the export industry operates within the complexity of the business environment that stretches beyond the national borders.

While the industry may strive to influence the environment within which it operates the greater bulky of these elements are beyond the influence of the producers. For example, consumer demands and preferences are non-negotiable especially when they are inclined to food safety issues. Overlap and spillovers of certain elements like economic and technological changes directly or indirectly influence the business operations and strategies. Most of these environmental forces are constantly changing, some of which may be sudden changes. The producers or farmers often bear the consequences most of which they have no option save to comply. Compliance or finding copying mechanisms is often not without costs.

South Africa has the advantages of a good geographical and natural environment that presents the opportunity to produce the whole range of citrus fruit. This presents the opportunity to serve different consumer preferences. Thus, the nation has good citrus production conditions.

9.2.4 Measuring competitiveness

The complexity of the competitiveness concept has seen many measures thrown into the research field. Linked to the choice of the methodology is the way the concept is defined. In the context of the objective of the study an operating definition guided the choice of the model to be used for the analysis of the competitiveness of the industry. This also guided the choice of variables to be analysed.

The Constant Market Share was adopted as it is able to indicate the trend of the activity of the industry in various markets. This was also suitable because changes in consumer demand and preferences, changes in business environmental elements and the increasing private standards influence trade flows. Besides influencing the quantities traded, these elements influence the fruit production processes which in turn determine whether or not the quality can make it to certain markets. Porter's diamond model was adopted for the identification and establishment of the influence of the business environmental forces.

9.2.5 Results

The projections of the export volumes up to the year 2013 show that the South African citrus industry has the capacity to maintain continued productivity and an ultimate positive supply capacity in terms of quantity. This is needful for competitive advantage over time. The main concern however is that, while productivity is an essential sign of competitiveness, in today's consumer-biased business environment, other essential elements such as vertical coordination, traceability, increasing social and environmental standards, food quality, compliance with stringent private food safety standards and innovation are indispensably underlying signs to competitiveness.

This and other previous studies (Brooke, 2009b; CGA, 2011; CGA, 2010) have found that the infrastructure, especially transport system, is a general challenge for exporters. This is one of the specific targets of potential address for efficient performance. Addressing transport problems will not only save the citrus industry but is a potential point for the enhancement of economic development since many industries and firms will benefit. This study identified that technical back-up of the citrus growers, especially the emerging and smallholder is an area needing serious support. The identification of critical areas through research enable the appropriate allocation of the insufficient funds as critical areas, services and potential target groups would have been spelt out.

Many issues have been raised as hindrances to competitiveness of the South African citrus industry in the global market. Porter's diamond model showed that trade specifications, challenges of management in an international environment, non-tariff barriers to trade, foreign market support systems for fruit producers, exchange rate fluctuations, inflation and crime were the major factors impeding competitiveness of the industry. The list also included HIV and Aids, economic stability, public departments, labour policy, cost of production, worker literacy, pricing strategy, worker skills, adaptability, threat of substitutes, threat of new entrants, government support, trade policy, land reform, property rights issue and agricultural policy. The problem with exporters paying third parties for certificates of compliance still raises costs for citrus exporters. The factors enhancing the competitiveness of the citrus industry in the export market include market availability, market size, market information, market growth and the presence of research institutions.

The results of the Constant Market Share analysis showed a mixed scenario. Some citrus varieties were competitive in certain markets while the same were not in others. Oranges were competitive in the UK, Northern Europe, Greece, Italy, Asia and Portugal. The same were not competitive in France, Spain and Eastern Europe. This was the case with lemons and limes. South African lemons and limes performed well in the American market. Though competitive in Europe, South Eastern Asia and the Oceania, the trend was downward for South African lemons and limes. Growth in the import volumes for grapefruits in Eastern Europe, Germany, Denmark and South Eastern Asia raised grapefruit exports to these markets for the season 2000 to 2008. However, the South African grapefruits were competitive in France, Greece, Italy, Netherlands and Spain though showing a downward trend. The performance of the South African soft citrus in the Asian and Eastern Europe markets was due to the increase in import volumes within these nations. The variations in the performance of the cultivars in different international markets can be an important confirmation of the influence of varying specifications and demand conditions associated with different markets upon market shares.

9.3 Recommendations

The recommendations made herein are more influenced by the operating definition of competitiveness, the results of the Constant Market Share analysis and the results of the complex business environment. The recommendations are thus biased towards the need for promoting a constant market share in international markets amidst challenges of the business environment. The fluctuations of the share of the South African citrus fruit in exports markets calls for vigilance from all possible stakeholders and key supply chain players. The critical aspects influencing competitiveness as rated by the producers, need special attention for sustained performance of the industry. Despite the unpredictable business environment, consumer demand changes and the complexity of the international food supply chain, the industry needs to brace itself for outstanding performance. The highlighted challenges and opportunities attributed to international business environment attract the need for strategies for a sustainable business. The study has categorised the strategies to cater for the key players, namely, the citrus industry, the growers, the government, farmer organisations and private sector. Thus, this study makes no presumption that some of the challenges highlighted in the study are obvious to key players. The recommendations are discussed below.

9.3.1 Strategies to enhance the competitiveness of the South African citrus industry

The Concise Oxford Dictionary (2001) defines strategy as a plan designed to achieve a particular long-term aim. Strategies must facilitate an industry's ability to compete for the consumer's dollar. The strategies should target sustained profitability, ability to reinvest, innovate, expand and perform in an unfair environment. Thus, the strategies and institutional arrangements should uphold an industry's ability to win today, tomorrow and in the future (Esterhuizen and Van Rooyen, 2006). The fifth step in the analysis of the competitiveness of the South African citrus industry in the global market was to determine the strategies for enhancing long-term competitiveness of the industry. This study recommends the following strategies for competitiveness.

9.3.1.1 The role for the South African citrus industry

Employment of strategies that differ in every respect from those of the rivals will guarantee the exporting industry an international leadership. The strategies should prioritise the preservation of the reputation of South African citrus fruit brands in the international markets.

(a) Continual innovation

Innovation in the form of new technology development, new cultivar development, new products attributes as well as improved and cost effective fruit production processes, new and diverse marketing approaches are ingredients of achieving a competitive advantage. In spite of investing in physical assets, the citrus industry needs to invest also in skill and knowledge. Though the industry may not afford a major technological breakthrough like totally new products, small insights like improvements in fruit attributes flanking the trend in consumer preferences can generate a competitive advantage. Thus, the innovations considering both domestic and foreign needs especially food safety concerns and quality will yield competitive advantage.

Relentless improvements need to be pursued as any advantage can be imitated and innovations can become obsolete when new ones enter into the production system. It is possible for an industry that has enjoyed early-mover advantages such as customer relationships, loyalty of distribution channels and scale economies in existing technologies to

be overtaken by rivals if it stops improving and innovating. Slow innovations compared to rivals can also lead to loss of market shares as there will be no additional value to present to the consumers. Though it might take time, rivals inevitably and almost eventually will create better and cheaper ways around conducting business to the loss of first-mover advantages that never were further improved.

Changes in the business environment and innovation are inextricably intertwined. The unpredictability of these changes needs a vigilant investment in R&D, especially information, and market research. Existing strategy may be rendered obsolete immediately thereby solidifying the once cherished competitive advantages and leadership into an invincible barrier to gaining superior performance. Resistance to change may be no habitat for protecting past performance than it is a downward road leading to failure. Embracing change and formulating strategies in tandem to the trend in markets is more than an option in global business today. The industry cannot afford to slow down the change that is needed to retain competitiveness in the global market.

(b) Targeting new market segments

Though the citrus industry has a diversified export market, a continued research for other potential markets should be encouraged. Serving entirely new markets and market segments coupled with innovation and improvements in fruit quality can create competitive advantage and also first mover advantages. A quick response to market challenges should be ensured especially where there is reluctance and slow response from the competitors' side. There is no average consumer, and the industry should continue to encourage promoting fruit of superior quality and good practices by the smallholders as well. While the smallholders may serve the not so stringent and accessible regional markets, working on improved compliance with the global strict private standards should be encouraged. With the fast globalisation of all agro-based industries and an unpredictable, complex business environment, changing consumer preferences, the promotion of good quality citrus fruit will help the nation stand better competitiveness amidst these changes.

(c) Market research and information dissemination among exporter and key value chain players

Success in trade is about meeting consumers' needs and conducting market research on the anticipations of the consumers. Citrus fruit exporters can no less remain competitive in the export market than retailers would remain in business without meeting consumer demands and anticipations. Neither can loyalty of consumers and strong relationships be established and retained without meeting consumer expectations. A lack of information and general knowledge about the services needed by a specific group leads to inefficiency and inability to effectively respond to crucial aspects of remaining competitive in the market.

The changes in demand should be communicated throughout the entire supply chain enabling effective and timely responses to the consumer demands. Information coordinates the operational and logistical activities of partners. Such information includes process information, business information, traceability data and market information. Perfect information translates into perfect decisions. Thus, correct information, information systems and technology are the main support systems to the information flow dimension. Coordination, collaboration and cooperation within the whole supply chain are inevitable for joint focus towards a sustainable competitive advantage.

(d) Aggressive involvement in retailer procurement activities

The citrus industry needs to seek marketing channels that it can control or else have a voice and an influence. Though retailers are increasingly controlling and dominating the marketing and international distribution of many agro-food products, the industry can create partnership with these retailers for the promotion of their products and for the establishment of long-term relationships. The relationships established by the South African citrus industry with UK big retailers such as Tesco and Spencer can be extended to all markets as the consumer trends are growing towards the consumers having a strong influence of the purchase of fruit through their local retailers. Maintaining and improving market shares in global markets may need aggressive involvement in retailer procurement activities.

(e) Market diversification

Market diversification may ensure continuous marketing of products, since a failure in one market may not necessarily lead to a total collapse of the industry. However, markets can offer size but not profits. This is evidenced by the less-demanding Russian market which is apparently price-sensitive. Industries need larger customer base for economies of scale, but returns should not be compromised save if the shift in markets pays off better than compliance with stringent standards in the existing ones. This attracts timeous and thorough market research since serving unattractive market segments that are characterised by high consumer bargaining power and price sensitivity may render the industry an unstable position. Resorting to incremental volumes to offset cost position may be the ultimate unavoidable temptation. South Africa's position in less demanding markets may be undermined by the inherent high production costs against heavily subsidised rivals. Thus, it may not meet price competitiveness in markets like Russia without risking sustainable business operations.

(f) Strengthening relationships in new markets

Promotions and strengthening of the newly established relationship with the emerging fast growing markets such as Japan and Middle East should be ensured, with the latter being the fastest growing. Innovation, product mix and differentiation, quality assurance and consistency in value improvement should be uppermost in the marketing strategies. It is easier to retain customers than to gain new ones in trade relations characterised by strict traceability records and loyalty. Although individual differences in consumer needs and safety measures in different market segments exist, it is worthwhile for the industry to consistently create customer value aimed at winning the competitive marketing war.

(g) Improving competitiveness

The Russian market has a potential to turn into a large export market for the industry. Nevertheless, the competitiveness of the South African citrus industry in the Russian market has been found to be affected by external environmental factors such as exchange rates more than internal forces which can be directly addressed by the industry. Price competitiveness may not pay off despite the high perceptions of the South African citrus fruit in the Russian

market. The engagement of any foreseeable transaction cost minimisation may be worthy considering for long-term strategies in cost competitiveness in the Russian market. Market niches in the Russian market that have better returns compared to other alternatives available for the industry are also worth considering to maintain presence in the market while anticipating a change for better competitiveness.

9.3.2 Role of the South African government

Government export promotion is an essential ingredient for the construction of the knowledge and experience needed by the industry for a successful international market involvement. Government export promotion and the performance of its industries in the export markets are directly related.

Though the adversaries of export promotion attribute the competitive position and export performance of industries to the private market forces rather than government promotion, it is evident that competing with heavily subsidised farmers in developed countries creates an uneven field for the exporters from the LDCs. Challenges faced by the citrus exporters need governmental intervention to ease the impact and also to ease transaction costs incurred that have a negative bearing on the net earnings.

The importance of government intervention is also tied to the fact that domestic currency is strengthened by the inflow of foreign currency. Since exports have a bearing on currency values, it is not unreasonable to conclude that they have an influence on the fiscal and monetary policies by the government. The South African citrus industry as a significant foreign currency earner needs strong support from the government because of its potential to influence the currency of the nation. Thus, governmental export promotion and incentives should be targeted toward the motivation of companies to engage in export activities.

9.3.2.1 Indirect government support

The government is a medium and challenger in creating favourable conditions in the home diamond and encouraging higher competitive levels of performance. Government activity and involvement in export of the fruit should critically regard the underlying conditions in the diamond. Although the deregulation of the agricultural and fruit industries in particular were

aimed at removing direct government involvement, the government policies should be aimed at creating an environment that enable its industries to gain competitiveness in the export markets.

Free markets can offer anything save justice for the exporters. The existence of a fair playing field may never be guaranteed in a global village characterised by changing business environmental forces as well as different forms of non-tariff technical barriers to trade. The injustices associated with a free market system cannot exclude the need for government intervention. The government should thus engage in an indirect role of promoting competitive advantages of industries amidst international markets challenges. Negotiations and trade agreements are good as far as they go but, as the business environment continues to change in diversity and intensity of challenges than opportunities, the government needs to shift its role as situations dictate. Government intervention should go beyond securing trade agreements.

The high levels of uncertainty associated with trade influence business strategies that the industry can employ. Value chain development and improvement are highly needful for the growers. While risk management is a supply chain issue, critical points especially those linked to fruit quality assurance (producer level, transportation, and cold store) need to be checked, modern measurement systems applied and thus calls for government efforts for the reduction of production and other transaction costs. Competitiveness in export markets needs more than the activity of farmers and exporters.

The market promotions carried out by the CGA raises awareness of the existence of the nation's products in the foreign market, but will not eliminate the unfair and unequal competition in world markets. Government support may ease such hindrances or unfair competition especially through the provision of subsidies. Financial subsidies will however, not be a substitute for production of high quality fruit that can compete in any market. This aid will provide an attractive and enabling environment, cushion intense competition and unfavourable production conditions while enhancing the competitive advantage. Soft loan with manageable rates for the burdened exporters and producers may ease out the challenge if subsidies cannot be availed to the disposal of the exporters.

Also, the high volumes of citrus exported to the international markets as well as the nation's general level of competitiveness therein are a mask over huge differences among producers. The voice of the smallholder players in the global market and business cannot effect change, consequently, calling for government involvement.

9.3.2.2 Employment of long-term policies that favour long-term benefits

It takes time for an industry to create competitive advantage through the upgrading of human skills, investing in products and processes along with penetrating foreign markets. The government should therefore put in place policies that favour long-term benefits that might not be easily perceived. Short-term and easily perceived ones such as subsidies, protection and arranged mergers which have been associated with retarding innovation may be worthy though. Good fruits take time to ripen, and thus the government need to consider policies that may take time to yield benefits with a short-term sting, but would make a real difference. This can be witnessed by the deregulation of the agricultural industry. Though citrus exports were adversely affected by the deregulation process in the mid 1990s, the industry soon found coping mechanisms and faced intense competition from global rivals with little if any government support and serious home diamond challenges. Thus, government should go a step further to promote policies that will yield competitive advantages for its industries though the results may need patience.

The formulation of trade policies should take into account the policies operated by the top importers of the nation's products. For example, exporters with little or no subsidy will not effectively compete in the environment wherein the majority of the key rivals are heavily subsidised. The ground automatically becomes unfavourable for a sustainable business transaction. Price competitiveness will not be favourable either for the unsubsidised South African citrus industry when taken in the context of the European markets.

On the other hand, relaxed requirements in the export market may not yield favourable conditions to exporters when the oversupplied markets are forced to resort to price competitiveness. For instance, the price competitiveness of the Russian market with no government support may remain a challenge for the South African exporters despite the reasonable standards faced by the exporters. The effectiveness of trade policy thus depends on the simultaneous environmental challenges faced by the exporting industry. More so, the

high fruit quality demanded by the export consumers should simultaneously attract an investment in the infrastructure that will promote efficient transmission of the fruit to the destination in the shortest time and most efficient means possible. Policy adoptions should be more focused and specific, more than they should generally promote productivity and general export market access. Country-specific analysis alongside the trade regimes and trade policies of trading partners should be done in order to identify and implement most critical policies for a given time and general trend in business environment.

Government intervention may also target at addressing critical challenges and areas that commonly affect key players in the supply chain for effectiveness. For example, the transport challenges are not only export companies-specific, but they impact on the efficiency of all industries in the economy including the non-exporting ones. Addressing the transport issue will not only improve competitiveness for citrus and other fruit exporters, but will also have a bearing on the productivity of other sectors of the economy. The upgrading of infrastructure (transport, ports) can be enjoined with law enforcement thus curbing high incidents of accidents in the nation.

9.3.2.3 Skills development and training

Research efforts in universities connected to the citrus industry, food safety and health issues, the citrus fruit supply chain, trends in consumer changes and the business environmental changes (both local and international) will ultimately create information that will influence competitive advantage creation by the industry. Government intervention is inevitable in human resource skills, in innovation and physical assets.

9.3.2.4 Promote competition in the free market

The tough competition in free trade promotes innovation and eliminates inefficient players, thus promoting national competitiveness. Intense international competition forces industries to be more efficient in resource use. The abolishment of the pooling system associated with the regulated marketing system has meant that growers are now properly compensated for good quality and costs are more transparent. This may be a source of motivation to aim even higher since the reward for good performance is accorded fairly unlike in the old system of fruit marketing.

However, the government trade policy need not be responsive to complaints but seek to aid market access and the rigorous development of the domestic diamond in promotion of the competitive advantage of the industry in export markets. Supporting exporting industries to overcome barriers to market entry should be prioritised by the government. Though the industry may strive to attain the level of quality specifications by the international market, it may be counteracted by unfair playing fields.

Coupled with market diversification, export promotion can enable exporting industries to gain strength and take advantage of different growth rates in different markets. There is need to promote and develop a national food safety and control strategy. An examination of all forces that can possibly impinge upon the performance of the industry in the global markets may be carried out through industry and government sponsored research leading to a national strategy that promotes competitiveness. In spite of formulating strategies to face challenge from the market side, the government can embark on mechanisms to promote good fruit quality production. National strategy will provide better coherence where many agencies are involved in the marketing of products, thus curbing inefficiencies in performance and resource usage.

9.3.2.5 Addressing incompetence and problems linked to transport and other supply chain players

Since South Africa's northern hemisphere competitors have the advantage of low transport costs to most lucrative markets, South African transport logistics need to be addressed to ease the high costs negatively affecting gains. Infrastructure developments require heavy investments which cannot be handled by exporters alone without government intervention. The improvement of transport and harbour efficiencies will promote the ease with which the fruit can reach the market in the earliest times possible without posing a detrimental effect upon fruit quality. While the cost savings presented in this study are suggested in relation to the export of citrus, it is certain that many industries will benefit from the improvements since the congestions involve intra-industry activities as well as other users of the ports and transport system. The cost savings will be a national economic good.

9.3.2.6 Technical assistance for smallholder farmers in export marketing

The South African government needs to be an active ingredient in the support of small and emerging citrus fruit growers and exporters especially those that have benefited from the land reform programme. While the CGA is providing mentorship for the smallholder farmers, it is imperative for the government to also ensure an efficient use of the land allocated to these farmers. A sustainable farming business is not only about activity and yields, there are risks associated with it as well. Technology and innovations may not accommodate the smallholders yet it is essential for competitiveness. More often standards and other related changes in the environment come into scene when one has highly invested in the business and changes in response to compliance have a tendency to raise costs. This also applies to large farmers.

The inherent levels of development of the smallholder farmers is often not considered when harsh and stringent standards are passed. Investments associated with complying with food safety standards may be too high for the sustainability of small farming businesses especially with regard to infrastructure re-design, improvement or development. This makes intervention towards the grass root producer very inevitable. While this may not be in grant form, facilities such as soft loans and enabling the growers' access to financial aid are crucial. Risk management may need external support because though the smallholders are self-reliant, the majority is not totally self-dependent. The more the government acts as if there is zero risk for its industries, the more vulnerable they are and the more the risk.

Since the land reform was implemented with the objective of addressing land ownership anomalies and inequalities, land usage and its productivity should also come as a part of the package. While the emerging and smallholder farmers have access to farmland through the government's land reform programme, the programme can not be a fruitful endeavour unless backed up to its fruition. No matter how good a policy and its initial implementation are, failure to carry it to its intended end may render it a worthless cost to the implementers and to the nation as a whole. This is because productivity, upgrading and the search for competitive advantage are also taxed as a consequence. Thus, government support is very essential. While policy usually comes with good intentions, any unintended massive consequences should be strictly guarded and addressed at their budding stage or else the later and resultant condition turns out to be worse than the former. The end-result that pre-existed within the eye of

development should also carry the objective to its full maturation. Strong attention should be paid to the capacity-building strategies aimed at sustainable production of sound quality fruit coupled with cost-effectiveness within the smallholder producing community.

9.3.2.7 Promotion of food safety standards

More promotion of food safety and meeting the general regulations should be emphasised from the production side. Despite the differentiation in production unit sizes, production systems and resource base of the producers, government support should aim at promoting the production of high quality fruit that can stand the test of the export market. This may eliminate the comfort zone in some small producers to target the less challenging informal local market, thus, competing at farm gate level.

The increased and more efficient production enhanced by export promotion broadens the industry's market reach and serving customers abroad. Dealing with stringent demands by international customers can lead to the improvement of existing products and the development of new ones. Industries engaged in exporting act as conduits for the informal inflow of foreign technology and thus could generate higher productivity and consequently a greater need for employment.

The government should be actively involved in the promotion of food safety standards and ensuring mandatory compliance with the same. This will not only ensure safe and good quality fruit for the export market, but will also ensure fruit of superior quality for the home market which is capable of competing anywhere in the world. Ensuring improved fruit quality, safety, good agricultural practices with the promotion of safe environmental impact, and fruit with attributes that will respond to global consumer preferences should be prioritised. The strict standards should be combined with an efficient regulatory process to ensure that the nation moves in tune with the global trends. Exposure to tough local competition will strengthen the local exporters to withstand the test of the global market with its stringent demands despite diversity in private standards. The presence and existence of the right competitors and rivals aid the rise in competitive advantage. Government promotion of domestic rivalry should consider the complex environment faced by these producers beyond national borders.

Public investment in food safety issues and the associated priorities can be a challenge. However, strategies formulated should take into account the interests of the exporters, other producers currently serving the local market, the economic interests of the nation with respect to export and development of agricultural industries.

9.3.2.8 Empower public institutions and departments for service delivery

Most public departments have been found not to promote competitiveness e.g. the National Department of Agriculture (NDA). Government should empower these departments for service delivery targeted towards complementing CGA advisory training of small farmers and research support.

9.3.2.9 Ensuring a stable political and economic environment

A stable political and local economic environment supports the degree to which the industry can improve its international image, translating into the growth and competitiveness in export markets. While the value chain is very critical in today's consumer-driven export market, the supply chain players need government support in terms of a stable political and economic environment. Crime reduction can encourage willingness to reinvest.

The improvement of some external business environmental factors such as the labour, land, fiscal and trade policies are in the hands of the government to effect change. Since these have been cited as hindrances to competitiveness, the government should improve on them so as to enhance the competitive edge of the industry.

9.3.2.10 Incentives for outstanding performance

While the South African government engages in bilateral trade agreements with traditional trading partners such as the EU, domestic incentives for good performance should be employed to enhance domestic rivalry. Domestic rivalry will in turn encourage research, innovation and improvement. Vigorous domestic rivalry creates sustainable competitive advantage as the producers will grow internationally than dominate the domestic market. Since export incentives support export activities, a close relationship exists between the benefits of exporting and those of export promotion.

The downturns and upturns of competitors within the industry and in global markets respectively increase and/or decrease the market shares of rivals. Heavy competition necessitates the maintenance of the necessary capacity to meet demand as rivals are readily available and capable to fill in the gap during a downturn. Moreover, the industry needs to be very efficient to eliminate opportunities for new entrants. The government should promote both productivity at domestic levels as a long-term target and immediate compliance and coping with changes in the business environment. Productivity will ensure long-term activity of the industry in the export market while compliance and innovation will ensure the retention of market shares and consumer confidence as well as established and long-lasting relationships with importers and consumers.

9.3.3 Role of research institutions

In the midst of the ever-changing international business environment, the export industry needs not to be only responsive to the changes in the business conditions. There is great need to set the pace and be initiative while taking cognisance of the trends in consumer demands and changes in their needs. The industry cannot afford to slow down the change that is needed to remain globally competitive. Innovations with high returns and low risk improvements are usually the beginning of an expedition of continuous improvement, where one venture inspires the next and the savings are exponential.

Investment in market research is not optional. In the era where information asymmetry has been lessened, the industry can do much in market research and invest in the same to maintain market shares and alternatively improve on it.

The presence of research as an imbedded component of the industry is commendable i.e. through the Citrus Research International (CRI). Development in cultivars and fruit attributes should be incorporated as cultivars and their qualities do not remain forever favourable in the market due to changes in consumer preferences. Continued innovation in line with the trends in consumer preference changes is imperative.

9.3.4 Role of private sector

There is need to strongly increase harmonisation of the industrialised food safety standards. Harmonisation of food safety standards has a potential to enhance transparency among the

multilateral trading partners and increase trade. The harmonisation of the standards and GAP regulations will ease the rise in cost of production as they may necessitate a single inspection that is agreeable in every part of the world. The rise in private regulations encourages the industry to shift from volume to quality, thus, moving in tune with the global market demand. However, each new proposal should be weighed with regards to the likely consequences on export, especially upon the developing countries and smallholder producers who are characterised by limited resources and technical incapacities. Though nations are set at liberty to develop additional private standards apart from those set by WHO and WTO, the organisations need to be actively engaged in the harmonisation of these standards in order to eliminate their use as Technical Barriers to Trade (TBT).

Since all safety claims are attributed to scientific proof, the adoption of any standards can be subject to the Commission or else the necessity, role and legitimacy of the WTO and the Codex Alimentarius Commission remains questionable in the sphere of food safety. The integrity of the food safety system also remains dubious if variance is becoming a predominant characteristic of the same. Contrary to managing a diverse number of requirements, the measures offering the highest protection can be adopted by the commission for application in the international trade of agricultural food products. This can be a better means to avoid the pervasion of the private standards by higher-value markets in developed countries and issues associated with equity and market access by the less developed countries. The most critical thing is that the private standards have found their way into the value chain and nullify the advocacy for free international trade.

Technical assistance is needful especially for the smallholder farmers faced with challenges of compliance and verification of compliance standards especially from the EU. Possible alternative measures that are likely to have reduced impact on the developing countries should be set in place. However, this has serious challenges as consumers are in control and are the decision-makers on what to buy. Technical assistance should address the following aspects among others:

- (i) The strengthening of the overall quality infrastructure within South Africa through development of standard bodies, accreditation bodies, product testing laboratories, inspection services, competent authorities for certifying export products and traceability schemes.

- (ii) The development of competitive productive capacities. Technical assistance in the form of training and manpower development, improvement of fruit quality and safe production systems enhance both the national and global food safety.

Organisations like the United Nations Industrial Development Organisation (UNIDO) can be engaged for any trade facilitation challenges since one of their key objectives is to support the agro-food manufacturing and the export of agro-based products. Technical assistance can be sought and the advantage is that UNIDO has some of its offices in South Africa. The United Nations Conference on Trade and Development Consultative Taskforce (UNCTAD CTF) can also be engaged for facilitating the harmonisation of the safety standards since one of the core reasons it was formed is to provide a forum where key private sector standards can be discussed among a variety of stakeholders (United Nations, 2007).

9.3.5 Role of growers

Growers are the pillar for commodity production as well as setting the minimum quality standards in response to consumer demands and preferences. The producers' integrity to the consumers is intertwined with their ability to maintain quality standards, consistency and the implementation of good practices.

9.3.5.1 Continual improvement and innovation

Citrus production is asset specific. Once established, quitting may be very expensive than otherwise. The business cannot be easily converted without serious consequences or even total business collapse. Thus, continual improvements and innovations are inevitable to sustain or keep abreast with the market-side challenges coupled with improvements in the production-side environmental elements. The producers need to compliment innovations with production cost minimisation in order to ensure growth and development and an advanced competitive advantage that yields high revenues even in price-competitive markets.

9.3.5.2 Embrace the challenge of private standards

While private standards are often associated with technical barriers to trade, the South African citrus producers should view them as a challenge that leads to a better position in the

global market. With the fast globalisation of the world markets, the standards may turn out to be the best measure across borders compelling all exporting industries to comply or run the risk of losing lucrative export markets. The food safety standards help accentuate the strength and weakness of the supply chain. Compliance with these standards will enhance competitiveness in the export markets when all key chain players are focused at meeting the demands of the importer and consumer. Promotion of excellence in the value chain (including supplier, producer, exporter and transporter) should focus on the production of fruit that can compete at the export market though it may sell locally.

Maintaining or improving the competitiveness of the South African citrus industry remains paramount amidst the changes in the business environment, particularly those on the market side, such as the private food safety standards and changes in consumer preferences. Most of the factors affecting the competitiveness of the citrus industry are on the increase and impeding export performance. Switching from one market to the other can have several causes among which are failure to comply with stringent SPS and TBT standards set by the importers, the emergence of new lucrative markets and changes in consumer preference in the traditional markets which the exporters may be failing to meet. Consequently, it may also have a bearing on the financial gains from the exports. Besides disposing of the produce, are the returns to the growers reasonable compared to those that would have been fetched from the traditionally lucrative markets for the same quantities sold?

9.3.5.3. Contractual arrangements

Contractual arrangements can be beneficial for the smallholder farmers as they will be compelled to deliver fruit of a specific quantity and quality at a specified period of time. The promotion of contractual arrangements can help this group of producers to improve their production conditions and meeting high quality standards of fruit. Such arrangements will eliminate some hindrances to good performance by the smallholder farmers thereby ensuring their full participation in the activities of the industry. Both the formal and informal contractual arrangements (vertical coordination) and vertical integration will enable a production and distribution system that adjust quickly to changing consumer demands, economic conditions and technological improvements, thereby maintaining profit margins, capturing innovators profits and correcting errors quickly.

9.3.6 Role of farmer organisations

The CGA is doing a good service through its mentorship programme targeting the emerging and small farmers. Despite the need for government intervention, ultimately, only industries themselves can achieve and sustain competitive advantage. The fundamentals described below may be worth considering.

9.3.6.1 Seek highly competitive rivals as motivators

Since South African freight charges and transportation times to the Russian market are similar to those of other southern hemisphere competitors, it is worthwhile for the industry to study these competitors and work on ways of reducing production and other transaction costs so as to meet the price competitive situation in this market. Meeting these market challenges rather than avoiding them is imperative as the business environment and consumer behaviour will always undergo changes that attract the need for high aspirations. The hard-to-resist competitors can be used as motivators for cost reduction, product improvement and keeping abreast with technological changes.

The price-sensitive Russian market is a high risk and low return market and investing in it may attract high costs that may be impossible to offset. Withdrawal from such challenging and unprofitable markets may be the best option. Nonetheless, withdrawal should be weighed against possible options like finding niche markets, increasing market shares in other existing markets and ability to retain market shares in traditional lucrative markets. Withdrawal should also be considered against the possibility to work on reduction of production costs and the possibility of acquiring competitive advantages in less demanding markets.

9.3.6.2 Improving the quality of the home diamond

While the home-based diamond is complex for the industry to single-handedly influence, there are however, responsibilities that the industry need to play in order to improve the diamond. The stringent consumer demand may be a good motivation for cluster formation and upgrading of competitive advantages of the key supply chain players. The creation of specialised factors such as human capital, infrastructure as well as technical knowledge is not irrelevant.

9.3.6.3 Tapping selective advantages from other nations

The relaxed food standards in the less demanding markets such as Russia may not stimulate faster rates of innovation. Continuous improvement is the basis for competitive advantage. This is particularly important considering that research ventures are going on the world over. However, the affluent consumers in Russia may be beneficial as sources of competitive advantage. An identification of sophisticated consumers in niche markets may give the industry an understanding of different consumer needs which may impart pressure, leading to a more rapid innovation rate. The industry should target niche markets, especially retail markets that rate quality more than price and use this strategy as a way of market differentiation and also as a way of maintaining the nation's presence in the market.

While trade is viewed as a means to exploit gains that leads to higher productivity through the exploitation of comparative advantages (Ketels, 2010), it is however, an essential means to tap into foreign knowledge and thereby raising productivity. Investing in new cultivars and fruit products that meet consumer preferences in the newly identified niche markets can aid in avoiding direct price competition. Targeting and serving consumers with the most anticipatory needs in niche markets may create first mover advantages.

Market diversification targeted at nations with different levels of development can offer some selective advantages to the industry. Trade and business relations with the fastest economically growing markets such as China and Japan may impart fortunes to the South African economy.

9.3.6.4 Maintaining superior leadership

A leadership that believes in change while working in the upgrading of the home diamond is an underpinning for a sustained competitive advantage. Change is an indispensable aspect of today's global business. It demands the need for a leadership that recognises the challenges and pressures, and turns them into part of the industry strategies. A willingness to sacrifice and strive for a competitive advantage above and beyond mere survival in the markets is indispensable for sustainability. Risk reduction, and soliciting government support and superior financial performance should be part of the highly sought aspects in the business of

the industry. Leadership should be able to exploit and augment the forces in the diamond to promote innovation and upgrading.

9.3.6.5 Resource mobilisation

The CGA's involvement in the promotion of technical and academic education of many underprivileged students at various levels of education boosts the improvement of technical skills within the nation. The citrus-related research output can be directed by the CGA's Citrus Academy in order to investigate the most challenging aspects related to the export sector. While this promotes the research wing, it is unarguable that the CGA promotes education access by the otherwise intelligent but resource-poor citizens. Indirectly, literacy levels are promoted by the organisation through skilful additional human resource mobilisation.

Existing research collaboration with private research institutions, universities and government research institutions should be strengthened. In today's global market, the quality of an industry's product is not indispensable from the quality of its research and technical abilities. Strategies geared towards aligning research, development and extension programmes with the prevailing and anticipated market forces are beneficial for customer attraction, satisfaction and retention amidst competition.

Poor worker skills have been identified as impeding competitiveness. This may account for the use of more labour associated with the industry compared to Australia. Efficient use of the labour factor is inevitable for increased returns and competitiveness as prices are mostly dependent on forces of demand and supply. The minimisation of permanent labour cuts on the cost, but, this may attract high training costs each time new part-time labour is unavoidable especially during such peak times as harvesting. Technology and innovation may be considered though there are consequences of increased unemployment. However, such great investments should be weighed against the reduction of production costs.

9.3.6.6 Develop good supplier attributes

Consistent supply of competitively priced fruit of wide range of the expected and agreed quality should be ensured so as to attain reliability. While this is needful for all markets

wherein the industry exports its citrus products, it may be more expedient for the price competitive Russian market whose specifications are usually visual and taste criteria. Flexibility in terms of payment is highly important for this market as it has been identified as one of the challenges attributed to South African exporters. There is need to build relationships based on trust with selected importers, increasing understanding of selected retailers and their consumer preferences, providing marketing and other investments to promote South African products. The Russian market is already a huge import market and has large potential to grow even further. In the future, the market's demand for quality and ability to pay for that quality may simply increase.

9.4 Supply chain logistics

The international marketing of agricultural products is more diverse and complex, with the supply chain comprised of many key players such as; the producers, exporting companies, storage facility providers, transporters, input suppliers and packaging material suppliers. All these need to be capacitated to handle fruit quality issues satisfactorily with minimal unnecessary fruit quality losses. Incompetency within any link in the chain, especially the current transport problem, will create additional costs. The complexity of the citrus supply chain is made stern by the combination of the perishability of the products exported, the high demands of high quality fruit and the numerous links in the chain. An efficient supply chain is not an option in today's global business.

While the farmer has practical control over the quality of the citrus fruit up to the farm gate, s/he has no practical influence over the actions of the other links in the chain. This calls for an informed supply chain management system. All participants in the conveyance of the fruit to the export market should be actively involved in ensuring delivery of fruit of good quality for the competitiveness of the industry. Risk reduction should be the responsibility of all key players. The management of the supply chain should ensure the efficiency with which the product can reach the consumers' table in the very best of its original state.

As the transport system imposes real problems to the export of South African citrus fruit, serious changes need to be enabled as this is a key link in the chain. All links should be focused at cost reduction, improved performance based on co-operation, increased

information to support joint planning, enhanced customer services, reduced risk and uncertainty and collective creativity and superior competitive advantage.

The information system in the consumer-driven market gives signals in time for coordination and collaboration in the whole chain. Information flow (up and downstream) is the lubrication for a sustainable business. The chain links are significantly dependent upon each other such that information sharing will improve coordination while eliminating enormous amounts of uncertainty and inconsistency. Role players are diverse but uniquely complementary for the competitiveness of the citrus products in the export markets. With the high demand for a good traceability system, trust, integrity, and similarity of vision are indispensable attributes in key players for an efficient supply chain.

Efficiency in fruit production is a necessary component for the delivering of the final product and for market penetration. The link between the producers and the consumer has a strong bearing not only on the competitive edge of the industry but also on its benefits from its participation in the global markets. Global competitiveness is not only production-centred, but enjoins the competitiveness of all the value chain players both in the home and global environments. The competitiveness of value chain links coupled with the unavoidable product traceability requirements will curb the problem of fruit rejections being shouldered by the producers who practically have no control over the produce beyond the farm-gate.

The implementation of policies targeted toward promoting export performance can attract the best gains when all links in the value chain are efficiently performing the duties associated with their area of specialisation. Amidst the extreme complexity of the global market and the changing environment, every participant is striving to win. Maintaining market shares, consumer loyalty, importer relationships as well as striving to meet the requirements of the markets should be part of strategies formulated by all value chain links. Improving competitiveness cannot be attached to benefits and successes of today as others are also seeking ways of improving their competitive advantage, making obsolete certain innovations and sources of good performance in the near future. Participation, sustainable gains, winning and competitiveness in the global market should be viewed as a task for all interconnected links. This is vital because of the top issues debated globally which need unity of purpose in all links e.g. green marketing and carbon footprints.

An overnight transformation of the challenges faced by smallholder citrus growers in meeting food safety and private standards cannot be ensured through strategies alone. Strong support and focused actions are demanded for these producers if they will be internationally competitive. Segmentation in terms of marketing (local supermarkets and exports) may be good as far as it saves different consumer capacities to buy the fruit, but meeting the universal standards should be the focus. International competitiveness, compliance with food safety standards and consumption of fruit that meets the basic standards set by the WHO should be promoted at all levels of production. Much more joint ventures and partnership should be allowed in order to exploit the competitive position within the industry supply chain.

The business environment is drastically changing, demanding compliance in most cases. Alternatively, the role players have to be sound innovators to cope or else stand the risk to lose the competitive position to competitors. Technological advancements (both tangible and intangible) are particularly integral to the smooth flow of the product (downstream) and information (upstream and downstream). Coupled with the inevitability of the supply chain; they are an indispensable component of outstanding performance in today's global markets. Upgrading of the systems and technological devices within the chain as well as an improved coordination are not an option for a sustainable competitive advantage in the export markets. The environment is getting more complex with each passing day and thus attracts vigilance, or the role players risk the capability to cope with the complexity.

9.5 Recommendations for further study

This study was focused on the competitiveness of the industry in the most lucrative and fast growing emerging markets. It was also focused on the performance of whole fruit exports and neglected the processed products such as juice. The study cannot however, conclude to have captured the final conclusion on the performance of the industry in the international market. The processed products may be complimenting what seemingly is a loss of market shares in some markets when considering the export of whole citrus fruit.

This study also proposes that it will be more informative to research on aspects such as establishing the performance of specific groups of exporters. Evaluating the competitiveness of the industry masks huge differences among producers, ranging from resource-poor small

scale to large commercial farmers. Thus, a generalised recommendation for a diverse range of producers may not be very efficient. Each group may need a special treatment.

An evaluation of the performance of an industry in the export market requires a continuous assessment since the business environmental forces change over time and in intensity especially the private food safety and health standards. Information gathering and evaluation should be done in accordance to how they affect and shape the industry's strategies in international competitiveness. The outcomes of such evaluations should be availed to all key supply chain players and policy makers for the formulation of strategies and policies that will promote an effective and internationally competitive industry.

This study proposes that, while general changes in export market shares of the industry cannot trigger immediate policy changes, they may also be a good indicator of the areas that need support for sustainable performance in the international markets. Negative changes in market shares may be an indication that there are weaknesses that negatively affect the industry's ability to retain lucrative market shares, which may call for immediate intervention from the government and all stakeholders.

The business environment for today's agro-business industry engaged in export trade is very complex. The traditional business environment is inadequate to explain the forces involved. Figure 9.1 presents a theoretical framework of the business environment of the citrus industry that this study proposes. While globalisation is a factor within the international economic factors, it however has wrought with it the need for food safety regulations and standards. These are an important and indispensable element of today's business environment. The thesis chapters have provided a detailed discussion about them and their influence on trade.

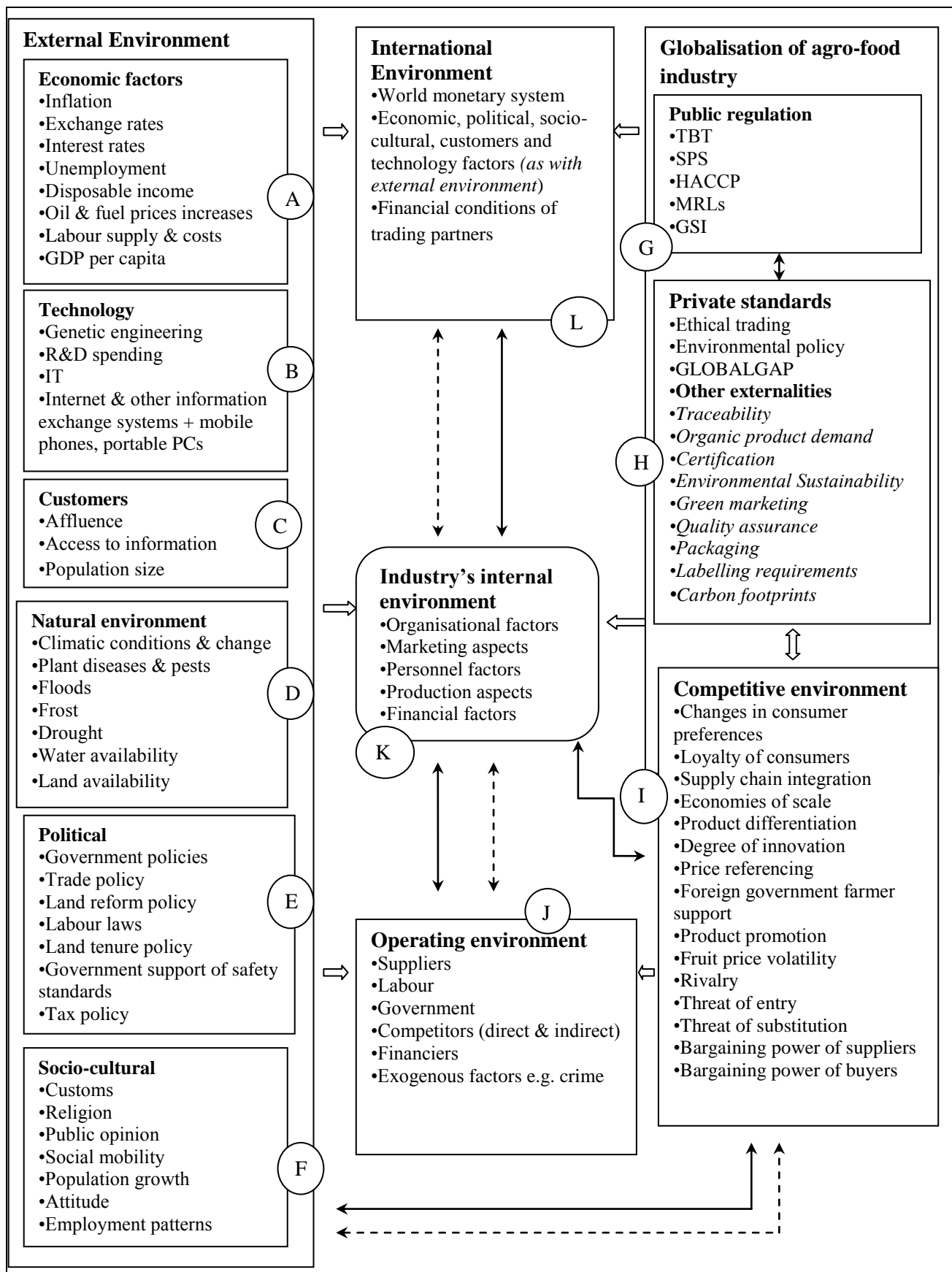


Figure 9: 1: Theoretical framework of the business environment of the citrus industry

Source: Own compilation based on reviewed literature: —→ Direct effect - - - → Indirect Effect

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QUESTIONNAIRE

All information supplied will be treated with the strictest confidentiality

THE COMPETITIVENESS OF THE SOUTH AFRICAN CITRUS INDUSTRY IN THE FACE OF THE CHANGING GLOBAL HEALTH AND ENVIRONMENTAL STANDARDS

Portia Ndou
 Email Address: pcndou@gmail.com
 Department of Agricultural Economics and Extension
 Fort Hare University
 P. Bag X1314
 Alice 5700

**A. GENERAL INFORMATION**

A. What best describes your farm or orchard? *(Tick one)*

1.Large Scale Commercial citrus farm	
2.Emerging Farm	
3.Small Scale Citrus farm	
4.Province	

SECTION B: CHALLENGES AND OPPORTUNITIES IMPACTING ON (DETERMINANTS OF) THE COMPETITIVENESS OF SA CITRUS INDUSTRY

B. On a scale ranging from 0 to 10, please indicate the extent to which the following factors affect your competitiveness in the citrus market: A higher score indicates a more enhancing factor, and similarly a smaller score denotes the more constraining a factor is for your organisation to attain competitiveness.

1. Factor Conditions	Score
Cost of production	
Labour -labour relations	
-productivity	
-worker skills levels	
-staff training	
-worker literacy	
-worker aptitude	
-worker attitude	
-availability of skilled employees	

-Influx of Zimbabweans (and other nationals) into the country	
Natural factors -climatic conditions	
- accessibility and cost of water	
-Citrus diseases e.g. CBS	
-Pests (<i>specify</i>)	
Infrastructure -type	
-location	
-user cost e.g. transportation	
-communication systems	
-electricity	
Capital -cost	
- availability	
Access to Knowledge -cost	
-quality	
-availability of scientific, technical and market knowledge	
-Extension capacity	
Access to Technology -cost	
-quality	
-availability	
-technical information flow	
-availability of scientific research	
2. Demand Conditions	
Market availability	
Market size	
Market information	
Strict quality measures in the export market	
Changes in consumer preferences	
Market growth	
Size and growth in the local market	
Retailers in direct importation	
Global supply chain integration	
Competitive rivals from the developed nations	
International market large enough to obtain economies of scale	
3. Related and supporting industries	
<i>Supporting industries</i>	
-Financial institutions	
-Research institutions	
-Transport companies	
-Suppliers of packaging materials	
-Agricultural input suppliers	
-Electricity Suppliers (ESKOM)	
<i>Related organisations</i>	
-Nurseries,	

-Citrus Growers Association (CGA)	
-Agricultural Research Council (ARC)	
-Citrus Foundation Block (CFB)	
-Exporting companies (<i>specify</i>) e.g. CapeSpan	
-Citrus Research International (CRI)	
-Perishable Products Export Control Board (PPECB)	
-Fresh Produce Exporters Forum (FPEF)	
-National Department of Agriculture (NDA)	
-NGO Extension Services (<i>Specify NGO</i>)	
-Institutes of Higher Learning e.g. universities	
4. Firm strategy, structure and rivalry	
Adaptability	
Culture	
Structure	
Flexibility	
Pricing strategy	
Managerial capabilities	
Market power of buyers	
Market power of suppliers	
Threat of substitutes	
Threat of new entrants	
5. Government	
Indirect support	
Trade Policy	
Land reform policy	
Labour policy	
Fiscal policy (general economic policy)	
Education policy	
Agricultural policy	
Environment policy	
Financial and taxation policy	
Property rights issue	
SA's BEE and transformation policies	
Impact of the tax system on investments and risk taking	
6. Chance	
Economic stability	
HIV/AIDS	
Political stability	
Price stability	
Crime	
SPS regulations	
Trade specifications	
The challenges of management in an international environment	

Non-tariff barriers (-quality and packaging requirements)	
-import licensing	
-quotas	
-Sanitary and Phytosanitary regulations	
- Global Partnership for Good Agricultural Practice (GLOBALGAP)	
- Hazard Analysis and Critical Control Points (HACCP)	
- Codex Alimentarius Commission (Codex)	
-import duties	
-The US plant quarantine Act)	
Oil and fuel prices	
Fluctuations in the exchange rates	
Inflation	
Cultivar mix	
Foreign market support regimes for fruits	
-The reference price or minimum import price system	
-The reference price system for citrus fruits in the EEC	
-Subsidies and price supports (by Canada, USA, Japan and the EC	
2010 World cup hosting by SA	
Global economic recession	

SECTION C: IMPACT OF HEALTH, FOOD SAFETY AND ENVIRONMENTAL FACTORS ON THE CITRUS INDUSTRY

C. According to your experience with the export market, *Indicate whether the costs of the following are 1= increasing; 2=neutral; 3=decreasing*)

Cost of compliance	Score
1. Staff training programs	
2. Audit and Certification	
3. Phytosanitary issues (disease/ pest eradication or control)	
4. Facility upgrading	
5. Investments targeted at enhancing the capacity in production and distribution systems	
6. Market value of products rejected due to poor quality	
7. Market value of products rejected due to exceeding MRL	
8. Maintenance of facilities	
9. A rise in product prices impacting negatively for poor consumers	
10. Food safety measures (unintentionally) acting as trade barriers	
11. Running cost of traceability systems	
12. Net additional cost of compliance e.g. production costs	
13. Decline in export quantities	
14. Trade name switching	
15. Other (<i>Specify</i>)	
16. Other (<i>Specify</i>)	

D. Rate your level of satisfaction with any of the benefits you experience from complying with the quality requirements of the citrus fruit industry

Benefits of compliance	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
1. Increased Consumer and Buyer confidence	1	2	3	4
2. Local consumers will have same view of the local citrus fruit	1	2	3	4

products as with the imported				
3. Compliance with current regulations can eliminate additional effort for the business	1	2	3	4
4. Compliance leads to a reduction in product losses and business liabilities (thus, it can act as a preventative approach)	1	2	3	4
5. Enhances commitment and responsibility in the management towards the production and supply of safe products	1	2	3	4
6. Companies are able to meet customers and legal requirements at both domestic and export markets	1	2	3	4
7. Effective and efficient government and customer oversight enabled through thorough and proper record-keeping	1	2	3	4
8. Improvement and enhancement of relationships between supply chain players, customers and enforcement agencies	1	2	3	4
9. Unimpeded access to new markets (or particular market segments) leading to additional exports	1	2	3	4
10. Access to more remunerative markets and supply chains	1	2	3	4
11. Value of avoiding loss of reputation of industry and/or country in existing markets	1	2	3	4
12. Increasing incomes	1	2	3	4
13. Job security for the employees in the supply chain and within the production system	1	2	3	4
14. Establishment of policies that provide equal access to markets and resources	1	2	3	4
15. Domestic health and welfare	1	2	3	4
16. Expanded or increased demand	1	2	3	4
17. Consistent demand in subsequent years	1	2	3	4
18. Provision of detailed information on market development and requirement changes by clients	1	2	3	4
19. Safety specifications include very detailed guidelines to exporters, including examples of good practice	1	2	3	4
20. Reduced wastage in production processes	1	2	3	4
21. Increased focus and ownership of food safety	1	2	3	4
22. Reduction in operational expenditure	1	2	3	4
23. Enhancement of product quality and consistency	1	2	3	4
24. Repression of crisis due to better functioning traceability systems i.e. prevention of a cause for banning the country as a supplier	1	2	3	4
25. Opportunity to examine overall efficacy of controls	1	2	3	4
26. Reduced level of product inspection and detention abroad	1	2	3	4
27. Enhanced morale of inspection or production staff	1	2	3	4
28. Other (<i>Specify</i>)	1	2	3	4

SECTION D: STRATEGIES TO ENHANCE COMPETITIVENESS

E. What are the prevailing needs/preferences of the current and potential customers? (Place them in decreasing order of significance)

Preferences of current customers	Preference of potential customers
1.....	1.....
2.....	2.....
3.....	3.....
4.....	4.....

F. What are the anticipated changes in the customer needs?

.....
.....

G. What strategies have you put in place to face the anticipated changes?.....

H. Who are your current competitors within South Africa?

I. Which top 5 countries are the current competitors in the international citrus market?

J. What are the competitors' key strengths and weaknesses with respect to their marketing programmes (e.g. products (cultivar mix), distribution, promotion and pricing)?

Key strengths	Key weaknesses
1.....	1.....
2.....	2.....
3.....	3.....
4.....	4.....
5.....	5.....

K. What are the anticipated changes in competitors, should the environment and marketing strategy change?.....

L. How is the set of competitors likely to change in the future?.....

M. Who are likely to be the new competitors?.....

N. State the Reasons.....

O. What is the industry's marketing strategies?.....

P. What are the probable changes in the external environment (economic, political, technological, and social) of the industry?.....

Q. In your own view, state the strategies that can be put in place to enhance a sustainable competitive position for the South African citrus industry in the international market?

Strategy	Responsible authority or board
1	
2	
3	
4	

All information supplied will be treated with the strictest confidentiality