

## An analysis of the competitiveness of the South African citrus industry using the Constant Market Share and Porter's diamond model approaches

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### ABSTRACT

This study evaluated the export market share of the South African citrus industry amidst the ever-changing forces in the business environment such as food safety standards, economic, technological and political factors. The Constant Market Share (CMS) model used time series export quantities from Citrus Growers Association (CGA), the Department of Agriculture Forestry and Fisheries (DAFF) and Food and Agriculture Organisation database (FAOSTAT). The Constant Market Share showed a positive performance for oranges and lemons, which was linked to the industry's inherent competitiveness in the selected markets. Soft citrus quantities were almost stable to decreasing for most markets save for the Middle East, Americas and South East Asia. Limes and lemons as well as grapefruit and pomelos showed an upward trend in the Middle East and Central European markets respectively. Market availability, market size and strong support from the CGA- earn the industry advantage to compete in the export market. However, challenges from both the market and production side such as, high transport costs to markets, stringent food safety standards and high foreign market support regimes were on the increase. While South Africa is a key player in the export market, its competitiveness depends on diverse forces in the global business environment. These negatively affect the price competitiveness of the industry in the oversupplied export markets. It is often more difficult to penetrate the more lucrative markets to which standards are generally more stringent. The implications for market share of the South African citrus exports and hence the industry's competitiveness needs to be examined. In spite of all this, striving to meet the food safety and private standards, maintaining the market share in high value markets as well as government support are inevitable.

**KEYWORDS:** Constant Market Share; South African citrus industry; Competitiveness; Performance

### 1. Introduction

The South African citrus industry has enjoyed export of its fruit from the 1900s. Initially exports were most exclusively to Britain. The whole of the agricultural sector was highly protected and regulated, till the post-apartheid deregulation of agriculture in 1996 and the deregulation of the fruit industry in 1997 (Mather and Greenberg, 2003). The exporters had adapted to the single channel marketing system which majored in pooling products on cultivar and quantity bases (Mather and Greenberg, 2003). The single channel marketing system rewarded volume than quality, resulting in all growers receiving the same unit price (Gibbon, 2003). This long standing export performance of the South African citrus industry has not been without both opportunities and challenges. South Africa's diverse 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 preferences in different markets. The diverse climatic conditions ensure that the industry will not suffer a total crop failure. Most citrus pests and diseases are climatic conditions specific. For instance, the Citrus Black Spot (CBS), false codling moth and the greening disease are prevalent in the northern warm districts. An infestation of one locale may not affect production in other areas. This is an advantage as supply to the market can be guaranteed at all times despite variations in quality. South African soils are also mostly slightly acid (pH around 6) sandy loams, characterised by less difficulties in managing soil nutrition (Philp, 2006).

The deregulation of the industry exposed the citrus producers to real market forces without government intervention. The high incidence of food-borne diseases associated with international trade and the potentially rapid spread of hazardous materials have seen the global agro-food industry tightening the food safety standards (Anders and Caswell, 2006). Stringent regulations that

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govern trade and tight private food safety and health standards to safeguard the consumers of traded food items, particularly in the developed countries, have been put in place. A growing appreciation of the link between diet and health has also contributed to different eating patterns and has influenced food purchases within and from the less developed countries. Consumers are demanding much more than quantity- they also want quality, consistency and value (Drabenstott, 1995). The changing and diverse consumer demands, new technologies (bio- and information technologies) and new product characteristics also led to major structural changes in the production and distribution of agro-food products not only in South Africa but in many parts of the world. Thus, exposure to world markets through the process of globalisation brings with it challenges, opportunities and opens up possibilities to new products and clientele. One of the greatest challenges for the South African citrus industry was adapting to quality demands by the importers in addition to adapting to the many changes that the nation has undergone in the past few years with respect to policy issues.

Increased access to information by today's consumers coupled with the process of labelling gives the consumer knowledge about the availability of certain products in markets, their origin and the production processes involved. This has attracted improvements in quality and rapid evolving of down-stream supply chains. The increased distances between suppliers and consumers associated with international trade have made quality assurance standards directly linked with supply chain management. Product characteristics increasingly demanded by consumers include safety, nutritional status and authenticity (Mehotra, 2006). The later relates to the need for easy traceability of the product. Thus, paying explicit attention to production processes that promote a safe and sustainable environment cannot be avoided. 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, 2008).

Despite the advantages of a counter-seasonality production system to its major northern hemisphere rivals especially Europe (South Africa Info, 2008), which is the country's main export market, South African citrus exporters face challenges of high transport costs, especially inland to ports (primarily Durban). In spite of the claims that South Africa enjoys

world-class infrastructure such as deep water ports, shorter shipping times to Europe compared to southern hemisphere rivals, good road networks and a sophisticated financial sector that facilitates exports (South Africa Info, 2008), exporters also incur additional costs at harbours where congestions and operational inefficiencies are common (Van Dyk and Maspero, 2004). This is a major challenge especially when exports are destined for the European countries, where the South African citrus industry's northern hemisphere rivals have relatively lower transport costs as a result of geography. Moreover, delays anywhere within the supply chain can be detrimental to fruit quality, resulting in failure to meet market requirements. Apart from facing intense competition from the southern hemisphere rivals, longer northern hemisphere production seasons have posed a challenge (Mather, 2003). The international fruit export is often characterised by oversupply. In 2000, the industry as a whole lost about SAR1 billion<sup>2</sup> in export earnings (Mather, 2003). The losses were attributed to poor fruit quality, the existence of too many inexperienced export agents and oversupply in the international market. Oversupply automatically translates into non-price competition such as fruit quality and traceability which have dominated today's global market. It also leads to lower prices, a condition unfavourable for producers with high production costs.

However, South Africa ranks thirteenth in world citrus production, with China, Brazil, India and the USA taking the first four leading positions respectively. Although the Southern African citrus industry produces only 1.5% of the world production (Philp, 2006), South Africa ranks third in citrus export after Spain and Turkey (CGA, 2012). South Africa exports a diverse range of citrus products; oranges, soft citrus, grapefruits, lemons and limes, and citrus juices. Seventy (70%) percent of the total citrus production is exported, 8% processed and 22% is locally consumed as fresh fruit (CGA, 2012).

Despite its importance, South African citrus exports depend on diverse forces in the global business environment beyond the control of the industry. Among these, the food safety and health standards have been shown to be highly influential, determining export volumes to different markets. The competition for the more lucrative markets is therefore expected to be tight. Their influence determines the trend in the traded fruit quantities and market shares. This paper sought to investigate the export performance of the South African citrus industry in the post apartheid era particularly in the light of the changes in the food safety and quality standards as well as the many policy and business environmental changes surrounding the South African citrus export industry. Specifically, the study sought to determine the market share of the industry over the years using the Constant Market Share model. The study provides an analysis into the strength of the industry's competitive position in the global market and an understanding of the importance of external factors that may influence that position. The study is of great benefit as it explores how the industry fares against its

<sup>2</sup> At the time of writing this article (September 2012), SAR1 was approximately equivalent to \$US 0.12, £0.075, and €0.094

rivals. 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. Thus, this analysis unveils the conditions that can aid in formulating strategies focused upon high competitiveness amidst the ever-changing business environment.

## 2. Analytical framework and model

The study on which this paper is based analysed the export market share of the South African citrus industry between 2004 and 2011 in the major high value international fruit markets, namely, the Americas, UK, Europe, the Middle East, Asia as well as Africa. To measure the performance 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 emerging ones like the Middle East. Due to the rapidly changing regulatory environment with respect to trade restrictions and private food safety requirements, 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 and import volumes in selected markets were examined.

Secondary data comprised trade statistics and international destinations of fruits. Time series data of sufficient length were available from Food and Agriculture Organisation's database (FAOSTAT), the Department of Agriculture Forestry and Fisheries (DAFF) and the local farmer organisation, the Citrus Growers Association (CGA) Statistics book.

The Constant Market Share (CMS) model was employed. The Constant Market Share (CMS) model was developed by Tyszynski 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). The Constant Market Share involves the measure of a country's comparative export performance as a ratio of its exports to those of a standard, i.e.

$$S = \frac{x}{X} \quad (1)$$

Where  $S$ , is the ratio of exports of a 'focus country' ( $x$ ) to the exports of one or more countries that serve as a standard of comparison ( $X$ ). The proportional change in exports ( $S$ ) is decomposed into 3 terms: a scale effect ( $Q$ ), a competitive effect ( $s$ ) and a second-order effect ( $sQ$ ):

$$q = Q + s + sQ \quad (2)$$

Where  $q$ ,  $Q$  and  $s$  are the proportional changes of  $x$ ,  $X$  and  $S$  respectively, over a discrete period of time.

Equation [2] is often used as an aggregate version of Equation [3] where in the later, the exports are differentiated in terms of product type ( $i=1, \dots, I$ )

and regional destination ( $j=1, \dots, J$ ), the export growth for the focus country, say Russia, in market  $ij$  can be written as follows:

$$q_{ij} = Q_{ij} + S_{ij} + S_{ij} Q_{ij} \quad (3)$$

Where  $q_{ij} = \Delta x_{ij} / x_{0ij}$  is the growth in exports of Russia for the  $(i, j)^{th}$  commodity;  $Q_{ij} = \Delta$

$X_{ij} / X_{0ij}$  is the growth in exports of the set of countries against which the focus country's export performance is compared, herein called the reference group or standard; and  $s_{ij} = \Delta S_{ij} / S_{0ij}$  is the growth in the export ratio for the  $(ij)^{th}$  commodity.

The CMS model allows for the evaluation of international exchanges involving one or more countries exporting in one or more destinations. It is based on the disaggregation of variations occurring either in their exports or in their market shares. In this case the exporter consists of one country, South Africa, and 6 destination regions. The key consideration for the use of this model is that the growth rate of imports coming from the rest of the world is different from the growth rate of imports coming from a single country.

The CMS has as its basis, the assumption that an industry should maintain its export share in a given market (i.e. remain unchanged over time). Considering the global village within which today's agribusiness operates, the business environmental factors impact each country differently. The impact of these forces on similar industries may result in different and independent reactions, impacting also on the fruit volumes exported to the same market outlet. In addition, there are differences in home base environmental factors affecting the imports of a single market coming from different countries. 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. The CMS was found to be most appropriate for the analysis of the performance of the South African citrus industry since several markets for the industry were under review.

The CMS model is specified as follows (Barbaros, Akgungor, Aydogus, 2007):

$$\Delta q = \sum_i \sum_j S_{ij}^0 \Delta q_{ij} + \sum_i \sum_j Q_j^0 \Delta S_{ij} + \sum_i \sum_j \Delta S_{ij} \Delta Q_{ij} \quad [1] [2] [3]$$

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  $j$

$\Delta$  = annual change

$0$  = base year

The CMS analysis assumes three factors to explain why a country's exports grow faster than the world exports. The three terms are indicated on the right hand side of the equation, namely, (1) the structural or market effect, (2) the competitive effect and (3) the



**Table 1:** Components of the CMS Model

Item	Interpretation
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.

*Adapted from Chen and Duan, 2001*

second-order effect, respectively. These terms are defined in Table 1 below.

The structural effect is the change in exports due to the change in the importing country's imports. In simpler terms, it is the growth of the export market relative to the world export growth (Chen and Duan, 2001). 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 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 second-order effect 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).

A short-coming of the CMS model is that it does not provide information on the causes of any gains or losses of market shares. To compensate for that, the CMS model is used side-by-side with Porter's diamond model. The diamond model (Porter, 1998) identifies the determinants of competitiveness, namely those factors that either enhance or hamper competitiveness. The determinants are grouped into factor conditions, demand conditions, firm strategy, structure and rivalry, related and supporting industries, government and chance events. 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. The perceptions of the citrus exporting farmers about the impact of these determinants of competitiveness were measured using a 10-point Likert scale. The 10-point Likert scale was anchored by 1 for 'impeding' to 10 for 'most enhancing'. The closer to 10 the index is, the more enhancing the determinant and a lower index denotes an impeding influence.

Semi-structured questionnaires were administered to the citrus export producers who were identified by the CGA. The questionnaires were used to establish citrus producer perceptions on the impact of predetermined environmental factors influencing the performance of the citrus industry. The questionnaires were mailed to the farmer clientele throughout the country so that all the growing regions, production and climatic conditions

and cultivars were accommodated. The unit of analysis was the citrus producers engaged in export of their products. 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. A total of 151 responses were received and analysed out of an estimated 1400 citrus growers distributed across the nation including those in Zimbabwe and Mozambique (Philp, 2006). This gave a response rate of 10.8%. The percentage was representative enough as it embraced the different classes of exporting farmers ranging from the resource-poor smallholders, emerging and the large-scale commercial producers. Though South Africa exports the juices of citrus fruit juice, this study only considered the export of whole fruits.

### 3. Results and discussion

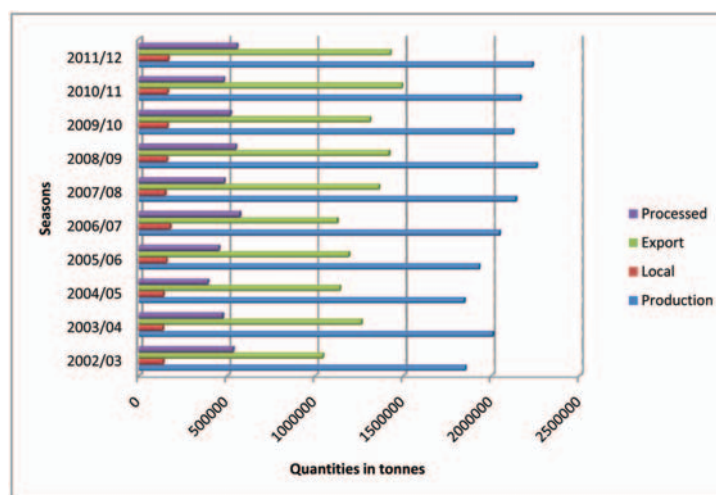
Differences in quantities demanded of each citrus cultivar were considered for the analysis of the competitiveness of the South African citrus industry. Each type was treated separately. The analysis adopted the following categories; oranges, grapefruit, lemons and limes and soft citrus. Various cultivars within each category were ignored.

A greater proportion of the citrus products are exported, while the balance is either consumed locally either as fresh fruit or in processed form (Figure 1). Although the industry experienced a decline in quantities of citrus fruit produced between 2002 and 2006, export quantities remained near stable to increasing and later rose as reflected in Figure 1. Despite an increase in total production for the 2011/12 season, Figure 1 reflects a decline in export quantities of citrus fruit. The locally consumed fruit forms the smallest portion of total citrus produced in South Africa.

Oranges constitute a greater proportion of the exported citrus products (Figure 2). The breakdown of exported citrus products (Figure 2) confirms that oranges constitute the highest amount (about 70%) of exported citrus fruits, followed by grapefruit.

#### Performance of the South African citrus industry

The Middle East, South East Asia, UK, Central Europe, Americas and Africa have been the major export market destinations for South African citrus products for the previous 5 seasons. 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



**Figure 1:** South African citrus production, processing and exports (Data according to CGA, 2012)

countries is summed up in Table 2. A greater proportion of grapefruit was exported to the Middle East where it enjoyed a market share of 76% in 2006 (Table 2). Lemons were also mainly exported to the Middle East where South African share amounted to between 36 and 82%. The UK accounts for a larger share of the South African soft citrus than other destinations.

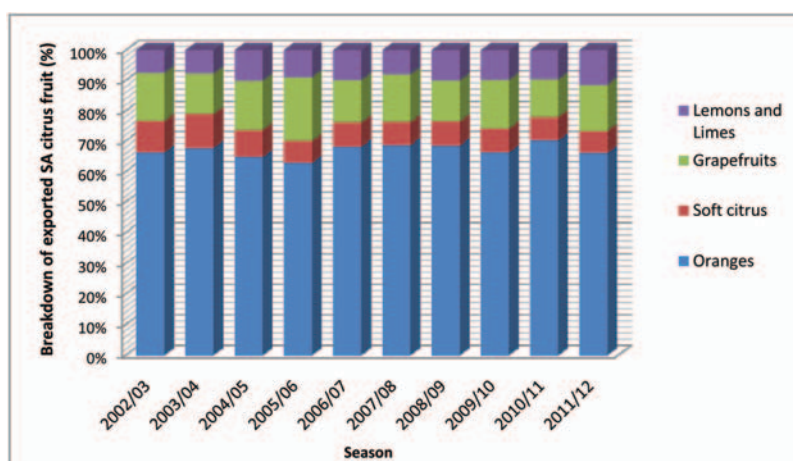
### Results of the Constant Market Share Analysis of the South African citrus fruits

The three factors used to explain the growth of a country's exports were analysed through the use of the Constant Market Share model (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 (Barbaros, Akgungor and Aydogus, 2007). The CMS analysis reveals that South Africa's export growth of lemons and Oranges is due to the competitiveness of its fruit in all the markets (Table 3). The trend for the import quantities in destinations of interest was generally stable, with the exception of fluctuating conditions for the oranges in the Middle East and Central Europe, as well as the

increasing and sporadic situation for the lemons and limes in the Middle East and Americas respectively. Soft citrus is highly competitive in the UK, Central Europe and the Americas where the import trends apparently show varied trends. South African grapefruits and pomelos are competitive in the Middle East, South East Asia and the UK. However, the performance of the grapefruits is due to the structural effect in Central Europe.

### Factors affecting the performance of the citrus industry

The results of Porter's diamond model were divided into factor conditions, demand conditions, related and supporting industries, strategy, structure and rivalry, government and chance events as indicated in Table 4 to 8. The perceptions of the exporting farmers were measured on a 10-point Likert scale. A lower index denotes an impeding influence while a higher index (closer to 10) shows a more enhancing the determinant. The demand conditions for this study entailed the export market-side challenges since the export market was under consideration. Table 4 shows that foreign market support systems, non-tariff technical barriers to



**Figure 2:** South African citrus fruit exports composition for each year (% of actual values). (Trend data according to CGA, 2012)

**Table 2:** Composition of South African citrus exports in different countries of destination

Country of Destination	Share of total South African exports (%)							
	2004	2005	2006	2007	2008	2009	2010	2011
Share of total South African Grapefruit (Incl Pomelos)								
Middle East	48.54	47.2	76.37	72.15	57.75	21.64	17.68	21.62
S.E. Asia	0.003	0.005	0.006	0.005	0.004	0.002	0.002	0.019
UK	26.85	32.27	37.67	45.70	36.86	28.84	31.81	35.40
Europe	25.43	30.99	18.59	21.39	15.40	26.80	13.45	14.73
Africa	4.61	4.28	4.59	6.37	4.94	32.70	27.71	29.43
Americas	5.57	6.397	6.74	6.06	5.09	29.51	6.85	7.11
Share of South African Lemon exports								
Middle East	56.58	82.32	45.86	36.99	62.51	26.28	28.42	23.28
S.E. Asia	21.49	27.36	27.86	27.19	59.19	55.87	23.17	24.30
UK	17.48	20.8	18.44	17.05	34.22	11.98	13.29	14.03
Europe	6.49	7.89	6.15	3.19	4.71	6.65	5.39	4.78
Africa	27.77	10.97	13.85	11.77	34.08	34.87	39.35	34.07
Americas	0.25	0.28	0.27	0.2	0.43	4.86	1.01	2.33
Share of total South African Orange exports (%)								
Middle East	46.65	49.56	46.08	44.5	58.55	21.09	21.13	20.20
S.E. Asia	31.79	42.97	45.1	60.83	47.92	22.34	26.59	23.27
UK	19.98	26.23	28.2	28.29	31.57	23.27	30.12	27.13
Europe	18.99	25.26	22.73	21.11	18.60	14.15	16.02	16.31
Africa	5.24	6.68	7.25	5.62	5.96	4.89	57.68	56.69
Americas	11.91	12.63	14.73	13.5	13.32	9.14	10.76	9.12
Share of total South African Soft citrus exports (%)								
Middle East	5.39	8.29	5.34	6.54	3.94	8.6	14.07	7.5
S.E. Asia	6.23	4.89	4.37	4.29	3.91	1.77	2.11	1.58
UK	11.39	13.53	13.52	17.57	19.02	13.29	15.60	14.74
Europe	3.31	3.38	2.62	3.31	3.21	3.36	2.95	2.97
Africa	9.59	9.69	8.44	8.24	6.66	35.26	42.45	27.24
Americas	5.795	5.595	5.02	6.16	6.38	2.09	2.18	1.84

Data average export composition to each market (CGA, 2009; 2012; DAFF, 2011) and import figures of the major destinations for citrus fruits (FAOSTAT, 2010)

trade (TBT) and trade specifications impact negatively on performance.

Changes in consumer preferences enhance the competitiveness of the industry with a score of 5.1. This concurs with Mabiletsa's (2006) findings that consumers prefer seedless, easy-peeling cultivars with very excellent internal and external qualities which are highly favoured in the global market. It is estimated that by 2020 the fresh fruit and vegetable sales would have grown by 4.2% (Mashinini, 2006). The increase in demand for the fresh fruit and vegetables 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 quality and nutritious food stuff (Mashinini, 2006). The highly influential supporting and related organisations, institutions and departments for the citrus industry are agricultural input suppliers, the CGA and the Citrus Research International (Table 5). South African financial institutions and the National Department of Agriculture (now known as Department of Agriculture Fisheries and Forestry (DAFF)) were deemed not to promote the competitive advantage of the export farmers with a score of 3.5 and 4.5 respectively (Table 5). Institutes of higher learning had below average

influence. The universities and the CRI are important for research.

All factors whose influences are sporadic and are subject to twists and turns were classified as chance events. All the aspects considered as chance events impacted negatively on the smallholder citrus producers' performance (Table 6).

Table 7 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, worker skills, literacy and the availability of skilled employees are major factors affecting the competitiveness of the smallholder producers. The employment of personnel with the rightful skills may be very expensive for the farmers and in turn impact negatively on production cost. Nonetheless, it has to be addressed if the producers will be significant players in the citrus export market.

Government influence was deemed to negative on the industry's export activities (Table 8). The education policy, environmental policy and tax system on investments and risk taking have been found to have a slightly above average impact. The threat of new entrants, substitute cultivars, price strategy, adaptability and

**Table 3:** The Constant Market Share Analysis of the South African citrus fruits (2004-2011)

	<b>Trend in import quantities (2004-2011)</b>	<b>Structural Effect</b>	<b>Competitive effect</b>	<b>Secondary effect</b>
<b>Oranges</b>				
Middle East	+/-	-0.62	1.98	-2.08
S.E. Asia	=	-1.14	1.38	-2.23
UK	=	-7.38	0.82	-0.38
Central Europe	+/-	-0.36	-0.75	-4.65
Africa	=	0.39	0.01	-0.03
Americas	=	1.32	0.12	-0.04
<b>Grapefruits &amp; Pomelos</b>				
Middle East	=	s	0.19	-0.46
S.E. Asia	=	-5.93	3.84	-0.001
UK	-	-7.38	0.82	-0.38
Central Europe	+	1.79	-0.21	-0.56
Africa	=	-1.17	0.03	-0.05
Americas	+/-	0.43	-0.15	0.01
<b>Lemons &amp; Limes</b>				
Middle East	+	12.13	0.46	-2.86
S.E. Asia	=	-2.98	4.91	-0.42
UK	=	1.02	2.24	0.12
Central Europe	=	0.09	0.13	-0.04
Africa	=	-0.04	2.02	-0.21
Americas	+/-	10.41	0.03	-0.03
<b>Soft citrus</b>				
Middle East	+	18.53	-3.43	-14.02
S.E. Asia	+	34.28	-2.24	-18.59
UK	-	-38.71	8.99	-14.19
Central Europe	+/-	4.42	0.17	0.09
Africa	=	6.32	-3.92	-1.16
Americas	+	10.57	1.02	-0.51

(+)= increasing; (-)= decreasing ; (+/-)= fluctuating; and (=)= near stable trend

**Table 4:** The most important market side demand conditions affecting the performance of the South African citrus industry

<b>Determinant of competitiveness</b>	<b>Rate</b>
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). Average standard deviation =1.3



**Table 5:** Related and supporting industries conditions influencing the performance of the South African citrus industry

Determinant of performance	Rate
<b>Supporting industries</b>	
-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
<b>Related industries and organisations</b>	
-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).  
Average standard deviation=1.5

flexibility were found to impact negatively on competitiveness.

This and other previous studies (Brooke, 2009; 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 small-holder 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,

**Table 6:** The most important chance factors influencing the competitiveness of the South African citrus industry

Determinant of performance	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).  
Average standard deviation=1.3

**Table 7:** The most important factors conditions influencing the performance of the South African citrus industry

Determinant of performance	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).  
Average standard deviation=1.2

exchange rate fluctuations, inflation and crime were the major factors impeding competitiveness of the industry. The list also included HIV and Aids, economic stability, 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.

#### 4. Conclusion and recommendations

The CMS analysis proved that the competitiveness of the South African citrus industry's orange and lemon fruit in the period 2004 - 2011 is due to good performance and competitiveness. It is most likely that the shock of deregulation and other policy reforms have eased 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 and infrastructure development focused on ensuring fruit of good quality. Also, the South African citrus industry has been exporting its fruit for over a century now and has established reputation and relations with most of its



**Table 8:** The most important government and firm strategy, structure and rivalry conditions affecting the performance of the South African citrus industry

Firm strategy, structure and rivalry conditions	Rate
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
<b>Governmental factors</b>	
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). Standard deviation=1.4

traditional market destinations. It is easier to maintain an established market relationship than to venture into a new one especially in today's highly uncertain and competitive environment characterised by diverse health and food safety regulations, private standards, high demand for traceability, ethical trading and numerous food quality prescriptions. These are more in the traditional markets like Europe than the emerging markets like Russia.

Most of the factors affecting the competitiveness of the citrus industry are on the increase and, with the rapid globalisation of the agro-food industry, the food safety standards and high fruit quality demand may turn to be the best measure across borders, compelling all exporting industries to comply or run the risk of losing lucrative export markets. 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 like the food safety standards and changes in consumer preferences. Switching and diversification of markets aimed at evading compliance with stringent SPS and TBT standards set by the importers can be weighed against financial implications for the exports. 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. In such a situation, markets can offer size but not profits. Industries need larger customer base for economies of scale, but returns should not be compromised unless the shift in markets pays better than compliance with stringent standards in existing markets. Without compromising on return on capital invested in the production process, it is worthwhile for the industry to

explore and sell its products in the most accessible markets.

Existing research collaboration with private research institutions, universities and government research institutions should be strengthened. Since SPS barriers have replaced tariffs as protectionist tool, a country's global market share is not necessarily measured by the quality of its product as set by the importer, but by the quality of its research and technical abilities. The South African citrus industry should brace itself to be a leading research industry that is able to come up with new cultivars in response to consumer needs such as easy-peeling, fruit seediness among others. Home-based development of new varieties should be done in concurrence with the consumer preferences. Such developments should be made with meaningful differences from competitors, not for the sake of being different. In today's consumer-centred global business, developments in products and cultivars should be continuously and consistently aligned with the trends in consumer demands and preferences. 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.

The food safety standards have been found to have negative implications on the export competitiveness of the South African citrus industry. The negative influence of the private standards may have serious impacts on export flows of citrus from South Africa, especially upon the smallholder producers who are characterised by limited resources and technical incapacities. Technical assistance is needful especially for the smallholder farmers faced with challenges of compliance and verification of compliance standards especially from the EU.

Innovation, product mix, quality assurance and consistency in value improvement should be uppermost in the marketing strategies. There is no 'average' customer, especially with the globalisation of the agribusiness industry. It is easier to retain customers than to gain new ones especially with the high entry requirements characterised by traceability and ethical trading. Individual differences in consumer preferences and market segments exist, but, it is worthwhile for the industry to consistently create value aimed at winning the competitive marketing war.

All key players in the supply chain; the producers, exporting companies, packhouse owners, storage facility operators, transporters, input suppliers and packaging material suppliers need to be capacitated to handle fruit quality issues satisfactorily to avoid unnecessary fruit and fruit quality losses. Incompetency within any link in the chain, especially the current transport problem, will add to costs. The government needs to address infrastructural capacities, transport and harbours or ports efficiencies in order to smooth the flow of fruit exports to destination market. This will also reduce high transaction costs incurred which in turn improves profit margins. There is great need for government support for citrus producers engaged in export as they are faced with unfair competition from heavily subsidised northern hemisphere rivals and protected markets.

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## REFERENCES

- Anders, S., and Caswell, J.A., (2006). *Assessing the Impact of Stricter Food Safety Standards on Trade: HACCP in the U.S Seafood with the Developing World*. The American Economics Association Annual Meeting. California, U.S.A, July 23-26, 2006.
- Barbaros R, F., Akgungor, S., and Aydogus, O., (2007). *Competitiveness of Turkey's Organic Exports in the European Union Market*. Contributed Paper prepared for presentation at the 105th EAAE Seminar 'International Marketing and International Trade of Quality Food Products', Bologna, Italy, March 8-10, 2007.
- Brooke, M., (2009). *Maputo Citrus stakeholders workshop (Action Meeting)*. Maputo current constraints, CGA. Available online: [www.cga.co.za](http://www.cga.co.za) [Accessed on 2 March 2011].
- CGA., (2009). *Key Industry Statistics*. Citrus Growers Association. South Africa.
- CGA., (2012). *Key industry statistics for citrus growers*. Citrus Growers Association. South Africa.
- CGA (Citrus Growers Association)., (2010). Available online at: <http://www.cga.co.za/site/files/5438/FIFA%20World%20Cup%20-%20Citrus%20Logistics%20Impact.pdf> [Accessed on the 24<sup>th</sup> of March 2010].
- CGA (Citrus Growers Association)., (2011). *CGA Road show*. 22 February 2011. Kat River Citrus Boardroom, Fort Beaufort.
- Chen, K., and Duan, Y., (2001). *Competitiveness of the Canadian Agri-food Exports Against Competitors in Asia: 1980-1997. Rural Economy Project Report*, AARI Report. University of Alberta, Edmonton, Canada.
- DAFF (Department of Agriculture, Forestry and Fisheries)., (2011). *A profile of the South African citrus market value chain*. Directorate Marketing, DAFF, South Africa.
- Drabenstott, M., (2011). Agricultural industrialisation: Implications for economic development and public policy. *Journal of Agricultural and Applied Economics* **27**(1):13-20.
- FAO., (2008). Available Online: <http://www.fao.org/docrep/008/y5785e/y5785e0d.htm> [Accessed on 31 January 2008].
- FAOSTAT., (2010). Available at: [www.fao.org](http://www.fao.org) [Accessed on 16 December 2010].
- Gibbon, P., (2003). Value chain governance, public regulation and entry barriers in the global fresh fruit and vegetable chain into the EU. *Development Policy Review* **21**(5-6): 615-625.
- Henson, S., (2007). New markets and their supporting institutions: Opportunities and constraints for demand growth. *Background Paper for the World Development Report 2008. Agriculture for Development*. Santiago, Chile: RIMISP- Latin America Centre for Rural Development.
- Mabiletsa, P., (2006). *Republic of South Africa: Citrus semi annual 2006 Gain Report No SF 6019 of the 28<sup>th</sup> February 2006*. United States Department of Agriculture Foreign Agriculture Service.
- Mashinini, N., (2006). The changing consumer: Demanding but predictable 'in' Braga, G (ed)., (2006). *International Food and Agribusiness Management Review* **9**(6):103-108.
- Mather, C., and Greenberg, S., (2003). Market Liberalisation in post-Apartheid South Africa: the restructuring of the citrus exports after deregulation. *Journal of Southern African Studies* **29**(10), 393-412.
- Mather, C., (2003). *Regulating South Africa's citrus export commodity Chain(s) after liberalisation*. School of Geography, Archaeology and Environmental studies. University of Witwatersrand.
- Mehotra, I., (2004). A perspective on developing and marketing food products to meet individual needs of population segments. *Comprehensive Reviews in Food Science and Food Safety*. **3**:142-144.
- Milana C. (1988), Constant Market Shares analysis and Index number theory, *European Journal of Political Economy*, **4**(4): 453-478.
- Philp, B., (2006). *South African Citrus industry study report*. Findings and observations, Government of South Australia. Primary industries and resources SA.
- Porter, M.E., (1998). *On Competition*. Harvard Business Review Book Series. USA.
- Porter, M.E., (1990). *The competitive advantage of Nations*. London, Macmillan.
- Siggel, E., (2006). *International competitiveness and comparative advantage: A survey and a proposal for measurement*. Springer Science + Business Media, LLC 2006, *Journal of Industry, Competition and Trade* (2006)**6**: 137-159.
- South Africa Info., (2008). South African agriculture [Online] Available: <http://www.southafrica.info/business/economy/sectors/agricultural-sector.htm> [Accessed on 06 April 2010].
- Turkekul, B., Gunden, C., Abay, C., and Miran, B., (2007). A Market share analysis of virgin oil producer countries with special respect to competitiveness. Paper Prepared for presentation at the I Mediterranean Conference of Agro-food Social Scientists. 103<sup>rd</sup> EAAE Seminar *Adding value to the Agro-food supply Chain in the Future Euro-Mediterranean Space*. Barcelona, Spain, April 23<sup>rd</sup>-25<sup>th</sup>, 2007.
- Tyszynski, H., (1951). World trade in manufactured commodities, 1899-1950. *The Manchester school of Economic Social Studies* **19**: 272-304.
- UNCTAD (United Nations Conference on Trade and Development)., (2010). Available online: [www.unctad.org](http://www.unctad.org). [Accessed on 31 March 2010].