A Competiveness analysis of the Potato Industry in South Africa

This study forms part of an initiative by Potato SA to investigate the value chain for potatoes in South Africa.

The study entails a competitiveness analysis of the potato industry . This analysis will provide all the role players in the potato industry with a proper understanding of the forces that drives profitability, sustainability and competitiveness in the industry and it will also help to determine the key success factors and constraints impacting on the competitiveness of different sectors in the potato value chain.

In this study specific emphasis was given to the primary potato industry.

The aim of this study;

1. Determine the challenges faced by potato producers.
2. Investigate the input industry for potatoes.
3. Investigate the comparative advantage of the primary potato industry in South Africa and link it to the competitiveness of the industry.

This study includes reports written by the University of the Free State on the Potato Processing Industry and a report by the University of Pretoria on Supply Chain Management in the potato industry.

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Industry Overview

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Potatoes' contribution to agriculture

- Potatoes are the single most important vegetable crop in South Africa (Food pricing monitoring committee (FPMC), 2003:158).
- The value of potato production is in the vicinity of R3.5 billion per annum.
- Potato production's contribution to the gross value of total agricultural production was 3.2% and 3% for the years 2006/07 and 2007/08 respectively. The figure on the left hand side shows the contribution for the past 12 years.
- Potato production provide livelihoods for producers and labourers and has notable multiplier effects up and downstream in the supply chain in the input, transport, processing, retail, packaging and formal and informal trade sectors.
- According to the DoA (2005a) the food retail market was worth R165 billion in 2004 and vegetables (including potatoes) contributed 16 percent to this figure (Madevu *et al*, 2007).
- In general, the potato industry contributes the following to the South African economy:
  - Creation of job opportunities
  - Large downstream and upstream effect through industry linkages
  - Export earnings for the country
  - Empowerment of traders in the informal sector
  - Food to neighbouring countries
  - Improved welfare of the general population through productivity increases
  - Opportunities for emerging small-scale farmers
  - Income generation in small towns and rural areas

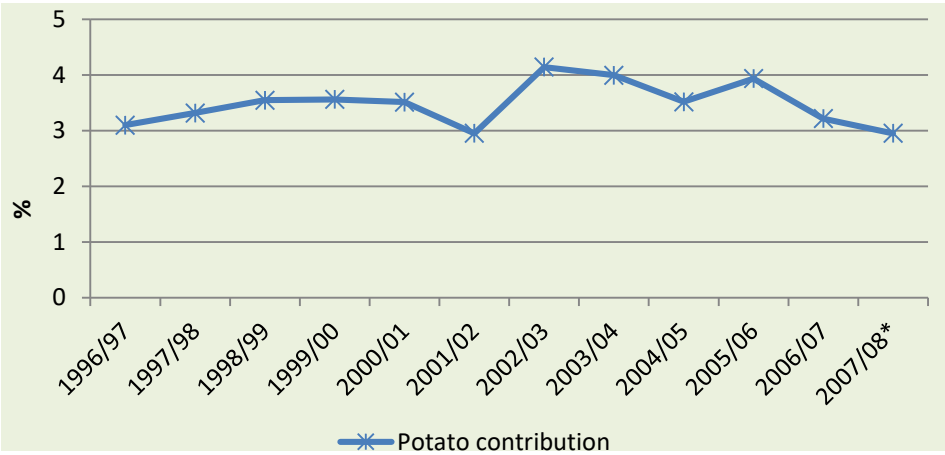

Figure 1: Contribution of potatoes to the gross value of total agricultural production.
Source: DoA, 2009

- Potatoes are produced in 16 areas in South Africa and can be produced all year around.
- Potato production comprises table potatoes and seed potatoes with the former produced for consumption and the latter for regeneration.
- In 2007 the potato industry consisted of 681 commercial potato production farming units.
- The most significant market outlets for South African potatoes are formal and informal fresh consumption and processing.

The Potato Value Chain

- As previously stated potato production comprises table potatoes and seed potatoes. Currently 88% of the potatoes produced are used for consumption and 12% are used for regeneration.
- The primary distribution channel for potatoes are the fresh produce markets (FPM's). South Africa has 17 fresh produce markets which are owned by the local municipality authorities around South Africa.
- The FPM's functions on a "commission on sales" basis and the revenues are collected by the local municipal authorities.
- FPM's serve as place for price formation. The supply and demand on the market determines the price of potatoes.

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- Product grading is also a critical component of price determination on the market. The potatoes are officially graded on the market and the fresh produce quality standards originally developed by the marketing authority serve as a reference point.
- The four major FPM's are, Johannesburg, Pretoria, Durban and Cape Town.
- The Johannesburg fresh produce market is labelled as the price determiner of products. It is also the largest fresh produce market with an estimated 35% market share, followed by Pretoria with a 25% market share. The remaining shares are distributed throughout the smaller fresh produce-, informal- and satellite markets (UP, 2008).
- The figure on the left hand side shows how the volume of potatoes delivered at the Johannesburg and Pretoria fresh produce markets have increased over the past nine years while the volumes at the other markets remained stable.
- In 2005 the fresh produce markets were responsible for the distribution of 59% of the potato crop, this figure then decreased and in 2007 it was only 53%.
- The remaining crop is distributed through direct sales from producers to the processors, direct trade to retailers and wholesalers and some informal traders and consumers. In 2005, 41% of the crop was distributed through direct sales and trade and it then increased to 47% in 2007.
- Apart from being consumed fresh, potatoes are also processed into a number of products.
- The predominant industries in the potato processing sector are the frozen french fries industry and the snack (crisps) industry. Companies with the largest market share in the frozen fries industry are McCain, Lamberts Bay Foods and Natures Choice. Companies with the largest market share in the snacks (crisps) industry are Frito-Lays and Willards (UVS, 2008).

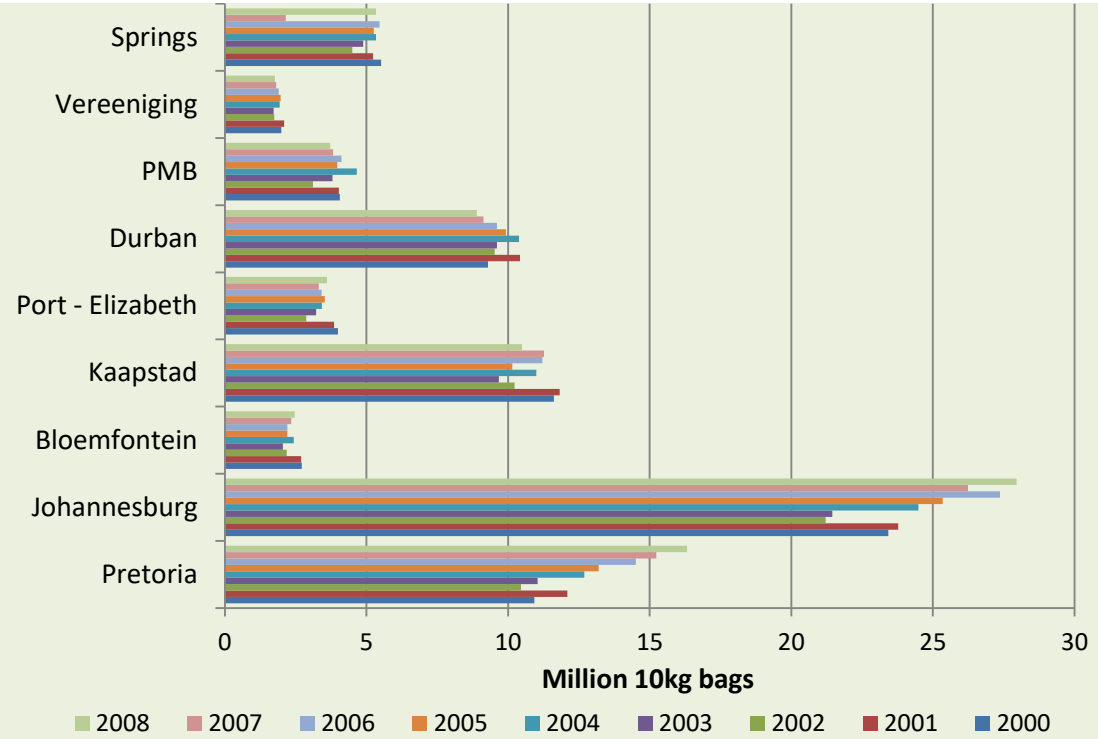

Figure 2: Potatoes delivered at fresh produce markets for 2000 to 2008
Source : PSA, 2009

- An estimated 20% of South Africa's total table potato crop are used for processing every year.
- The processing sector receives the fresh potatoes either direct from the farmer on contractual basis or from the FPM's. In 2007, 13% of the potatoes used for processing was procured from the fresh produce markets while the remaining 87% was procured directly from the farmers or from the processors own farms.
- The potato retail sector can be divided into two parts' the formal sector and the informal sector.
- The formal sector includes all the retailers such as, Fruit and Veg cities, Pick 'n Pay, Shoprite/Checkers, SPAR, Woolworths, Freshmark, Housewife Markets as well as other retailers. These retailers are of great importance in supplying the consumer with fresh or processed produce (UP, 2008).
- The next page shows the distribution of the total potato crop in 2007.

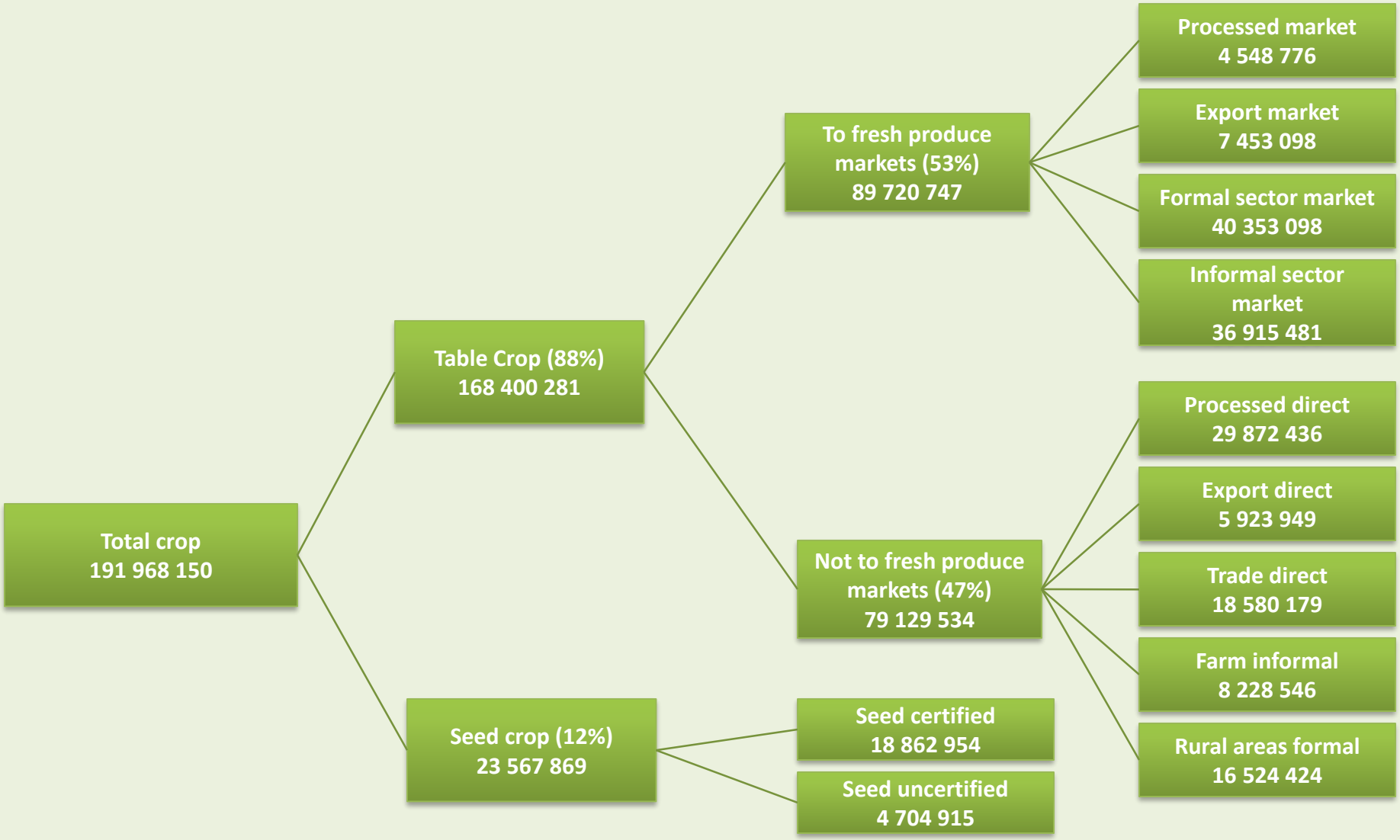

Figure 3: Distribution of potato crop in 2007 (10kg bags)
Source: PSA, 2009

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- In 2007 the formal retail sector consumed 24% of the total table potato crop sold at the FPM's.
- The formal trade in potatoes generally concentrates on the sale of high quality fresh potatoes, either loose or in smaller packaging. Some of the formal traders undertake their own packaging, branding, advertising and sometimes even semi-processing of fresh potatoes to create specific branded potatoes.
- Direct trade between the farmers and the formal sector represented 11% of the total table potato crop.
- The informal sector was accountable for 41% of all potatoes sold on the fresh produce markets in 2007 and 10% of the potatoes sold directly by the farmers. An unknown number of informal traders purchase 10 kg pockets from fresh produce markets, or directly from producers, repackage the potatoes into 1 kg or 2 kg plastic bags and sell these (or just sell the potatoes loose) in a number of settings in both urban and rural areas.
- South Africa exported 8% of the total potato crop during 2007, 3.5% of these exports were procured from the fresh produce markets and 4.5% of the exports was direct trade by the farmers.
- Potatoes are commonly regarded as a bulky, perishable commodity with high transport costs and limited export potential, confined mostly to cross-border transactions.
- In 2007 South Africa exported 8% of the total table potato crop.
- They main export destinations are Mozambique, Angola, Zambia and Zimbabwe.
- Exports to these countries represented 93% of the total potato exports of South Africa in 2008. South Africa's exports to these countries has grown by 85% from 14 478 tons in 2001 to 26 822 tons in 2008. Potato production has increased by 27 % from 2001 to 2008.
- The figure below shows South Africa's exports to the main destinations and the total exports for 2001 to 2008.
- The value of exports for both table and seed potatoes was R45 million in 2007 and R35 million in 2008. See the table on the left hand side.

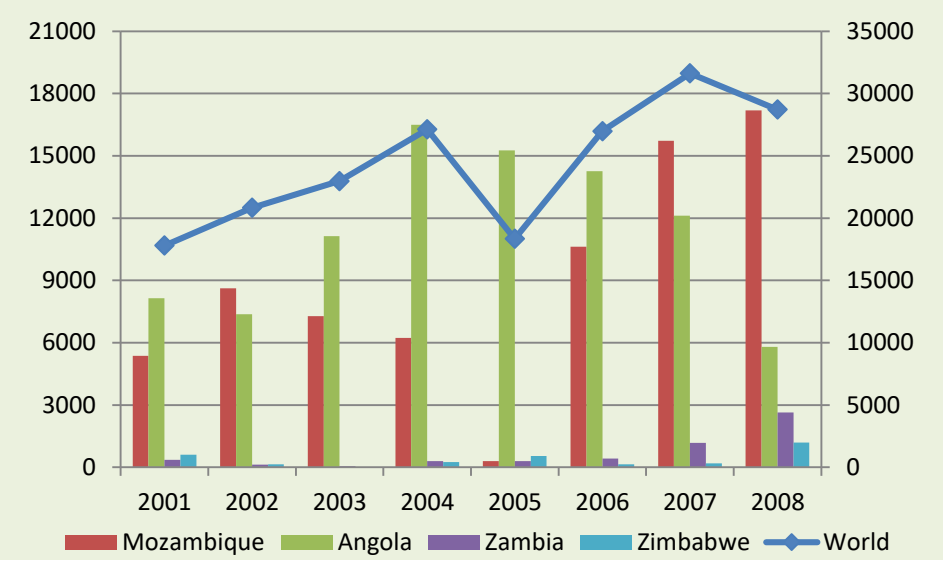

Figure 4: South Africa's potato exports for 2001 to 2008
Source: World Trade Atlas

Table 1 : Value of table and seed potato exports

	Export value of table potatoes Million R	Export value of seed potatoes Million R
2001	13.350	8.248
2002	18.990	13.448
2003	26.980	10.323
2004	26.748	7.737
2005	24.962	3.855
2006	25.546	9.295
2007	36.445	8.641
2008	27.313	7.464

Source: World Trade Atlas

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Potato production

- Potatoes are produced all over South Africa in different climatic regions and there is therefore a continuous supply of potatoes throughout the year.
- Potatoes are mainly grown in rotation with maize and wheat.
- The major potato producing areas in South Africa are the Limpopo (19%), the Western Free State (16%), the Sandveld area (15%) and the Eastern Free State (11%). These four regions represents ± 61 % of total potato production in the country.
- Production of potatoes can be done under irrigation or on dry land. Potatoes under irrigation have increased by 35% since 1991 to 2005 and dry land production has decreased by 62%.
- Higher yields and lower risk are characteristics of production under irrigation and has impacted positively on potato production in South Africa (Snyman, 2004).
- The figures on the left hand side illustrates the production, area planted and yield trends for the past 20 years.
  - Production of potatoes shows an increasing trend
  - Area planted shows a decreasing trend
  - Yields shown substantial increases for the past 20 years
- The graphs on the following page shows the production, area planted and yields for the different production regions for the past eight years. The following can be noted from these figures;
  - The Sandveld, Western Free State, Kwazulu-Natal and Limpopo regions shows the largest increases in production.
  - The Western Free State, Kwazulu-Natal, Limpopo and Marble Hall regions shows increases in area planted while the other regions shows only slight increases or decreases or constant areas planted.
  - The majority of the production regions shows exceptional increases in the yields for 2008, only six out of the ten production regions do not showing these exceptional increases, Ceres, Southwestern Cape, Northeastern Cape, Eastern Free State, Mpumalanga and Marble Hall.

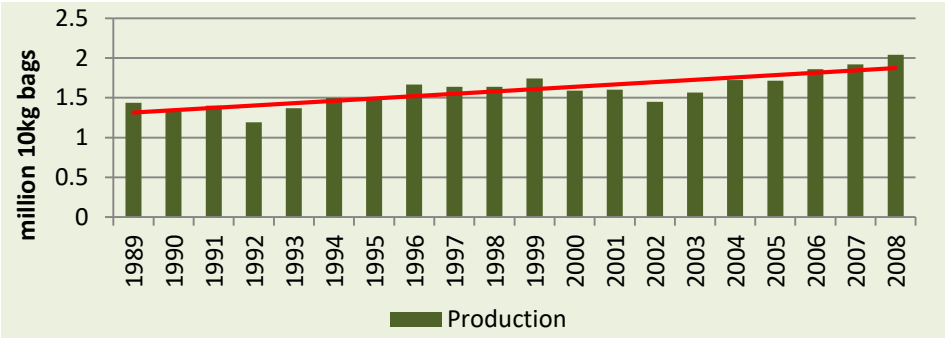

Figure 5: Potato production from 1989 to 2008
Source: PSA, 2009

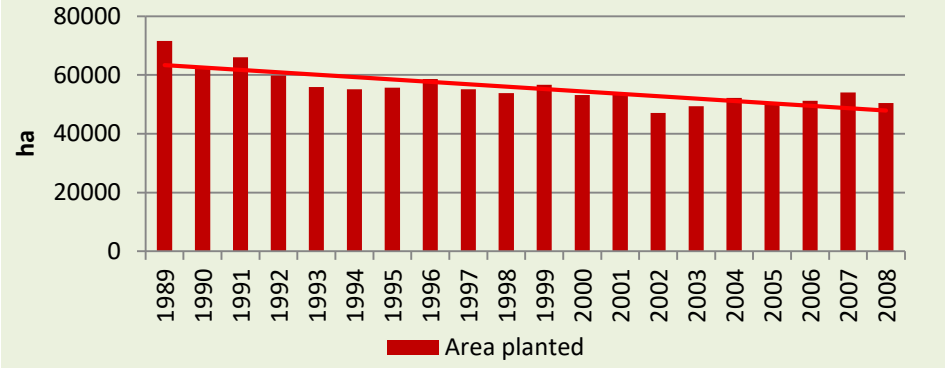

Figure 6: Area planted from1989 to 2008
Source: PSA, 2009

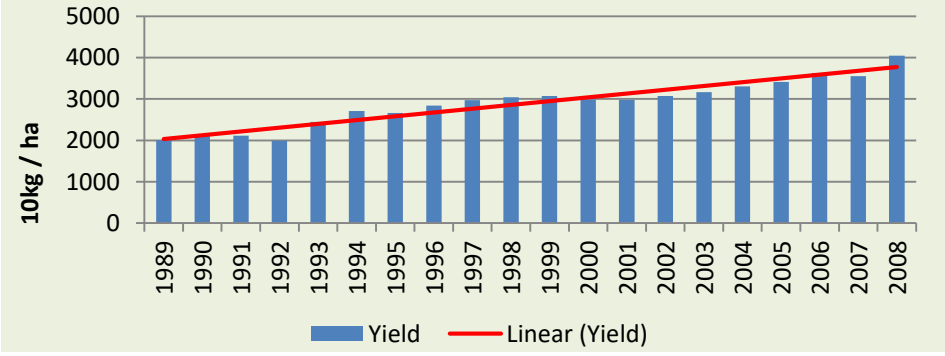

Figure 7: Potato yield from 1989 to 2008
Source: PSA, 2009

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Figure 8: Production, area planted and yield for the different regions for 2001 t0 2008
Source: PSA, 2009

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Organization of the potato sub-sector.

- The following figure shows the various organizational structures in the industry and the ways in which they support the industry.

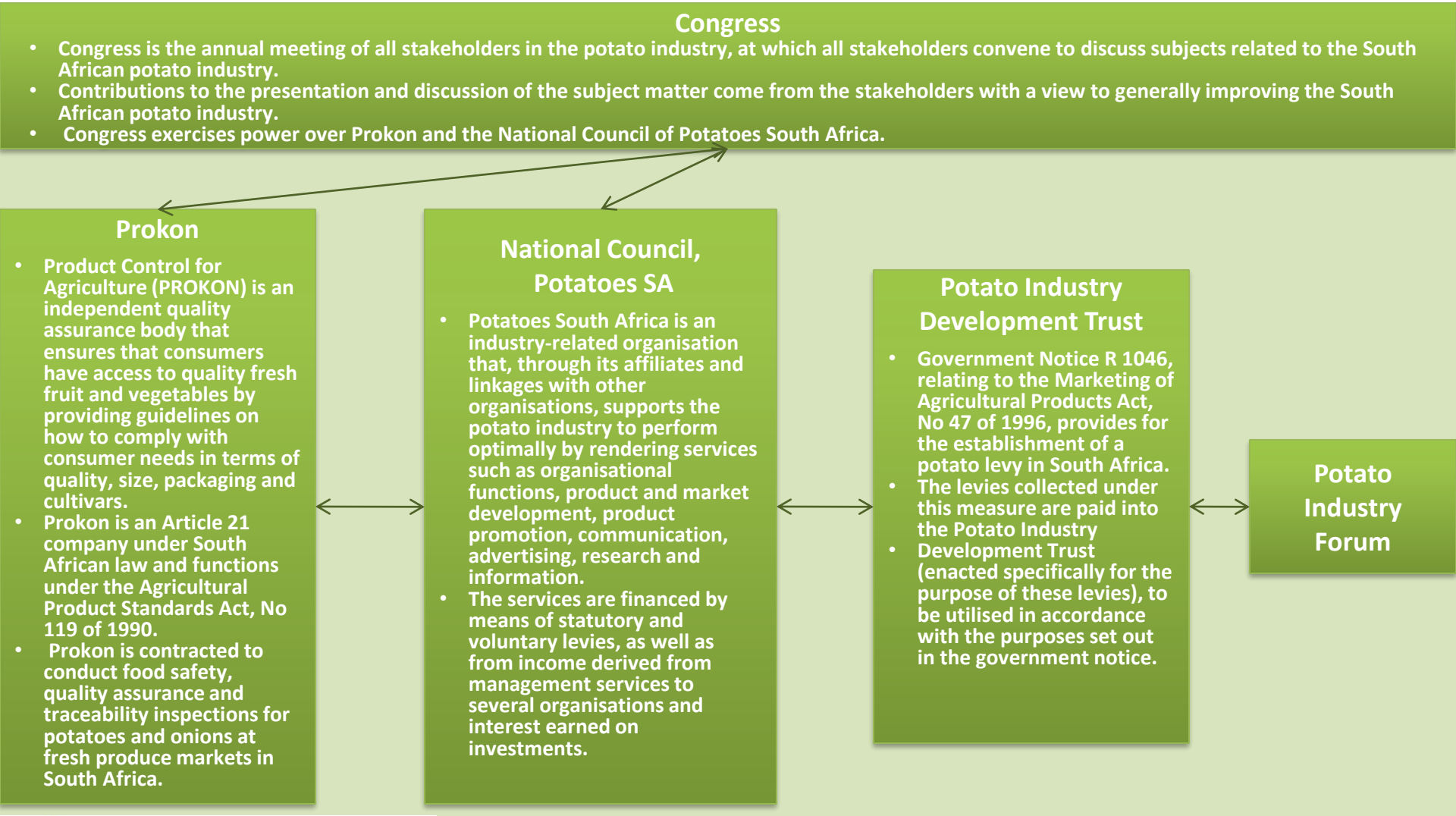

Figure 9: Organization of the potato sub-sector
Source: Adopted from NAMC and Commark Trust

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Potato Production in Africa

- South Africa is the third largest potato producer in Africa, Egypt is the largest potato producer and Malawi is the second largest producer, see the figure below.

Figure 10 : Top producers of potatoes in Africa
Source: www.potato2008.org

- The table below shows how South Africa's Potato production compared with the rest of Africa especially Egypt, Malawi and Angola in 2007

Table 2: Potato production in Africa

	Harvested area (hectares)	Quantity (tons)	Yield (tons/hectare)
Egypt	105 000	2 600 000	24.8
Malawi	185 000	2 200 000	11.9
South Africa	**58 000**	**1 972 391**	**34**
Angola	120 000	615 000	5.1

Source: FAOSTAT,2009

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The World's Potato Production and Consumption.

- In 2005, for the first time, the developing world's potato production exceeded the potato production of the developed world.(www.potato2008.org)
- The Asian counties, specifically China and India was responsible for this growth.
- China is the largest potato producer in the world followed by Russia, India the United States and Ukraine. South Africa is ranked 30th in the world for the production of potatoes.
- Table shows how Africa and South Africa's potato production compares with the other continents in the world.
- The world's potato production and consumption are currently expanding more slowly than the global population.

Table 3: Potato production of the world.

	Harvested area (hectares)	Quantity (tons)	Yield (tons/hectare)
Africa	1 541 498	16 706 573	10.8
Asia/Oceania	8 732 961	137 343 664	15.7
Europe	7 473 628	130 223 960	17.4
Latin America	963 766	15 682 943	16.3
North America	615 878	25 345 305	41.2
South Africa	**58 000**	**1 972 391**	**34**
WORLD	19 327 731	325 302 445	16.8

Source: FAOSTAT, 2009

- South Africa's potato consumption in 2007 was 31kg per capita. It is double the consumption of the rest of Africa and also higher than the consumption in Latin America. Europe has the highest per capita consumption of 87.8kg and North America also has a high per capita consumption of 60kg.
- Table XX shows the per capita potato consumption for the different continents and also for South Africa for 2007.

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Table 4: The world's potato consumption.

	Consumption (kg per capita)
Africa	13.9
Asia/Oceania	23.9
Europe	87.8
Latin America	20.7
North America	60
South Africa	31
World	31.1

Source: www.potato2008.org

- The global consumption of potatoes are shifting from fresh potatoes to value-added processed potato products.
- This high consumer demand for processed potatoes are driven by consumers needs for fast foods, snacks and convenience foods. These consumer needs are again driven by the growing urban populations, rising incomes, the diversification of diets, and lifestyles that leaves less time for preparation of the fresh product(www.potato2008.org).
- The international potato trade has doubled in volume and risen almost fourfold in in value since the mid-1980's. This growth is due to the high international demand for processed products, particularly frozen and dehydrated potato products.
- Most of the developing countries have not been beneficiaries of this trade expansion in processed products, they have emerged as leading net importers of the commodity (www.potato2008.org).

Producers view of the potato industry and the challenges they face.

We conducted a stratified sample of producers. Respondents was identified by Potato SA. The stratified sample was divided into groups of producers from different production regions. Semi-structured interviews were held where some background were provided. The dialogues then proceeded and producers indicated the constraints in the potato industry.

The constraints mentioned were grouped together under the following headings, inputs including; seed, chemicals, fertilizer, labour, fuel and packaging material; fresh produce markets, market agents, processors, supply chain issues, consumer demand, price formation and risk, commercial banks and then a list of major challenges and critical drivers identified by the farmers. Lastly this section will include a summary of the discussion with Western Free State Seed Potato Growers Association explaining their view of the industry and the problems that seed potato growers faces.

Production regions interviewed:

- Limpopo
- Mpumalanga, Marble Hall
- Eastern Free State
- Sandveld
- Western Free State Seed Growers Association

Inputs

- A critical factor on the input side was the farmers fear that government might interfere with amongst other price ceilings.
- The pressure of increasing input costs on income is a major concern for the producers. The price of diesel and fertilizer has increased substantially while the price they receive for the produce has not increased.

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Seed

- Producers experience a decline in the number of seed growers and also a decline in the quality of seed produced. Reasons mentioned are the low prices that growers receive for seed, the high input costs and the high risks related to diseases.
- The processing cultivars are not as widely adaptable as the table cultivars and this serves as a restriction on further expansion.
- Seed producers in the Sandveld region said that they feel the price asked for seed in the Sandveld region is too low. They determined the price by taking into account production costs, and supply and demand, but factors such as, individual differences, the surplus of seed and the demand for the specific variety that they produce were not taken into account.
- During the 1970's and 1980's the Sandveld area produced seed potatoes. The seed production was very profitable because the producers had the benefit of setting the price. But then two critical factors lead to the decline of seed production in the area, firstly an increase of viruses and secondly an increase in supply of seed potatoes from the Western Free State.
- The producers also pointed out that the cultivars are climate orientated and cannot be grown in all regions.

Chemicals

- Producers experiencing monopolistic behaviour in the chemical market. They gave the following example; a certain product is sold by only two retailers in a certain region. These retailers work on a cost plus pricing method and they do not give commission advantages through to the farmers in the form of lower prices. The quotes of these retailers are the same and they have profit sharing afterwards.
- The chemical industry takes high profit margins from producers and limited price competition exist amongst the suppliers due to high cooperation between suppliers
- Segmented and monopolistic trade of brands of chemical products also occurs. Company X sells only product X and the price is high while patent rights is in place.
- The shortage of chemicals are a major challenge for the producers.
- Producers in certain regions with intensive grain production did not complain about the chemical and fertilizer markets. They said that there are enough agents and that the chemical and fertilizer market are quite big and sustainable because of the grain production in the area.

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Fertilizer

- With regard to fertilizers, perceptions exist that prices are kept artificially high due to low supply, producers stated that manufacturers should have envisioned the demand.
- Producers complained about the fertilizer market experiencing large volatilities. According to them, the volatility in the market is caused by a lack of communication on how much is needed and how much is going to be used and a lack of proper planning by fertilizer companies.
- One of the concerns producers mentioned is the fact that fertilizer companies keep the right to pay back the producers money. The discount of 2 - 2.5 % producers usually received when buying cash has been taken away.
- Producers would like the downward stickiness of prices and the price increases of the different fertilizer companies to be investigated.
- The producers stated that the price of fertilizer has gone up by 70 % from January to March.
- In one of the regions the producers build their own fertilizer plant In order to increase the competition in the market, but they are not able to compete successfully against the bigger firms because they cannot provide credit to the producers.

Fuel

- Producers in the Limpopo region stated that fuel prices have a large impact on their profitability due to the fact that the producers are located far away from input suppliers and the markets where produce are sold.
- Transport cost is also a large problem in the Eastern Free State region given that they are 200 km to 400 km away from the markets. The producers either transport the produce themselves or they make use of contractors if they are available, but in both cases the cost is escalating and it is difficult to find trustworthy drivers.

Labour

- With regard to labour, producers said the following;
  - cost of labour has increased by 11 %,
  - Zimbabwean labourers are more productive and willing than the local labourers but producers receive hefty fines for employing illegal immigrants.
  - social grants received by the local labourers creates problems relating to labour productivity and availability,
  - labourers are unreliable and not loyal to employees
  - urbanization and HIV/AIDS leads to less available labour and labourers are not provided with the necessary HIV and AIDS education.
  - educated and trained workers such as drivers and supervisors are constantly lost to the mining industry and transport companies due to higher salaries.
  - In certain regions labourers are absent from work during the winter months due to the cold, the cold causes lung sicknesses and other diseases.
  - other reasons for labourers being absent from work are social responsibilities and social events which all leads to lower productivity
- They say that it is possible to increase the level of mechanization in the production of potatoes to overcome the labour problems, but they are constrained by their production of other labour intensive crops such as citrus and tobacco.

Packaging material

- Producers have difficulties with the availability of plastic, Consol is the only importer and the quantity imported is too. Producers are concerned that low volumes of product provides an opportunity for price manipulation.

Infrastructure and machinery

- The cost of infrastructure and machinery are also high. In one of the regions producers complained about monopolistic forces in the servicing sector.
- High infrastructure costs of potato production serve as a barrier to entry and it takes the “fly by night” producers out of the market.
- Meeting consumer demands such as to wash the potato adds to the infrastructure costs and delay producers reaction time to changes in consumer preference.

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Fresh produce markets

- Producers are concerned about the fresh produce markets not being kept in a good condition, the facilities are in a bad state. Producers said that the municipalities use the money from the markets for other purposes.
- Producers are also concerned about the commissions that are increasing even though the needed services are no longer provided by the fresh produce markets .
- Policing of the regulations are not done properly.
- Another concern is the fact that the large retailers no longer buy at the market. It is an important issue that needs to be addressed.
- Produce that do not meet the standards of the retailers are send to the fresh produce markets which is cumbersome since the fresh produce markets serves as place for price formation for the whole industry.
- A major constraint on the fresh produce markets are producers that flood the market with an oversupply which then leads to very low prices.
- It is important for the producer to manage the floor on the fresh produce market through scheduling. Producers complained about a lack of control in terms of the inventory on the floor at the market and the inventory already sold.
- The producers feel that it is important to seek alternative ways to market the products to avoid the surplus of products on the floor.
- Standards and regulations relating to the quality on the fresh produce markets are important issues that municipalities must attend to, because it has a large impact on the future of the fresh produce markets.
- Seed producers also deliver on the fresh produce market, a different quality than the other producers and they end up competing with their clients.
- Producers wants supply and demand principles to prevail, apparently it is not the current situation, producers said the “rules of the game” are not being followed.

Market agents

- Producers said that at the moment the market agents are playing a bigger role in the marketing process than before but without taking on more responsibilities or risks.
- Certain market agent group’s sales represents 65 -70 % of the total of potatoes sold and producers speculate that this can lead to possible market manipulation, for example in the case of unfavourable weather conditions; the market agent contracted a certain price to the retailer and then due to cold weather the price of potatoes increase, not wanting to make a loss the market agent then pushes down the price paid to the producer.
- Producers are concerned about the market agents who are only allowed to work on commission but also have other interests.
- The producers indicated that they would like the information system to be more efficient and that a system is also needed to determine the role/impact of inventory (apparently the market agents provides credit which they are not allowed to do).
- Producers feel that the market agents are not adopting to the changing environment, they still think that Mondial is the best cultivar and producers would like agents to be more innovative.
- Some producers try to cut costs at the wrong places. For example they try to cut commission costs which then in return leads to lower prices received.

Retailers

- The producers experience retailers as being in a comfort zone, they do not want to take the risk of price volatility then they pass it on through the middleman to the producers.
- Producers experience the following dilemma when producing for Freshmark, Freshmark wants the producers to plant a certain cultivar, UP-to-date because they want to establish a brand. But the producers concern is on who is going to carrying the risk of producing the cultivar that may not be the best suited for the region or soil type or which might have a low resistance against diseases.
- Potatoes lose their entity and are seen as a commodity and the large retailers do not really focus on the different cultivars.

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Value chain

- The producers indicated that they would like the information system to be more efficient throughout the value chain.
- Producers said the potato value chain is not adequately developed to meet the changes in consumer preferences in terms of buying more readymade food and fast foods instead of cooking at home. Investment in product development can assist with this problem.
- Traceability in the chain might help to improve the supply chain.
- Some of the producers are unwilling to look at the possibility of implementing EuroGap regulations which might help all the role players in the chain.
- The producers complain about the absence of client service/support within the potato value chain.
- The producers mentioned that a lot of opportunities for black empowerment lies in the processing side rather than the production side.
- A general need for information exist among the producers. They would like more information on almost all aspects of the industry from information on business practises of the input suppliers to information on consumer preferences.

Consumer demand

- A lack of consumer knowledge is a major challenge for the potato production industry, consumers do not know the difference between the different cultivars and which cultivars are best suited for the different cooking methods.
- There exist a lot of consumers resistance against the Mondial cultivar because the taste that varies between the different production regions.
- The producers are concerned about whether they are keeping track with the changing consumer demands and also whether the volume of a certain type of potatoes supplied matches the volume demanded for that certain type of potato or whether the demand of the different channels are met.
- Producers say that the cultivars planted and sold at the market are not corresponding with consumer demand.

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Processors

- The producers said that the processing industry has expanded.
- Apparently the processing "set-up" used by the processors are imported from the United States of America and has not been changed yet in order to fit South African cultivars better.
- Simba is the most preferred processor to supply to, they deliver a good service, they have strict rules which are consistently applied, they treat all producers the same and they check the quality of the produce on the farm.
- While McCain is seen by the producers as an irresponsible role-player in the industry and who do not care about the consequences of their actions.
- One positive statement that the producers made about McCain is the fact that they brought better cultivars to the industry.
- Producers are of the opinion that McCain causes market instability by providing financing to farmers that are in debt to help them plant potatoes. This cause certain problems; firstly more often than not these farmers are not experienced potato producers, they do not plant the correct cultivar, the disease control is not adequate and then ultimately low quality produce ends up at the market. Secondly McCain fail to carry out good relationship management with these farmers and thirdly McCain are inconsistent in the application of their rules.
- The fact that McCain expanded their business into potato production influenced the price of seed. McCain plant their own seed and also buy seed in bulk from the producers at a lower price. They will buy a producers whole crop and pay per ton.
- Producers producing on contract for McCain need to plant the cultivar specified by McCain and are obliged to buy the seed from McCain. McCain sell the seed to them at cost price plus ten percent handling fee. McCain also sell seed to their own producers for less than cost price.
- Producers explained the three ways in which potato production for McCain in the Mpumalanga region takes place;
  1. McCain rent farmland or they own farmland on which they produce themselves.
  2. McCain contract farmers and the farmers can obtain everything from McCain and just grow the potatoes for delivery back to McCain.
  3. McCain contract with the farmer who produces at own cost and then deliver to McCain.

- According to producers a positive correlation exist between the number of rejections and the supply on the market. If the supply is high, then the number of rejections are also high and if the supply is low then the number of rejections are also low. The same load of 30 tons delivered to McCain and also to Nature's Choice led to a 48kg deduction for "foreign objects" by Nature's Choice and a 2.1 ton deduction by McCain.
- McCain's quality control is done off the farm by McCain's officials. In the case of a quality fault arising there is no way for the farmer to verify it and then it is the producer's responsibility to cover the transport cost of that assignment.
- Producers receive payment form McCain 30 days after delivery minus a deduction of R150.00 per ton.
- McCain's contracts are characterized by the producers as one-side due to international pressure.
- Producers complain about a lack of transparency in the price formation. McCain use the average weekly price on the Johannesburg Fresh Produce Market and then deduct 15%. Nature's Choice has a fixed price with no deductions, their price are based on "soortlike gewig" and this method is consistently applied.
- Easy Green are responsible for the marketing of Simba and they use BEE producers. This influences the prices, since the government subsidises the inputs which then lowers the production costs and ultimately the price.

Commercial banks and financing problems

- The producers said that they need the commercial banks to be a better partner to them, the commercial banks tend to under evaluate the land and this limits their ability to obtain financing. Lots of the inputs producers use are imported and due to the weak R/$ exchange rate these inputs are very expensive.
- Input cost increases has put significant pressure on the producers cash flow and also lead to problems in obtaining financing. Only a third of the capital is other capital while the rest is all own capital, 25% of the income from the previous harvest to invest in the next harvest.

Price formation and risk

- The producers had very different views on the price formation, some say that prices determined by the direct marketers (retailers and processors) determines the prices on the fresh produce market while others said that the price on the fresh produce market are used to determine the price of the direct marketers.
- Determining which of these statements are true would be a difficult task and the probability of obtaining a clear cut answer would be rather low. It is important to note that either way is not ideal, because the prices determined by either parties are based on asymmetric information of both the volume and the quality, neither the produce sold to the direct marketer or the produce sold on the fresh produce markets resembles the total market supply in volume or are an accurate representation of the general quality.
- The producers said that they would like to know what price mechanism is used for potatoes delivered to Woolworths, they make the assumption that Venpro derive the price from the Johannesburg Fresh Produce Market price
- The producers' share of the retail price is only ± 50 %,and they would like the know the reasons for the large price gap.
- The producers said that expansion of potato production is possible but due to potatoes being management intensive and the high risk associated with it, the alternatives are better and producers would rather plant maize than potatoes.
- The prices of alternative crops play an important role in the planting decision, for every hectare of potatoes planted they can plant 10 hectares of other crops and therefore the profit of potatoes must be ten times higher than the profits of alternative crops in order to convince the producer to plant potatoes. If the management and risks are included in this decision making then the factor increases to twenty times.
- The high risks associated with potato production forces the farmers to diversify. The profitability of alternative crops have a large impact on the planting decision in areas where production is highly flexible.
- One of the risks in potato production is related to price uncertainty, there is no way of predicting the future price like it is with grains and there is also no international prices it can be linked to.

Environmental Concerns

- Conservation of resources are important to the producers but the some issues restrain them from acting on it as they would like to. Alternative production methods are limited due to electricity costs related to irrigation use and also a lack of support from the Department of Agriculture. Farmers also find the biological management of production to be difficult and the large fertilizer and chemical companies tend to be less encouraging of these practises.
- The following are major challenges producers identified as having an influence on the sustainability of potato production in no particular order
  1. The cost of production
  2. Theft of expensive irrigation equipment.
  3. Input costs and the influence of the exchange rate on input costs.
  4. The availability of input such as fertilizer.
  5. The oil price.
  6. Transport costs between markets.
  7. Labour, wages and the impact on productivity.
  8. The availability of cultivars and cultivar development.
  9. Water conservation and the quality of water.
  10. Electricity supply (load shedding). It influences the irrigation schedules, the time of irrigation determines the cost of irrigation, it is cheaper to irrigate certain times of the day. If the crops are not irrigated on the scheduled time then the producer is forced to irrigate during times when it is more costly to irrigate.
  11. The yield potential of processing potatoes vs. table potatoes.
  12. Improved fertilization and feeding practises.
  13. Better soil conservation practises, obtain more information on soils.
  14. Saving on input costs, for example the use of cattle manure?
  15. Level of diversification (animal production, grain production).
  16. Climate conditions in terms of frost and also in terms of the varying yields and risks related to different plant times.
  17. Monopolistic supply of seed because there are limited areas where it can be grown.
  18. The quality of imported seed and the risk of importing diseases.
  19. The over supply of potatoes.
  20. The disappearance of South Africa's fresh produce markets
  21. Monopolistic behaviour of processors, need more competitors in the processing market.
  22. The effect of McCain 's way of doing business on the wellbeing of the industry
  23. The control that producers have over marketing (contracts) and the grading of produce.
  24. The types of marketing (supply and demand) and the development of the value chain.
  25. Whether a market exists for their products.
  26. The difference between price received on the market and the price received when sold directly.
  27. The transaction cost involved in delivering to the market, it is more costly for producers located further away from the market.
  28. Ability to obtain financing.
  29. The following factors impacting on consumer trends; urbanization, the effect of income on sales as processed potato products are seen as a luxury good and the role that status apparently plays.
  30. The level of organization between the farmers.

Potato Study | Producer Report

Western Free State Seed Potato Growers Association (WFSGA).

- The ultimate risk for seed potato production is the results of their virus testing, which then also serves as a high barrier to entry.
- The association registered the Mondial cultivar during 1993 and it is protected under the Plant Improvement Act for 20 years. During 2003 the cultivar's popularity escalated. The success of the cultivar was enabled by the closed marketing system that they use and also the fact that this cultivar is resistant to some viruses.
- They provide the producers with seed to ensure good fertility of seed used, one disadvantage of this is that if the seed is very good the producers tend to hold back some of the seed which can lead to more illnesses.
- Not every one who wants to produce seed potatoes has to be a member of the WFSGA but they have to be part of the group, the association try to get all the new producers to be part of the group because it enables them to have better disease control.
- They make use of contract plantings and it is a challenge for them to ensure that everybody adhere to the rules. The plant improvement act enable them to keep the seed back but it can't be sold as seed or multiplied again, it must be planted for table potatoes.
- The most important factors for the producers are the quality of the seed and the region where they plant. Because it is certified, virus free seed that is used, it is important that the producer next to you is also virus free to prevent contamination.
- Within wetter years the occurrence of virus and bacterial illness is higher than in dryer years.
- All the production of seed potatoes in this region are under irrigation and therefore interrupted electricity supply as well as water quotas can have a large negative effect on production.
- The group of farmers plan and monitor the supply of seed very closely because over supply might lead to great income losses. Because they produce at maximum yields, they also deliver some of the potatoes to the market for table use. This also ensures that their cash flow situation remains healthy.
- The fact that the seed potatoes are marketed only through the WFSGA in a pool scheme results in payments long after they delivered.
- The profitability of seed production is very region based. Production in the Christiana area is output driven while production in the Bethlehem region it is input driven. Summer plantings and the winter plantings also differs a lot.
- The end uses of the same cultivar of potato grown in different regions vary a lot, in other words the end use of a potato is not only determined by the cultivar but also by the area of production.
- The table potato producers want the price of seed potatoes to be closely linked to the price of table potatoes but not reachable due to the following reasons;
  1. The seed is ordered four years in advance.
  2. The seed producers are paid on a delayed invoice system.
  3. The seed are stored for up to six months during which there are risk without security.
  4. The company carriers the financial risk but the producer carries the risk of illnesses.
- Previous they made use of shortages to manipulate prices but currently more balanced practices are used and over supply are send to fresh produce markets.
- The price of table potatoes' price plays a prominent role in the price of seed potatoes, if the price of table potatoes are too low then the producers do not plant and thus low demand for seed potatoes and therefore more seed potatoes are held back.
- The price of grains also determine how many hectares of table potatoes will be planted and thus influences the demand for seed potatoes.
- Price forming takes place after the planting took place. If the price is not correct the producer will send the potatoes to the fresh produce market. The price of seed potatoes are higher than that of table potatoes. They only increase the price once a season and keep it reasonable because the producers buy from each other.
- The following are risks related to seed potato production identified by the association.
  1. High temperatures tends to increase the risks of virus and bacterial illnesses because they are more active under warm and wet conditions.
  2. Diseases and pests, the lost of hectares due to virus contamination has declined over the past few years from 30% to 40% to only 2.5%.
  3. Allocation of breeding facilities
  4. Seed production and table potato's sales needs maximum yields.

National Agricultural Marketing Council
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Potato Study | Input Cost Trends

Input costs trends

Comparison of price indices

- A comparison of the price indices of potatoes, vegetables, all agricultural products and all farming requisites for the period **1997 to June 2008**, shows the following results (also see figure XX);
  - The Producer Price Index for Potatoes (PPI - Potatoes) has showed much more variability since 2001 than the other indices.
  - The **PPI - Potatoes** increased by **152.6 %** from 1997 to 2007,
  - The price indices for **All Vegetables** (PPI - Vegetables) increased by **177.5 %.**
  - The **All Agricultural Products** (PPI - Total) increased by **115.9 %.**
  - The **All Farming Requisites** Index (FRPI - Total) increased by **110.9 %**.
  - The increase in the PPI- Potatoes are a bit lower that the increase in the PPI – Vegetables and much lower than the increase in the PPI – All Agricultural products.
  - The increase in the FRPI – Total are the lowest of all the increases in the PPI's.

- The FPRI – Total includes the intermediary inputs. These intermediary inputs are fertiliser, fuel and crop protection, maintenance and repairs and packaging material.
- In order to obtain a better explain the large increase in the PPI of potatoes a comparison between the PPI of potatoes and the various intermediate input prices are shown in figure XX for the period 1997 to June 2008.
- The following can be determined from the figure;
  - All the indices shows an increasing trend
  - The PPI of potatoes shows a higher variability (particularly from 2001 onwards)
  - A slight correlation can be seen between the fertilizer price and the potato price.
  - Fertilizer and fuel shows exceptional large increases of 40.1% and 65% respectively for the period 2007 to June 2008.
  - The trends in prices for 1997 to 2008;
    - PPI – Potatoes increased by 152.6 %.
    - Fertiliser prices increased by 169.6 %.
    - Fuel prices increased 169.2 %.
    - Maintenance & repairs increased by 129.7 %.
    - Packaging material increased by 27.3 %.

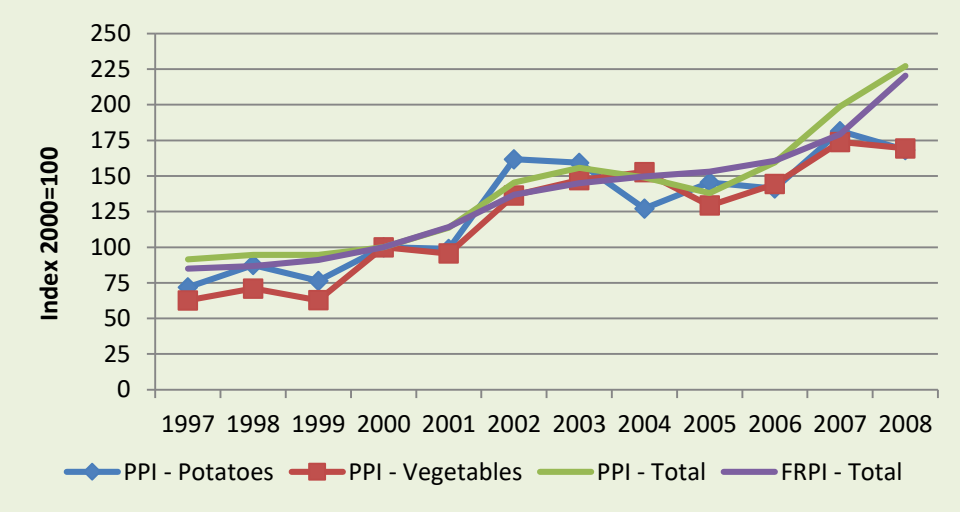

Figure 11: Comparison of various Price Indices, (1997 to 2008)
Source: DoA, 2008

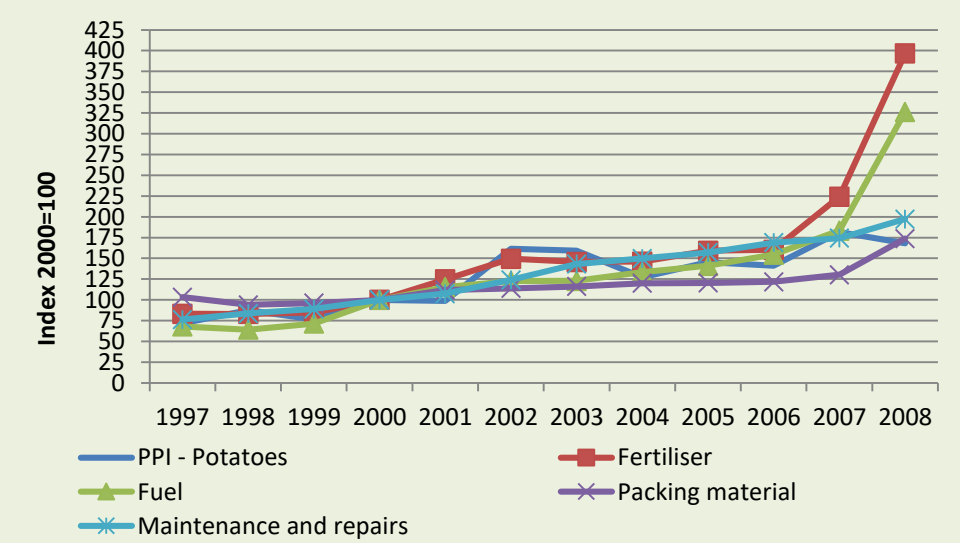

Figure 12: Trends in the PPI - Potatoes versus selected intermediate inputs
Source: DoA, 2008

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Strategic positioning of South African Agriculture in dynamic global markets

Potato Study | Input Cost Trends

Contribution of different variable input cost items to total production cost of table potatoes

- This section will focus on the variable costs for table potatoes, specifically to express different variable input cost items as a percentage of total input costs. (See Appendix B for the different input cost components included in a typical input cost budget for table potatoes).
- For table potatoes, variable input cost information were available for six irrigation production areas. These are the North-West Province, the Southwest Free State, KwaZulu-Natal, Sandveld, Limpopo and Mpumalanga.
- Due to the many different input cost items included, and their relative contribution to total input cost, it was necessary to aggregate certain variable inputs into an "All other" category (See Appendix C for "All other" cost items).
- Figure xx shows the average percentage contribution of selected variable input costs to the total production cost in selected potato production regions mentioned above.
- For the period under consideration,
  - **Seed** cost contributed on average **18 %** to total production cost (between 15.3 and 20.3 %), but its contribution to total production cost is showing a **declining trend.**
  - **Fertilisation** contributed just over **14 %** and showed an **increasing trend** in terms of its contribution to total production cost.
  - **Market commission and transport** to market costs showed a **decreasing trend** in their contribution to total production cost.
  - Cost for **insecticides, fungicides and seed treatment** remained **stable** at more or less **10 %** of total production cost.
  - **Mechanisation (including fuel) and labour** contributed, on average, **8.8 %** to the total production cost.

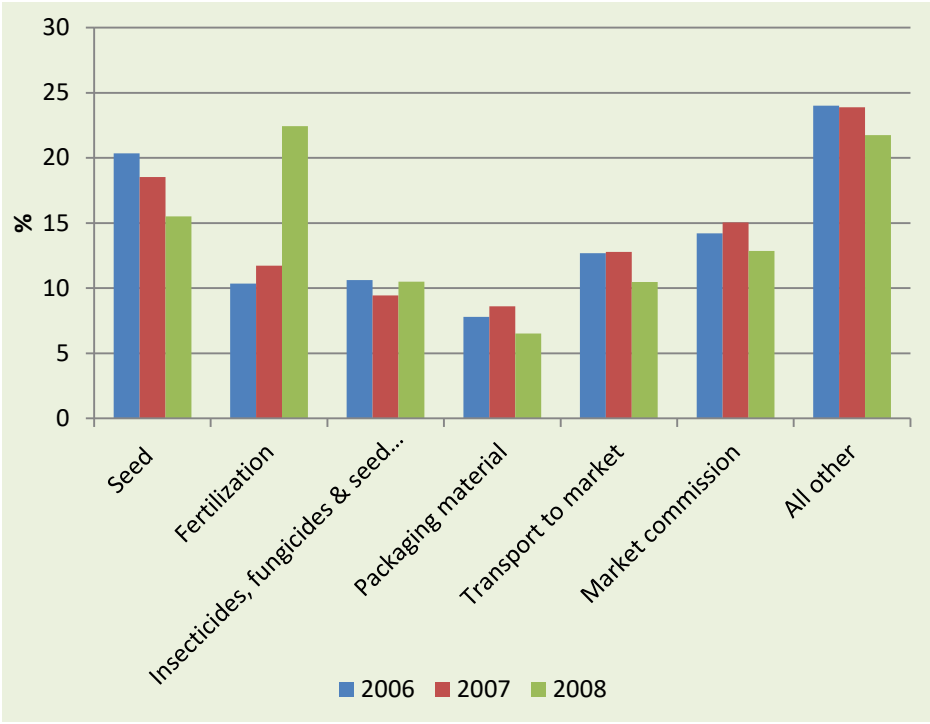

Figure 13: Average percentage contribution of individual variable cost items to total production cost
Source: Own calculations based on data from PotatoSA.

Potato Study | Input Cost Trends

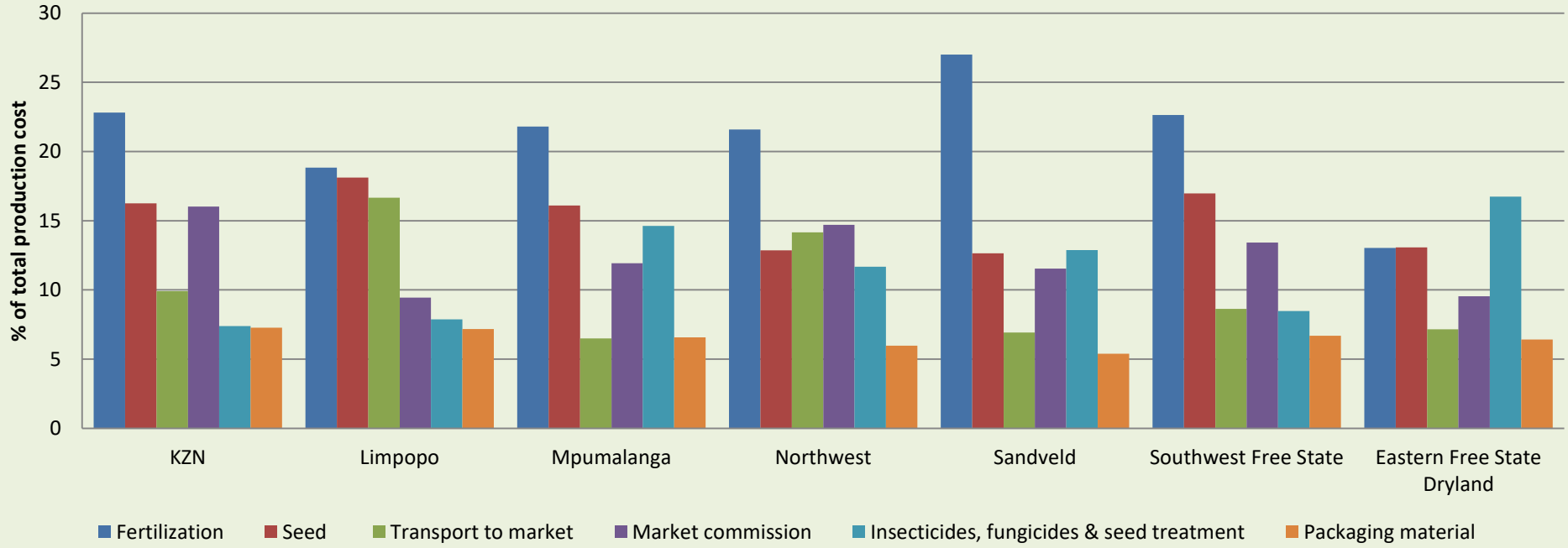

Figure 14: Comparison of the contribution of different variable input cost items to total production cost in different table potato production regions (2008)

Source: Own calculations based on data from PotatoSA.

A comparison of the variable input cost items per production area for the 2008 production season in figure XX give the following results;

- **Sandveld region** have the **largest expenditure on fertilisers**, **27 %** to total production cost.
- **Eastern Free State** under dryland conditions has the lowest **expenditure on fertilisers**, **13 %** to total production cost.
- **Limpopo has the highest seed expenditure**, while **Sandveld area** has the lowest seed expenditure as percentage of total production cost.
- In the **Limpopo** region the **transport to markets expenditure** as percentage of total production cost was **highest (16.7 %)** followed by **Northwest** with **14.2 %.**
- **Insecticides, fungicides and seed treatment** expenses as percentage of total production cost were **highest** in the **Eastern Free State** under dryland conditions, at **16.7 %**, followed by **Mpumalanga at 14.6 %.**

Potato Study | Input Cost Trends

Fertilizer costs

- During discussions with various role-players in the potato industry, a number of fertilisers were identified for inclusion in this report, based on the relative ease of sourcing their price information and their wide usage.
- To ensure easy interpretation of the data presented, price movements of the identified fertilisers are presented in Figures XX and XX. The PPI for Vegetables (PPI - Vegetables) and PPI - Potatoes are also included.

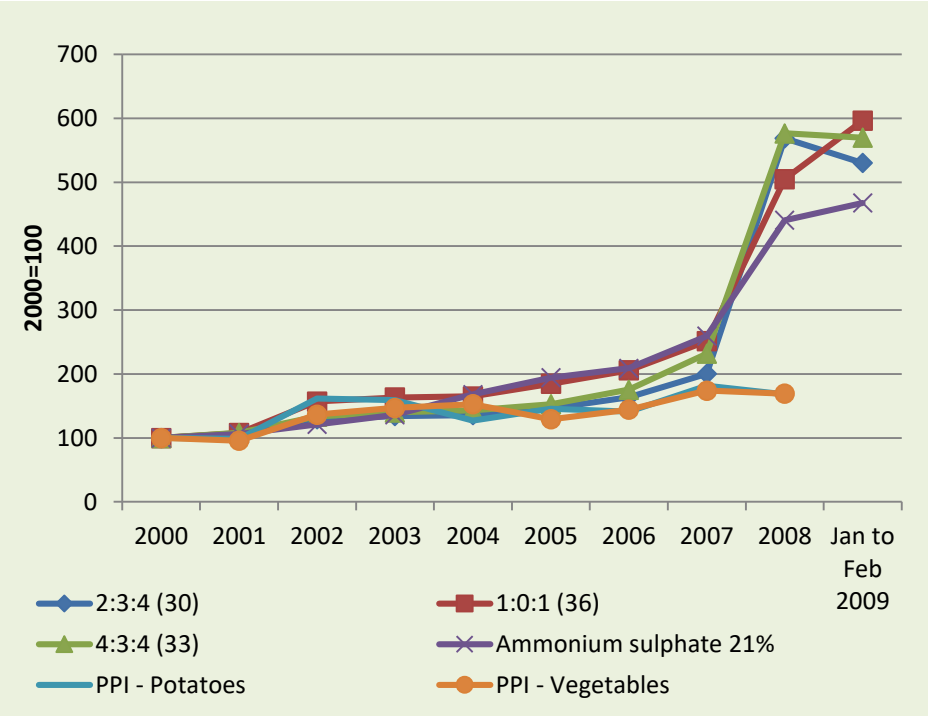

Figure 15: Price indices for different fertiliser products compared to the PPI - Vegetables and PPI - Potatoes
Source: DoA, 2009 and own calculations from list prices.
Note: PPI – Vegetables and PPI – Potatoes not available for January to February 2009

- Figure X1 shows that the trends for the items represented are generally upwards. Price increases for these items between 2000 and 2008 were as follows:
  - 2:3:4(30): 468.7 % increase
  - 1:0:1(36): 405 % increase
  - 4:3:4(33): 476.7 % increase
  - Ammonium sulphate 21 %: 340.7 % increase
  - PPI - Vegetables: 69.3 % increase
  - PPI - Potatoes: 68.2 % increase
- Figure X2 shows that the trends for the items represented are also generally upwards. Price increases for the items depicted between 2000 and 2008 were as follows:
  - LAN(28): 334.5 % increase
  - Supers(10.5): 575.2 % increase
  - Urea Prill(46): 332.5 % increase
  - Potassium Nitrate: 284.7 % increase
  - PPI - Vegetables: 69.3 % increase
  - PPI - Potatoes: 68.2 % increase

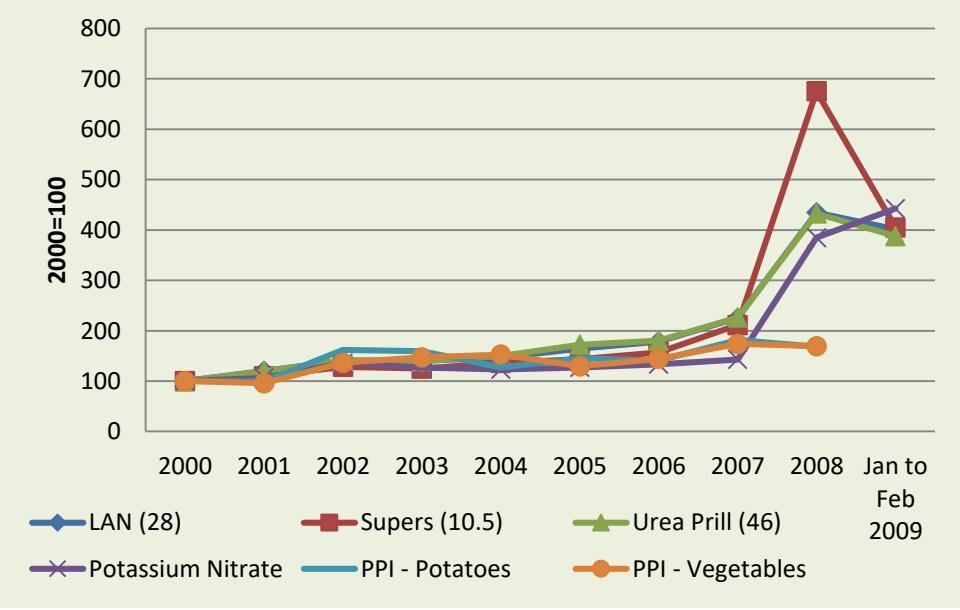

Figure 16: Price indices for different fertiliser products compared to the PPI - Vegetables and PPI - Potatoes
Source: DoA, 2009 and own calculations from list prices.

Potato Study | Input Cost Trends

- The local demand for fertiliser is in the region of 2 million tons. To meet this demand almost 70 % of the fertilisers have to be imported.
- The international price trends for fertilisers are shown in Figure X3, but please note the following:
  - The international prices were expressed in R/ton before converting them into an index.
  - The international prices depicted are not at South African harbours and hence exclude cost, insurance and freight to land the product in South Africa.
  - The international fob prices used differ from the usual port of origin for imports, but trends and general price levels are similar.
- It is clear from Figure 6 that the international prices all moved sideways until the end of 2007, after which unprecedented escalations took place.
- This was mainly due to global food shortages, high commodity prices, increased biofuel production and the introduction of export tax on fertiliser by China which led to an imbalance between global fertiliser demand and supply.
- Factors that changed fertiliser price levels were the global credit crunch, plummeting commodity prices and the production of biofuel, which is under pressure due to the drop in energy prices and food shortages.

- Between January 2004 and February 2009 price increases for the items depicted were as follows:
  - Ammonia 3.2 % decrease (Ammonia price is fob, Middle East in bulk)
  - Urea 166.4 % increase (Urea price is fob, Eastern Europe in bulk)
  - Di-Ammonium Phosphate (DAP) 149 % increase (DAP price is fob, US Gulf in bulk)
  - Muriate of Potash (MOP) 1317.6 % increase (MOP price is fob, CIS in bulk)
  - R/$ exchange 45.4 % depreciation.
- Between February 2008 and February 2009 price changes for the items depicted were as follows:
  - Ammonia 54.5 % decrease
  - Urea 2.7 % increase
  - DAP 44.6 % decrease
  - MOP 183.6 % increase
  - R/$ exchange 31.3 % depreciation.

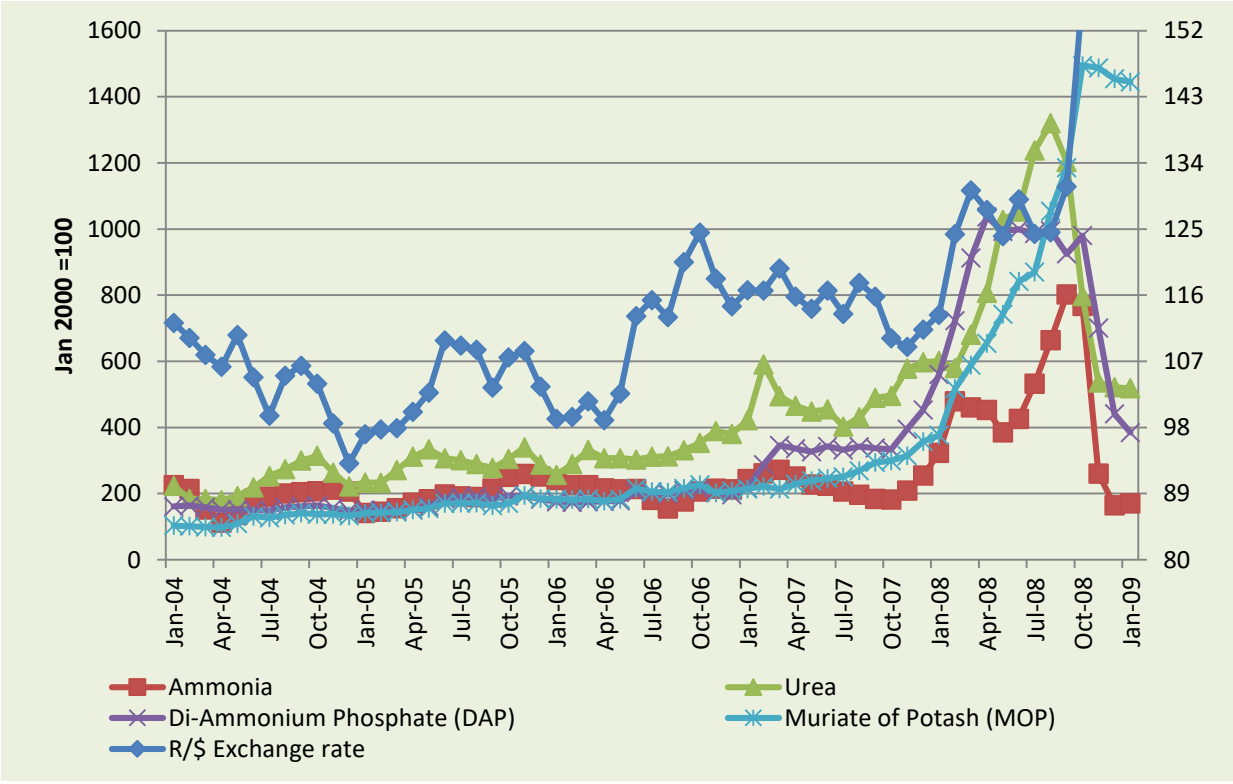

Figure 17: International price indices for different fertiliser products
Source: GrainSA, 2008.

National Agricultural Marketing Council
Strategic positioning of South African Agriculture in dynamic global markets

Potato Study | Input Cost Trends

- Urea prices are directly affected by the price of natural gas which is, in turn, influenced by the price of oil.
- Figure 7 depicts the price of Brent crude oil from January 2004 to January 2009.
- The price of oil kept a steady pace upwards during the depicted period, accelerating from October 2007 and peaking in July 2008.
- Over the depicted period, the price of oil increased by 45.1 % when expressed in $/barrel and by 108.1 % expressed in R/barrel. From July 2008 to January 2009 these prices decreased by 66.9 and 57.2 %, respectively.
- Other factors that influence the local market prices for fertilisers are the variability of local demand and stocks and shipping fees.
- Developments in the biofuel markets also have a noticeable influence on fertiliser prices in that they influence international fertiliser demand, and hence the availability of base material.
- The Baltic Dry Index is a shipping and trade index created by the London-based Baltic Exchange that measures changes in the cost of transporting raw materials such as metals, grains and fossil fuels by sea
- The Baltic Exchange directly contacts shipping brokers to assess price levels for a given route, product to transport and time to delivery (speed). The Baltic Dry Index is a composite of three sub-indexes that measure different sizes of dry bulk carriers (merchant ships) - Capesize, Supramax and Panamax. Multiple geographic routes are evaluated for each index to give depth to the index's composite measurement. It is also known as the "Dry Bulk Index".
- According to Investopedia, the changes in the Baltic Dry Index can give investors insight into global supply and demand trends. This change is often considered a leading indicator of future economic growth (if the index is rising) or contraction (if the index is falling) because the goods shipped are raw, pre-production material, which is typically an area with very low levels of speculation.
- Because the supply of large carriers tends to remain very tight, with long lead times and high production costs, the index can experience high levels of volatility if global demand increases or drops off suddenly.

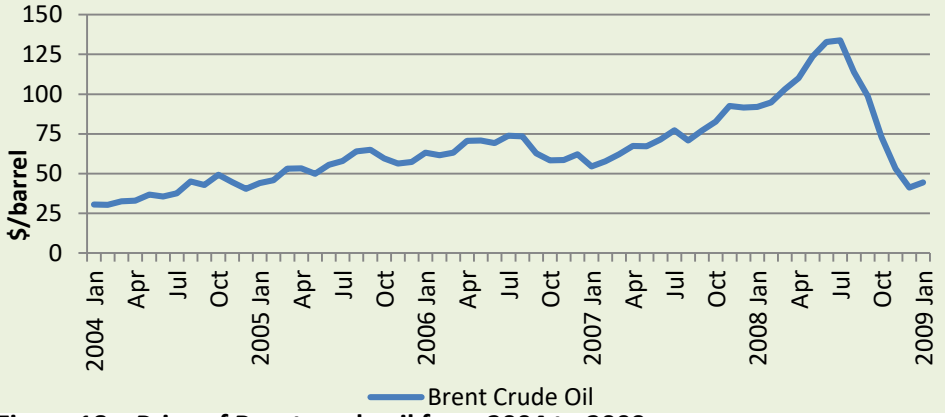

Figure 18: Price of Brent crude oil from 2004 to 2009
Source: GrainSA, 2009.

- Figure 8 takes a closer look at the Baltic Dry Index, which is a general barometer for shipping costs associated with imports of fertilisers by South Africa.
- Historically, the index moved relatively sideways with some peaks just to return to previous levels. This trend continued until early 2007 after which it accelerated with 136.3 percent to peak in November 2007.
- The freight cost index was volatile thereafter to reach a new record high in May 2008. A steep decline of 93.1 % occurred from May to December 2008. During the depicted period the index shows that freight cost decreased by 75.5 % from August 2007 to February 2009.

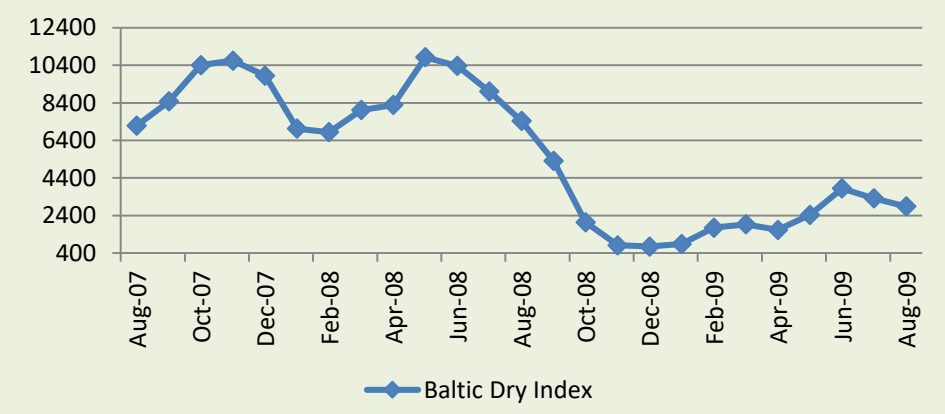

Figure 19: Baltic Dry Index
Source: SAGIS, 2009

Potato Study | Input Cost Trends

Fuel price trends

- Figure 9 shows the prices of diesel 0.05% S Gauteng and diesel 0.05% S Coast from January 2006 to January 2009.
- During the depicted period the prices of diesel 0.05% S Gauteng and diesel 0.05% S Coast increased by 26.4 and 26.8 percent, respectively
- Comparing year on year for January 2009 prices decreased by 9.8 and 10.1 percent, respectively.
- To explore the impact of the increase in diesel prices, consider the following example with prices in Gauteng. A potato producer uses approximately 250 litres per hectare per crop for the production process and general farm transport. Based on the total hectares planted to potatoes and an average price of R5.65 and R9.20 per litre of diesel during 2006 and 2008, respectively, the additional diesel cost to produce potatoes amounts to approximately R43.5 million.

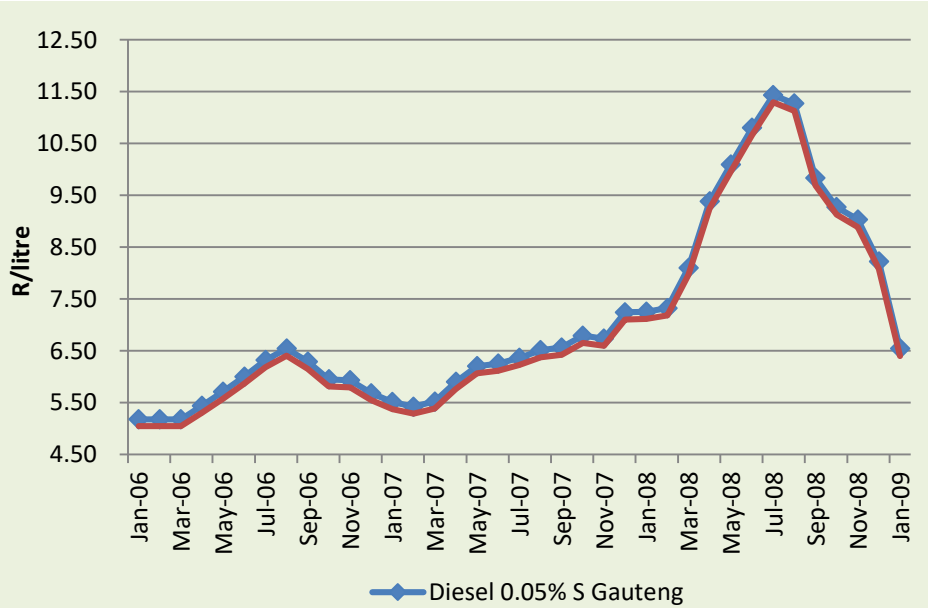

Figure 20: Diesel prices
Source: South African Petroleum Industry Association (SAPIA), 2009.

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Packaging material price trends

Pulp and paper prices

- The price of pulp as input to paper is based on international prices, global market conditions and the R/US$ exchange rate.
- The price of sack craft paper is driven by supply and demand as well as the price of pulp.
- The sack craft paper for the potato market in South Africa is estimated at 13 000 tons, of which the brown (unbleached) is the most commonly used.
- South Africa imported all of the white (bleached) paper until very recently, as SAPPI started to produce some locally.
- Figure 10 shows the price trend of Bleached wet strength and Brown wet strength paper from July 2005 to July 2008.
- It is clear from Figure 10 that the price of bleached and brown wet strength paper moved upward during the depicted period and increased by 55.6 and 67.9 % respectively.

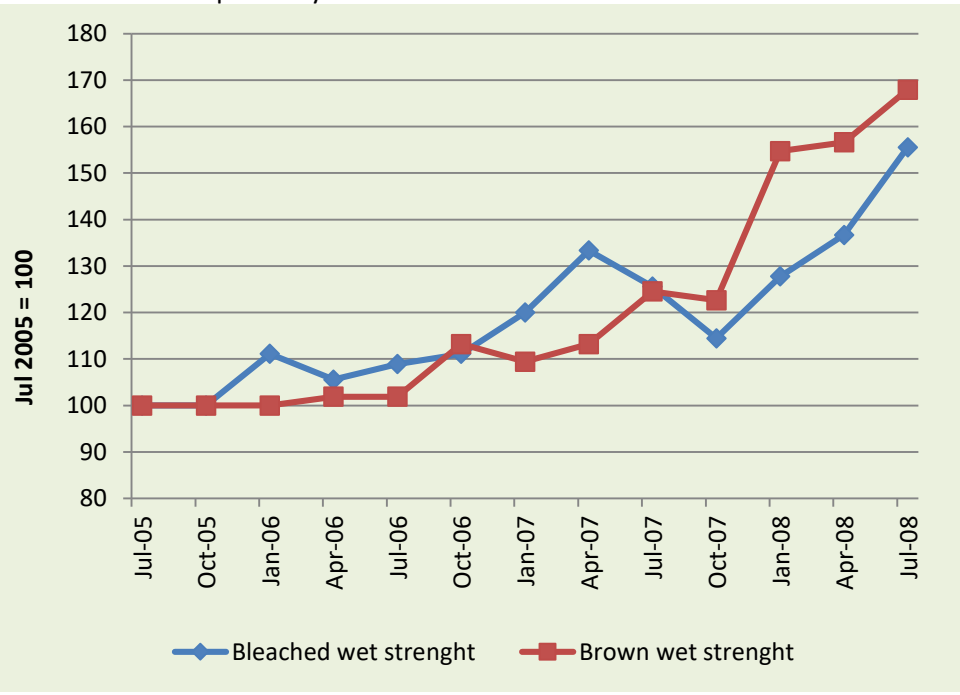

Figure 21: Price indices of paper (July 2005=100)
Source: SAPPI and Gerber Paper, 2008.

Potato Study | Input Supplier Report

Input Supplier's view of the potato industry.

Conversations with various input suppliers gave us their view of the potato industry and identified the challenges that their business and the industry face. The following is a summary of the key findings.

Syngenta

- In order to obtain information on chemicals one needs to look at the system that United States of America have, South Africa lacks such a system.
- The headquarters of Syngenta are located in Switzerland and they have subsidiaries in 95 countries. Internationally Syngenta has about 20% market share of the total $30 to 35 billion turnover of the chemical market. The other large chemical manufacturers are Bayer, Dow and Monsanto (of which 60% of their business are seed).
- Locally ,the chemicals are 95% of their business and vegetable seeds are 4%. Their turnover is R9 billion per annum and the chemical products account for R7 billion of the R9 billion.
- Syngenta are not sure on how big the total chemical market in South Africa is. Syngenta do perform their own market research (SIMPAK) which begins with regional information that is aggregated, they also do estimations on other companies and have informal conversations with Bayer.
- Locally Syngenta has 21% market share followed by Bayer with 16%, Dow with 12% and Monsanto with 7 to 9%. The others are BASF (5-7%), Du Pont (4-6%), and Filagrow with 1-2% market share. The generic manufacturers are mainly China and India based and they are trading locally as Villa, M.Agan, Volcano, Tsunami and Plaaschem with a total market share of 35 to 40% between them.
- Syngenta has 11 regional managers and they are supplying to approximately 37 agencies with 700 agents.
- Syngenta sell to 12 exclusive agencies (thus limited boundaries and geographical area) of which management of the agency and the agents share 18 to 20% of gross margin (10% commission) and gross margins differ widely.
- Their agents are trained and farmers pay for intellectual property, research and development cost. The perception of value for money of farmers and the actual working of the product will determine how much the farmer will be willing to pay.
- The intellectual property is very important but there are substitute products in the market. The 20 year period of patented rights that they have include the time spend on development. After expiration of patent rights, generic product manufacturers can copy the molecule and redevelop a new product. This new product then needs to be tested 3 times during 3 seasons to show that it is working the same as the original product before it can be sold.
- The cost of development of a new product (molecule) amounts to almost $350 million, that is until marketing. The marketing of a new product is done 4 years in advance before it is actually sold.
- Syngenta has a factory in Brits where 60% of their products are formulated (combined with various other ingredients) but all their active ingredients are imported. About 40% of their products are imported as complete products.
- All chemical products must be registered at the DAFF before it can be marketed or used and this can take up to 2 years to be finalized. Previously it only took only 6 – 9 months to be registered, reasons mentioned that may be responsible for this delay are a decline in capacity and lack of capability.
- The following were identified as the drivers in the industry;
  1. The climate, when it is dry lower to no plantings result in lower to no purchases of chemically products.
  2. Generic imports and the quality thereof, it increase competition in the market.
  3. HIV/AIDS in agriculture led to losses of workers that are trained on how to use chemicals responsibly.
  4. Government policies and the application thereof (land reform), 90% of their clients are white farmers.
  5. The exchange rate, since 40 % of their products are imported.
  6. Changes in consumers eating habits, the increase in meat consumption lead to an increase in grain production and to more chemicals needed and he stated that "if all the people in China eat one more chicken each, the whole Australian wheat crop will be used for additional feed".
- They explained that price forming takes place according to the following steps:
  1. TPC – Total production cost (excl R&D)
  2. Check price of competing products.
  3. Value pricing (why the farmer will buy in comparison to other).
  4. Check pricing at head office (check prices international to prevent competing in house with each other).

Paper manufacturers and Importers

Sappi

- The product used for the packaging of potatoes are extensible sack craft, the paper has the ability to stretch while being very strong at the same time.
- The reason why paper is used is because it has wet strength build into it, it shields potatoes from light which prevents potato from greening while allowing the potato to breathe and the farmer can package potato while it is still wet.
- Two types of paper are used for the packaging of potatoes; the white, bleached paper that are imported and brown unbleached paper. They use 3000 tons of the white (Imported) paper and 10 000 tons of the brown.
- Sappi produce a total of 76 000 tons of sack craft at their Tugela processing plant in Town Mandini. The turnover for their total production is R4 – 5 billion.
- The majority of their product, 30 000 tons are used by the cement industry and 10 000 tons are used by the potato industry. Other uses amounts to 63 000 tons and 13 000 tons are exported.
- In 2003 Sappi spend R250 million on the upgrading of machines to improve quality. Sack craft is a commodity but still specialised
- Sappi's market share depends on the international price. Currently they have about 75 % market share in the brown paper market and the rest (25 %) are imported, but if international prices are low then they only have 60 % market share.
- Sappi's 1st priority for the craft business is the local market and their 2nd is to squeeze out tonnage
- The prices of bags are driven by supply and demand and the pulp price.
  1. The price of paper are influenced by the following factors:
  2. The international and domestic supply and demand.
  3. Building trends cement paper Eastern Europe
  4. Exports (different products e.g. chips)
  5. Government regulations, e.g. concessions
  6. Forestry fires (short term)
  7. Pests (diseases)
  8. The temperature – trees do not stop growing in winter.
  9. Limited area for forestry (timber).
  10. Exporting restrictions (e.g. Russia)
  11. Environmental pressures (Indonesia and Mercosur)

Gerber Goldschmidt Group (paper importer)

- The Gerber Goldschmidt group import both white and brown paper.
- Paper goes into pocket:
  - SABS compliant
  - Standard product
  - Wet strength bag
- Reasons for huge slump in world price from about $900 to $500 after 2002 until 2007:
  - Mills went bankrupt
  - Reduced supply
  - People ordered due to shortage – snowball – artificial shortage.
- Sappi only other supplier to potato industry and only make paper for brown bags.
- 13 000 tons of which 2 000 white & 11 000 brown of papers for potato industry overall is regarded as important and cement competition for bags.
- Industry is not good at forecasting.
- Exchange rate a big risk for importer.
- Buy paper now you get paper ± 2 months 1 month to make and 1 month to ship.
- Take forward cover (8 week lead time).
- Keep stocks but uncertain.
- Margins very low for converters.
- Difficult to stay in business.
- Factor that influence importers business:
  - Exchange rate – use tools
  - Local capacity and priority of potato industry for local suppliers
  - Cost of creating additional capacity
  - Import affordability
  - Competitions
  - Be a world player
  - Quality and type of packaging e.g. move to hesion and plastic
  - New products/packaging being developed
  - Demand for/by farmers and factors affecting production of potatoes

Potato Study | Input Supplier Report

Manufacturers of multilayer paper bags.

- The South African potato bag market is estimated at 140 million bags.
- There are five bag manufacturers in South Africa.
- Taurus, Crown Bag and Central Sacks are the largest suppliers of potato bags with 25% each followed by Nampak with 14% and Impak with 10% of the manufacturing.
- Crown Bag, Impak and Central Sack are manufacturing mainly potato bags (90%) and charcoal bags (10%), but for Taurus and Nampak potato bags contribute a small part to their business.
- Bags are produced only on order from the farmer because they need to know the size and class of the potatoes beforehand to adjust the printing work.
- The cost of manufacturing a potato bag can be broken down in 80% for raw material, 5% for transporting the bags to the farmer and the rest to labour and capital cost and if anything is left it will be profit. Profit on the manufacturing of potato bag is very low.
- The raw material consists of paper, ink, glue and wire tied. The contribution to the existence of the bag is 93% paper, 3% ink, 2.5% glue and 1.5% wire.
- The paper used can be white or brown.
- All of the white paper used is imported while up to 75% of the brown paper is produced locally. The raw ingredients for ink and glue is all imported but mixed locally.
- Because most raw materials are mainly imported the prices are influenced by the exchange rate and the price of the glue is also influence by commodity prices.
- Price forming is mainly influence by:
  - The supply ability of the manufacturers.
  - The farmer also plays an important role in the price formation in that the acquired quotation will be shown to competitors and used as negotiation for lower price per bag.
- Over supply pushes down the price and manufacturers tends to supply at losses rather than losing their market share.
- The price receive for a paper bag varies between R1.10 (brown paper) and R1.30 (white paper) per bag. The price depends on the design and printing (how many colours in the design) as well as the colour of the paper.
- Other factors influencing the bag manufacturers business is:
  - Low skill levels and low availability of man power to train. They feel that school training is not on par and that the need for tradesman skills is higher. They do have own training programs for printers and bag makers.
  - The effect of HIV/Aids is seen as part of their business plan. They try to limit the loss of capacity by rotating workers between activities to ensure that there is back-up personnel in case of illness.
  - The uninterrupted supply of electricity is of utmost importance to them because a hour interruption leads to a R20 000 loss after cost deduction.

Domestic production

- Potatoes Planting is done almost throughout the year in different regions of South Africa (Fig. 22).
- Domestic potato production is mainly under irrigation.
- Potatoes are produced without supplementary irrigation (dryland) only during spring and early summer plantings in regions with a temperate climate and a proven reliable summer rainfall such as in the Mpumalanga Highveld and Eastern Free State.
- However, the months November and December are avoided because of high temperatures combined with long day lengths which are not conducive to planting. Consequently, domestic consumers have almost continuous access to fresh potatoes.
- Potato cultivars available in South Africa can be divided into three groups according to the length of their growing periods.

✓ Early cultivars (less than 100 days) Vanderplank is the most popular cultivar

✓ Medium-growing season cultivars (100 to 120 days) of which BP1 and Up-to-Date are the most popular cultivars at present.

✓ Longer growing season (longer than 120 days) such as Sackfiller, Late Harvest, Kimberley's Choice and Cedara.

Figure 22: Production region of SA
Source: Department Of Agriculture.

1-Northern Province;
2 -North West;
3-Gauteng;
4-Mpumalanga;
5-Northern Cape;
6 -Western Free State;
7 -Eastern Free State;
8- KwaZulu-Natal;
9 –Sandveld;
10- Ceres;
11 -South Western Cape;
12- South Cape,
13 -Eastern Cape;
14- North Eastern Cape.

National Agricultural Marketing Council
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Potato Study | Comparative analysis

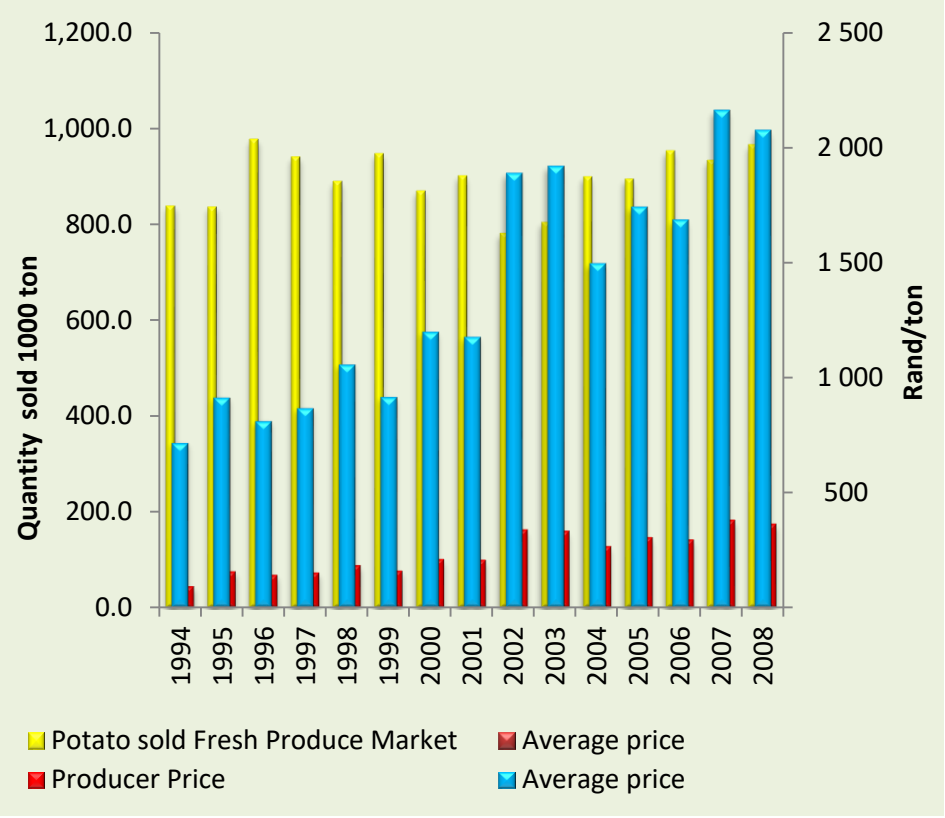

Figure 23: Quantity and price of potatoes sold at the fresh produce markets
Source: Abstract, 2009

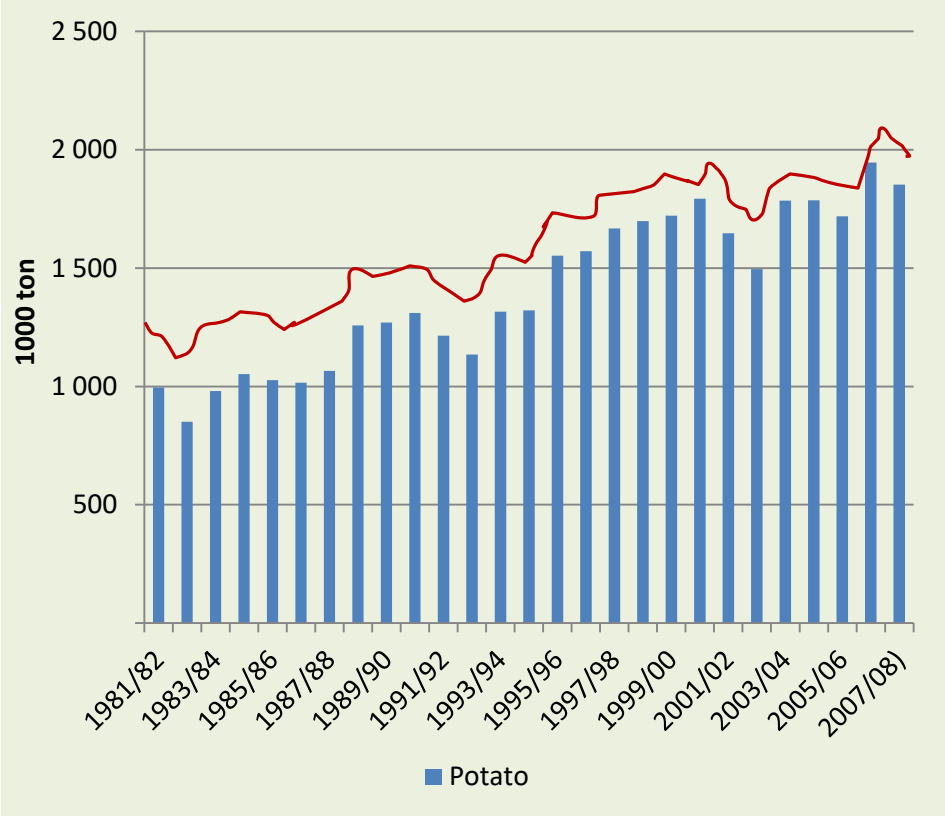

Figure 24: South Africa's Potato Production
Source: Abstract, 2009

- According to the figures above , the production of Potato in South Africa shows an upward trend since 1981 up to the year 2007, this is also supported by the Average price and the producer price which also illustrate an upward trend. The upward trend implies that there is growth in the Potato industry.

- The analysis is based on the seven regions of the production areas in which potatoes are primarily produced.
- The data used for the analysis is extracted from the enterprise budgets of commercial famers within the 7 regions, and the data is provided by Potato South Africa.
- During the year 2007 ,the contribution of the regions amount to 70% of the total production in South Africa.
- The contribution of each region towards the SA crop year in 2007 is illustrated in Figure 25.

Research Methodology

- Analysis is based on comparative economic advantage (CEA) framework;
- CEA- evaluates economic efficiency of productive uses of scarce land, labour capital and water resources within a particular country or region.
- Thus to get a proper understanding of the forces that drives profitability ,sustainability and competitiveness s in the potato industry in South Africa

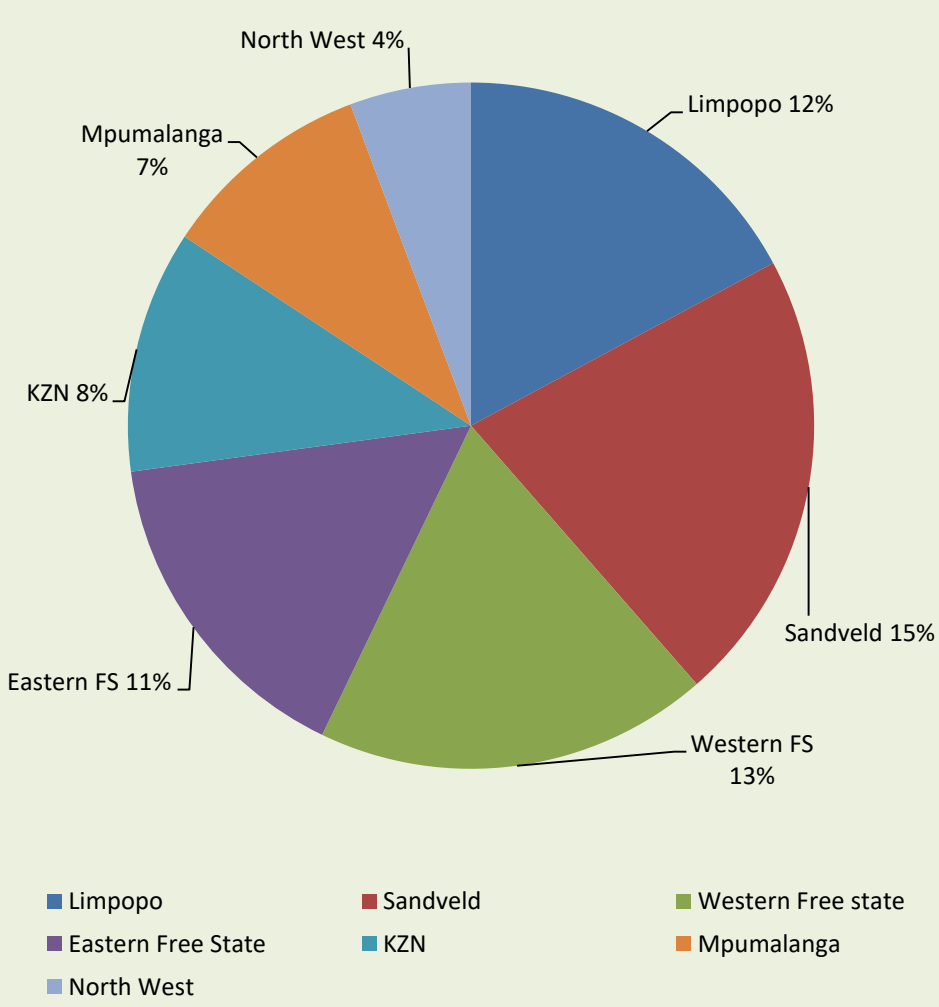

Figure 25: Different production region's contribution

Source: PSA, 2008

Potato Study | Comparative analysis

- The study analyse the data by means of tool called Policy Analysis Matrix :
- Private & economic profitability
  - Private cost ratio (PCR = C/(A-B)).
  - Domestic resources cost ration (DRC or RCR), (DRC = G/(E-F)).
- Effect of divergences
  - Nominal protection Coefficient on tradable outputs(NPCo = A/E)
  - Nominal protection Coefficient on tradable outputs (NPCi = B/F).
  - Effective protection coefficient((A-B)/(E-F)).
  - Profitability coefficient(D/H).
  - Subsidy ratio to producers (L/E).

Table 6: Policy Analysis Matrix (PAM)

	Revenue	Costs		Profits
		Tradable input	Domestic Factors	
Private Prices	A	B	C	D
economic Prices	E	F	G	H
Effect of divergences & efficient policy	I	J	K	L

According to Monke & Pearson (1989) the PAM) the PAM (Policy analysis matrix) could be used to investigate the following:
- The impact of policy on competitiveness According to Monke & Pearson (1989and farm-level profits;
- The influence of investment policy on economic efficiency and comparative advantages; and
- The impact of agricultural research policy on changing technology.

The PAM approach makes use of double entry bookkeeping. The one part calculates the profitability and thus the difference between income and costs. The other part measures the impact of divergences if the difference between observed variables and variables that will occur if divergences are removed, still exist. Profitability is measured horizontally whilst divergences are measured vertically in the matrix. Private prices are revenues and costs which originated on farm level, whilst economic prices can be seen as world price equivalents or shadow prices measured at the same reference point (in this study at farm level).

(Monke & Pearson ,1989)

Potato Study | Comparative analysis

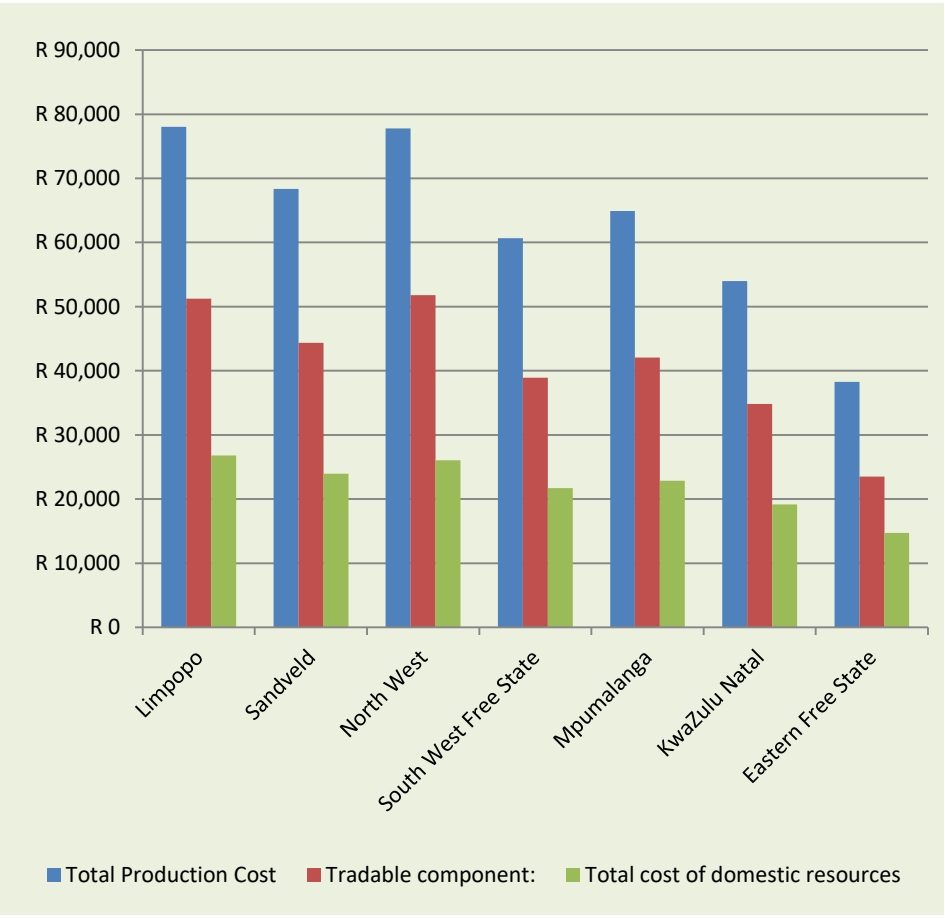

Figure 26: Production cost, tradable and domestic resources
Source: PSA, 2008

- Total Production cost of potato vary from region to region.
- Reasons for variation between regions is determine by the variability in labour cost, transportation to the market where produce are sold and proximity of input suppliers.
- Production cost in Limpopo and North West constitutes closely R78000 per ha.
- The above regions have also the highest effect of taxes (VAT) and import duties on inputs.
- Tradable component, which consist of machinery cost, transport, electricity and of which fertilizer ,pesticides and transport cost takes a large composition of tradable component .
- Total cost of domestic resources which is made up of factors such as cost of domestic resources(labour cost, water tariff & interest of production credit) and component of non tradable (fertilizer and pesticides , purchased inputs, electricity, contract service, and transport)
- Given the fact that most of raw materials used for fertilizers and pesticides are imported and the influence of volatile exchange rate which results in input being expensive for potato farmers,
- Proximity to the markets (input or output) has some advantage to famers because it reduces the transportation cost ,this is reflected on regions that are nearer or far away from the market.

Source: PSA, 2008

Potato Study | Comparative analysis

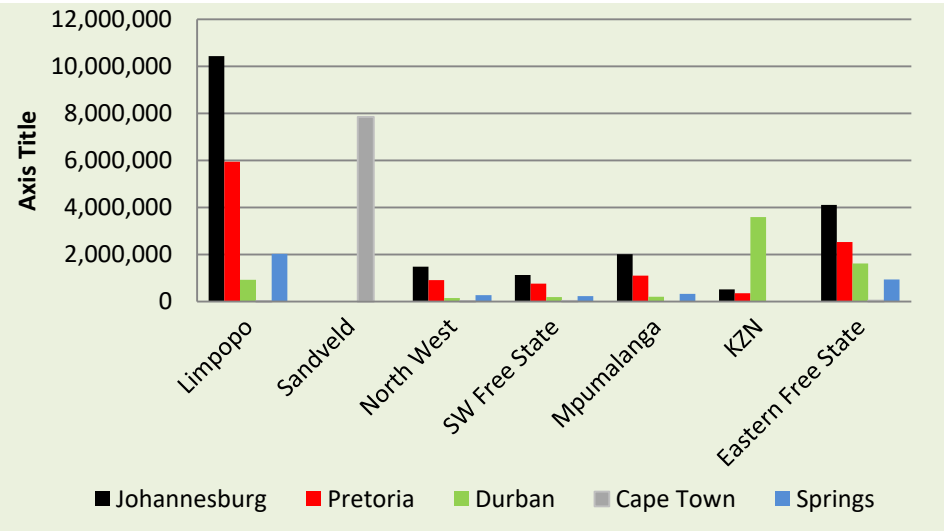

Figure 27: Markets supplied by different regions
Source: PSA, 2008

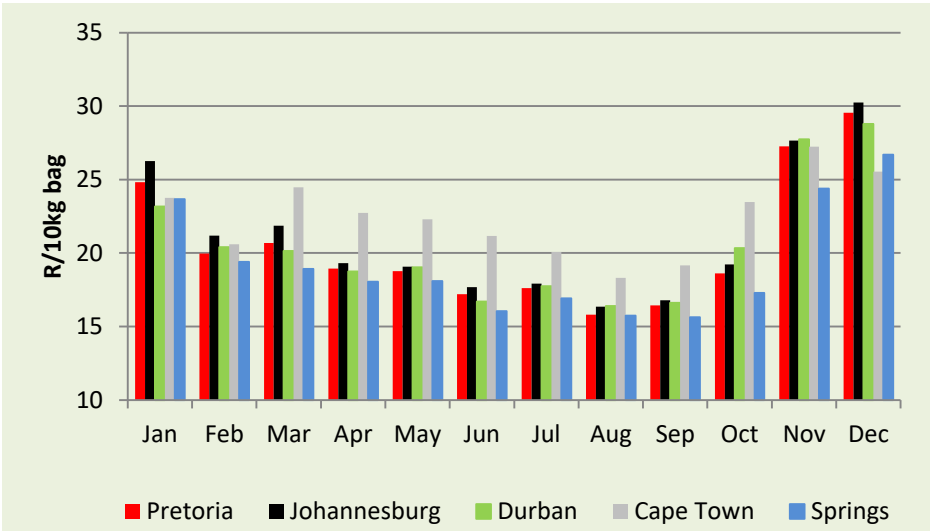

Figure 28: Monthly market prices
Source: PSA, 2008

- The proximity to the Potato market determine the choice of the market farmers use from various regions, see Figure 27.
- Figure 28 shows that November, December and January are the peak month where famers receives higher prices for the produce. Johannesburg fresh produce markets seems to offer the highest prices during the peak month.
- Figure 29 shows region receiving higher prices , such as North west, Limpopo and Mpumalanga and the production quantity of potato seems to have a positive influence on the prices farmers receive for their produce. North west province did experience very high yields and very high weighted average prices for the 2008 season as indicated in the Figure 29;These can be attributed to the fact that big producers have some market power to influence the market price of Potatoes .

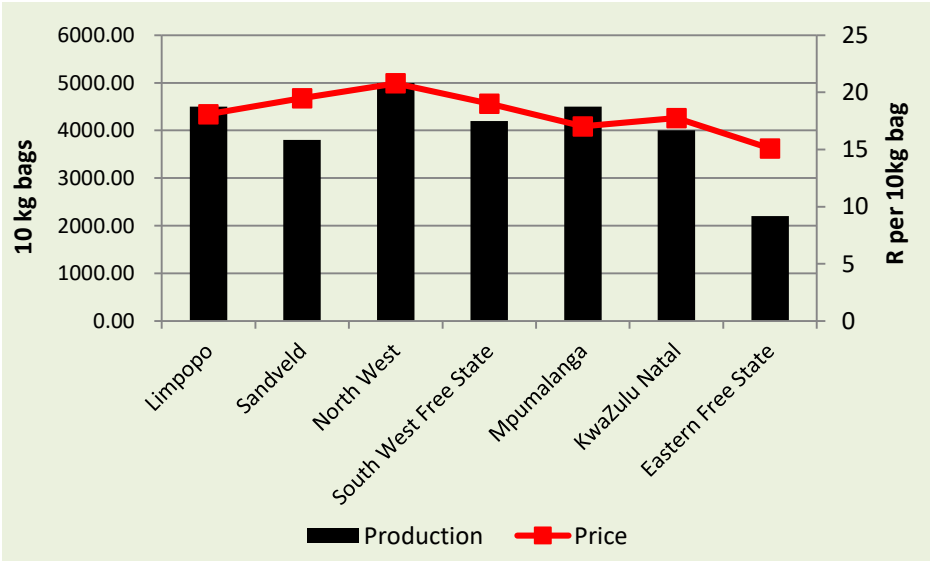

Figure 29: Production Quantity(ha) and Price (R/10kg bag)
Source: PSA, 2008

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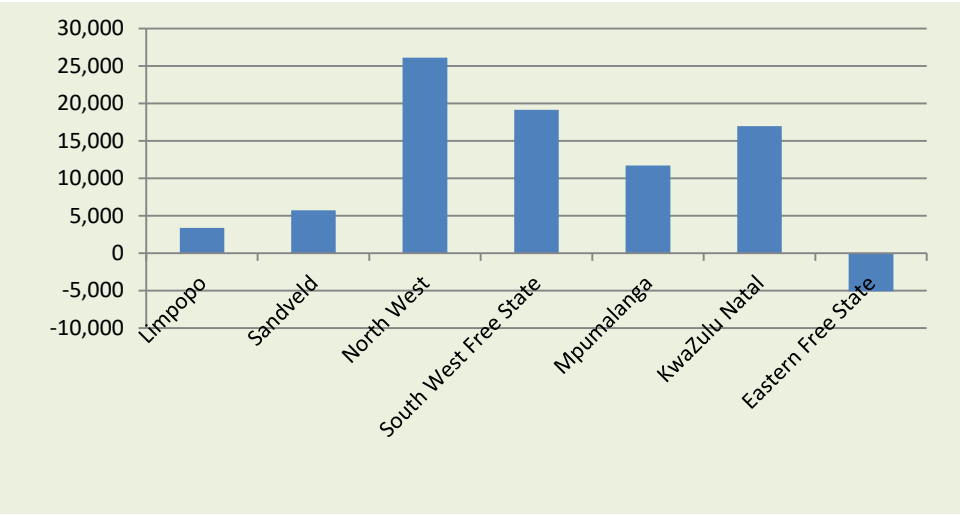

Figure 30: Private profitability
Source: PSA, 2008

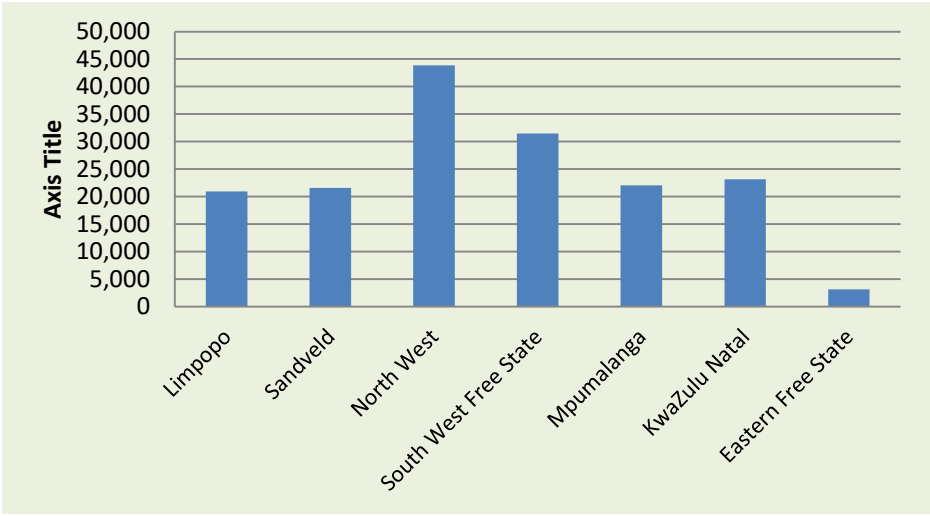

Figure 31: Economic profitability
Source: PSA, 2008

- Private profitability shows the competitiveness of the potato industry, given current technologies, output values, input costs, and policy transfers. The overall private profits of the regions is fairly good (D>0) , with Northwest performing exceptionally well.
- The implication of figure 30 is that, famers can afford to pay domestic factors (including a normal return to capital) and still remain competitive- that is, break even after earning normal profits.
- The production year 2008 shows hard difficulties for the Eastern Free State and Limpopo, due to an increase in fuel price, lower market prices famers received, unfavourable climate conditions and being located far away from input suppliers and markets.
- It also indicates that a net loss was made in the Eastern Free State; which means Eastern free state is earning a subnormal rate of return, thus it can be expected to move to other crops that are more profitable or alternative techniques of production, marketing strategies etc .

- Economic profits measure efficiency or comparative advantage.
- Economic profitability in all the regions is fairly good, with North west performing exceptionally well.
- When the economic profits are Positive, thus the regions can survive without assistance from the government.
- Therefore , these regions efficiently use scarce resources by producing at economic costs that is less than the costs of importing potato.
- Thus, the economic profitability indicates that every region under investigation is efficiently producing potato given the scarce resources.

Potato Study | Comparative analysis

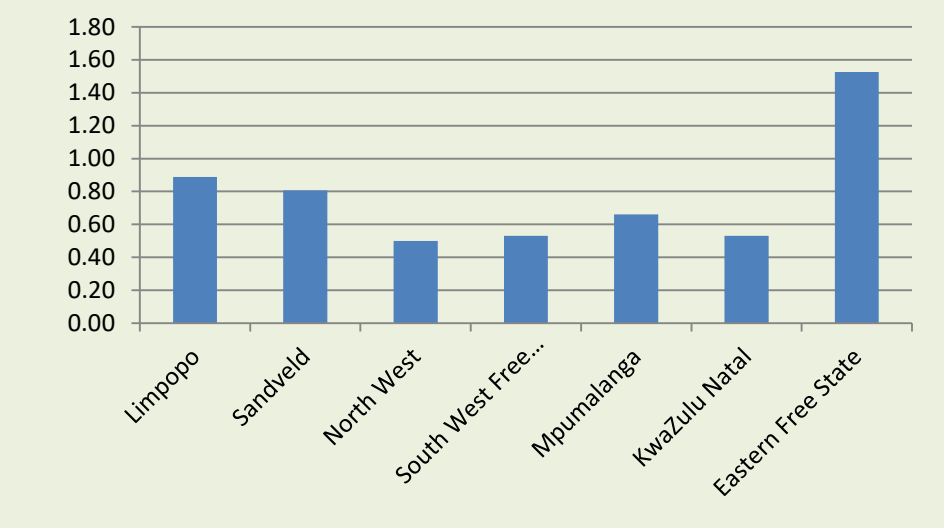

Figure 32: Private Cost Ratio
Source: PSA, 2008 and own calculations

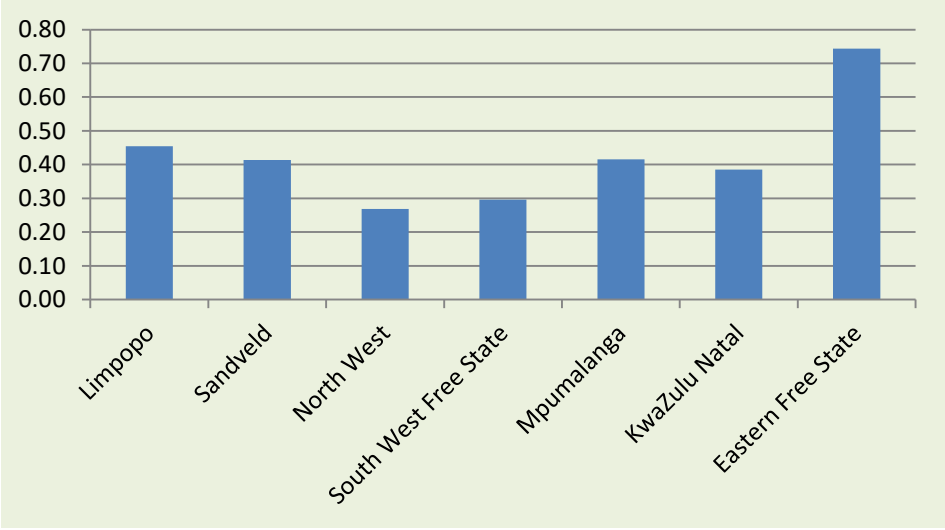

Figure 33: Domestic Resource Cost Ratio
Source: PSA, 2008 and own calculations

- PCR shows how much can famers afford to pay domestic factors (including a normal return to capital) and still remain competitive-that is, break even after earning normal profits.
- According to Fig 32, famers prefer to earn excess profit (D>0) , and they can achieve it because their private factor cost (C) are less than their value added in private prices (A – B) ,thus famers try to minimize the PCR by holding down domestic factor costs and tradable input costs to maximize excess profits.
- This ratio must be as low as possible to maximise profit. In this case the ratio range from the lowest of 0.47 to 1.40, Northwest province demonstrate to be the most competitive producer of potato, which is relatively high and this translate to be more competitive while Limpopo seem to be doing not so well with a ratio of 0.96 and Eastern Free state seems to be worse-off by the ratio of 1.40 which is relatively high and this translate to not being competitive.

- The DRC measure comparative advantage. DRC is used to determine which among a set of alternative production activities is relatively efficient for a region in terms of contribution to national income .It indicates whether resources are used efficiently or not for a specific region or country.
- DRC for all the province range from 0.27 to 0.74, and the rule of thumb states if (DRC<1); then is an indication that economic profit is maximised and that a region apply resources efficiently.
- North west has a relatively low ratio of 0.27 which indicate that producers are more efficient than the other regions.
- Therefore North west , followed by South west free has a comparative advantage compared to other regions, in other words they have the ability to engage in production at a lower opportunity cost than another regions.
- The reasons for the above performance is higher yield and higher income per bag. For example Potato seed producer has an advantage to induce yields and quality as compared to other table potato producer.

Potato Study | Comparative analysis

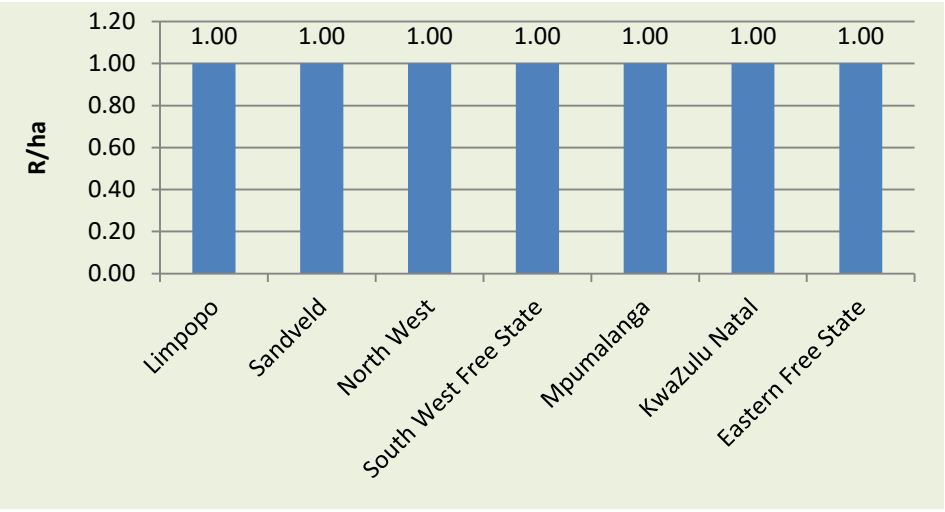

Figure 34: Nominal Protection Coefficient (NPC) on tradable outputs
Source: PSA, 2008 and own calculations

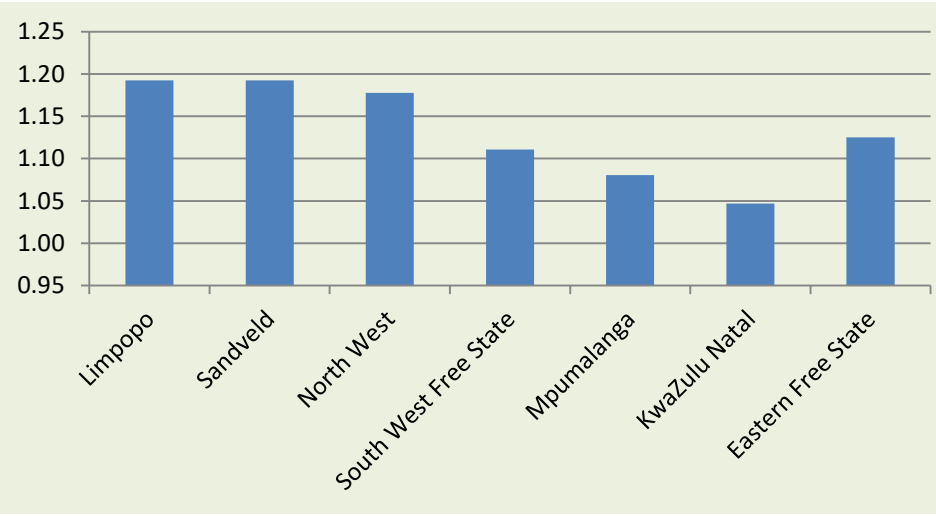

Figure 35: Nominal Protection Coefficient (NPC) on tradable outputs
Source: PSA, 2008 and own calculations

- NPC is a ratio that contrast the observed (private) commodity price with a comparable world(economic) price, thus it shows the impact of policy present or absent which cause the divergences between two prices.
- According to Fig 34, NPCO is equal to 1, this is an indication that policy influence market prices at the same percentage level with the world price. The implication of this ratio is that the country is sufficiently small in the world market that its international sales or purchases do not measurably affect the world price
- In practice producer sell most of potato to fresh produce market, or to Marketing Agents, who are the price makers, which makes famers to be price takers.
- Therefore famers are left out vulnerable to the market, given the unfavourable weather condition that can hamper the market price of potato, big producer that has a tendency to flood the market which lead to lower prices, seed producer deliver a higher quality cultivar to outcompete other producers of table potato .

- The NPCI measures the value with which market prices of tradable inputs exceed their economic prices.
- The potato study indicate NPCI ratio ranging from 1.05 to 1.19.
- This is an indication that most of the producers are paying above the world market price of the tradable inputs.
- For example Limpopo, An NPC on inputs of1.19 shows that policies are increasing input costs; the average market prices for these inputs are only 1.19 percent of world prices .
- This is an indication that most of the producers are paying above the world market price of the tradable inputs.
- This high ratios can be explained by the fact that nearly 70% of all the raw materials used in the production of fertilizers and chemicals required are imported. Furthermore, the fact that there is a worldwide shortage in these two commodities naturally leads to upwards pressure on prices, (PSA,2009).

Potato Study | Comparative analysis

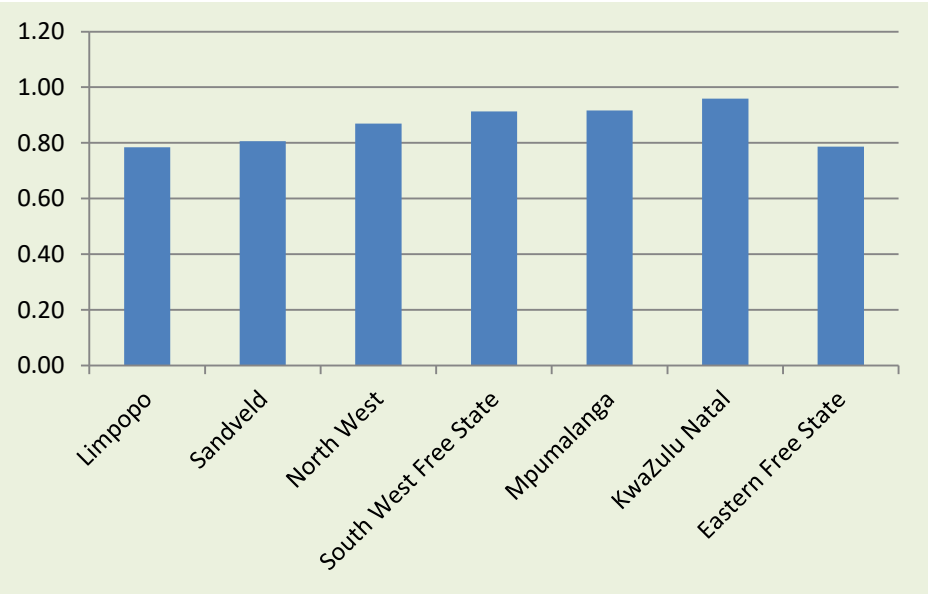

Figure 36: Efficient protection coefficient
Source: PSA, 2008 and own calculations

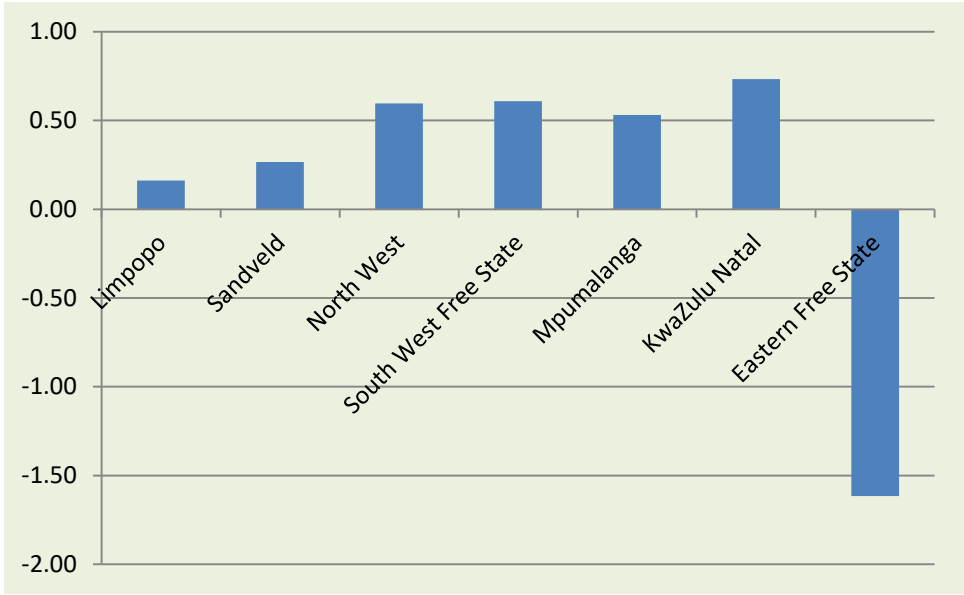

Figure 37: Probability coefficient
Source: PSA, 2008 and own calculations

- EPC measures the degree of policy transfer from product market-output and tradable-input-policies.
- It is an indication of policy and market circumstances for both output and purchased inputs on the incentives or disincentives to produce a product.
- In this study the EPC coefficient range from 0.40 to 0.84, In this case the EPC indicates a disincentive to produce given the following reasons, according to Potatoes South Africa, the production cost of a hectare of potatoes under irrigation is between R75 000 and R100 000 depending on the market segment i.e. seed, processing market. Since march 2008 the price of diesel escalated further by R1.30 This is however not a complete indicator of incentives.

- The PC measures the incentive effect of all policies and thus serves as a proxy for the net policy transfer. PC is ranging from 0.03 to 0.55. if $D > 0$; is an indication that producer earn supernormal returns which is expected to lead to future expansion of the industry or if substitute crops are more privately profitable.
- As for the Eastern Free state , a negative ratio of 1.6, $D < 0$; is an indication that producer did not make any profit in 2008. If the above conditions prevail it can be expected that this area will exit the market for production of potatoes.

Potato Study | Comparative analysis

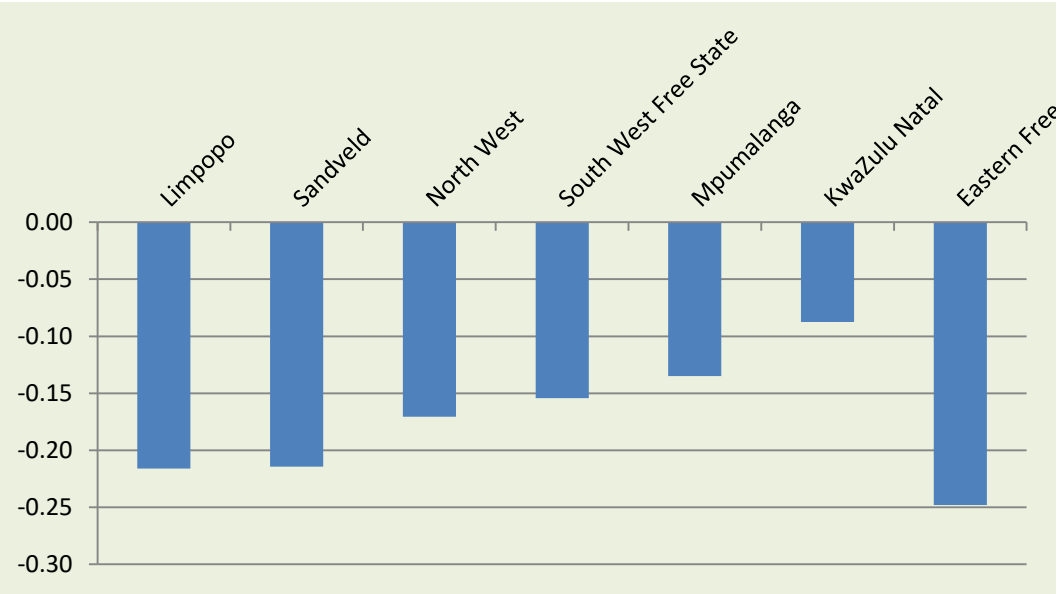

Figure 38: Subsidy ratio to producers
Source: PSA, 2008 and own calculations

- The SRP shows the proportion of revenues in world prices that would be required if a single subsidy or tax were substituted for the entire set of commodity and macroeconomic policies.
- The Subsidy ratio to producers (SRP) is for all the areas due to tariffs and taxes. The above ratio indicates that the net effect of support is negative. The Eastern free state, Limpopo and Sandveld SRP are the lowest, which indicates that the effect of tariffs and taxes are the highest on this region.

Potato Study | Related Literature: Potato Processing Industry

The University of the Free State conducted the following study;

Structure, Conduct and Performance in the South African Potato Processing Industry

By:

J.W. Hanekom, M. Ellis, D. Sissons, B.J. Willemse

Absrtact

The South African Potato industry was deregulated in the early 1990's, leading to changes in market structure. The adjustment in market structure leads to changes in production and marketing practices, including contracting and pricing strategies for processing firms within the industry. The purpose of this paper is to investigate the current status in the potato processing industry, based on market structure, conduct and performance. The objective is to qualitatively measure the driving forces within the industry, and how these factors influence performance of the industry as a whole. The research method was based on the structure-conduct-performance paradigm, giving a better understanding of the potato processing industry and the driving forces, relating to future growth. The assessment will also be used in a larger study, to determine an appropriate monitoring of the competiveness factors in the potato industry.

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Only the key findings of this study will be discussed in this report .

In order to determine the structure, conduct and performance in the South African Potato Industry an analysis was conducted using the *Structure-Conduct-Performance (SCP)* paradigm. A detailed explanation of the analysis are provided in the appendix.

Definitions of important terms:
Structure: refers to market structure defined mainly by the concentration of market shares in the market.
Conduct: behavior of firms - competitive or collusive (Anonymous, 2006).
Performance: social efficiency: mainly defined by extent of market power (greater market power - lower efficiency as firms tend to move away from marginal cost pricing).

Processing Industry Market Structure

- South Africa's per capita consumption of fresh potatoes is 34kg (2008), it is about half of the USA per capita consumption and a third of Europe's per capita consumption.
- South Africa's per capita consumption of processed potatoes are only 8kg, in the UK it is 52kg.
- The survey conducted among the processors provided the following results; The most prominent pricing method used is production cost pricing plus a certain percentage mark-up. Consumer demand is seen as the main contributing factor for price formation, apposed to price of substitutes and the availability of supply.
- Concentration analysis within both the fresh french fries (FFF) processors sector and the snacks processors sector suggests that there is one distinctive market leader within each sector, namely McCain in the FFF processors sector and Frito-Lays in the snacks processors sector.
- Companies with the largest market share in the frozen fries industry;

McCain	75%
Lamberts Bay Foods	15%
Natures Choice	10%

- Companies with the largest market share in the snacks (crisps) industry;

Frito-Lays	65%
Willards	60%

- The following table is an illustrates the breakdown of processors in the industry.

Potato Study | Related Literature: Potato Processing Industry

Processed potato product	Crisps	Frozen fries	French fries	Canned potatoes	Mixed vegetables
Number of prominent firms	7	3	5	2	3
Companies	Dowmont Foods Frimax Kavalier Foods L & C Messaris Poco Foods Simba Quix	Lamberts Bay Canning Co McCain Mine Corp	Dimpho Fresh Food Errol Veg Mannic Chips Rooipoort Fresh Products Super Chip	Langeberg Koop Giants Foods	DimphoFood Golden Harvest McCains
Market structure	Oligopolistic market	Oligopolistic market			

Table 5: Breakdown of processors within the South African potato industry

- Results of the analysis showed that both the FFF industry and the snack industry are tight oligopolistic industries
- The greatest barriers to entry in the processing industry are as follows:
  1. Capital Requirements
  2. Economies of Scale
  3. Proprietary products and knowledge
  4. Access to raw material
- Other factors not seen as important as the above factors includes patents, government regulation and brand identity. After processing companies were asked “Are there any reasons to exit the Processing industry?”, all of them answered with a resounding no, but mentioned factors like raw material costs and labour costs as influential threats.
- According to the survey the five most prominent issues processors have to deal with are:
  1. Cost of raw material
  2. Oil flavour and packaging
  3. Utility costs, coal, electricity and gas
  4. Labour
  5. Low Profit margins with high sales volumes.

Market Conduct

- No anticompetitive practices were noted within the industry.
- Future strategies concerning procurement with suppliers were noted as follows:
  1. ensure continuous quality as the key objective for the industry,
  2. contracting directly with farmers,
  3. long term storage facilities and sales objectives.
- A key driver in the industry are raw materials that makeup 65% of the total production costs, it also has a huge effect on how the industry approaches its management expertise.
- Procurement patterns vary among the different role player’s factories, with some doing procurement on a daily basis, while others prefer a weekly or monthly basis.
- One of the procurement methods are direct contracting. Processors explained the important role that direct contracting plays in procurement as follows; it ensures a continued supply of raw material for the company, while on the consumer side it ensures that consumer demand is continuously satisfied. It also ensure that processors receive the specific cultivars that are specified for processing and with the specific quality attributes.
- Differentiation is done by firms through the use of various strategies, including offering quality, price and packaging strategies that are different from their competitors.

Potato Study | Related Literature: Potato Processing Industry

- The following preferences were noted by the processors regarding procurement which includes:
  - Contracted farmers who apply best agronomy practices
  - Financially sound farmers
- Farmers that have a history of performance delivery
- Quality plays an important role with respect to the grading of raw material for farmers.
  - Snack Processors demand quality cultivars that have high solids and low fry defects, which have a good appearance.
  - Frozen french fries processors demand cultivars that have high quality and brick like features for longer fries.
- Quantity was seen as the most important requirement of business objectives after quality due to the low margins within the potato processing sector.
- Quantity is followed by ensuring enough of the right variety is attained and this is followed by time schedule, ensuring that enough products are stocked on the shelves packaging and handling of logistics.
- One of the major reasons for contracting farmers, is that processing companies can inform farmers about what cultivars the farmer should plant and the traceability of raw material can also be monitored better.
- The problem about buying potatoes at the fresh produce market is that most of the cultivars do not meet the needs of processors, be it frozen french fries producer or snack producer., therefore potato processors contract the supply of potatoes for processing. Procurement on the market is not really an option.
- Macro economic factors that had the most influence on the sustainability and growth of the business were noted in the following order:
  1. Consumption patterns
  2. Inflation
  3. Interest rates
  4. Exchange rate
  5. Crime
- Micro economic factors that had the most influence on the sustainability and growth of the businesses was the ability to control the availability of supply and product quality.

- The question was raised that if the potato price was largely determined by its nutritional value, what would be seen as the main substitute for potato products (Crisps) in terms of food types that contain high starch contents, e.g. products made from wheat, products made from rice or products made from maize. The results of the processors suggest that processed rice goods remained the biggest threat for frozen french fries producers while snack producers hinted that maize snacks were the greatest treat.
- Questions based on how consumers react to increase in price, revealed that buy less of the good was more prominent compared to consumers switching to other goods.
- Processors differentiate their offering by firstly distinguishing the quality, second the pricing of the product, followed by the packaging of the product.
- Processors defined their working relationship with suppliers as business like as apposed to agonistic or friendly.
- Quick service restaurants are the main buyers of the products of French Fries Producers (FFP) while wholesalers and supermarkets are the main buyers of crisps.
- Government and legislation have little influence on business.
- The list of important factors that are passed down from processor to the farmer is as follows:
  - What cultivars should be planted (preferences)
  - What standards of excellence should be met with inspections
  - Forecasting
  - Quality standards
  - Monthly pricing

Performance

- French Fries Producers (FFP) see specialty products and battered chips as future areas of expected growth, while snack processors kettle chips and maize snakes as areas of future growth opportunities.
- The impacts of growth are determined by demand, offering, price and availability.
- The potato products of both the FFP as well as potato snacks contribute to low profit margins of the respective industries, compared to the other vegetable and meat offering, which the industries cater for.

Potato Study | Related Literature: Potato Processing Industry

- Determining the needs of processors was seen as the main expectation of the processing companies regarding Potato South Africa (PSA).
- (figure of marketing channels for table potatoes ??? Include/not include, already in the industry profile)
- The main driving forces ensuring smooth operation within the potato processing industry includes the following:
  - Farmers sign contracts with processing companies during planting time
  - The farmer who produces table potatoes will only know his price on the day he ships his produce off to the markets
  - Farmers do not need a packing shed, because the processing company collects the potatoes on the land at harvesting time

Marketing Strategies for increased competitiveness

- As consumer income has increased over the last few years the preferences of consumers have become more nutrition and health orientated.
- Strategies of businesses have to be changed to adapt to these changing consumer wants and needs.
- One of the main conditions that have to be improved to achieve this is to increase the competitiveness of the potato processing industry.

1. Product Strategies

- Product quality has become increasingly important as the processor has to adhere to strict health and safety standards as consumers' needs are constantly changing towards these characteristics.
- In the South African potato processing industry the processors is still relying on old cultivars which emphasize the importance of adopting and using new cultivars.
- Packaging should be of high standards and can be used as a tool to differentiate your product from the competition which will increase non-price competition and thus efficiency (Vegsys, 2003).

2. Brand Strategies

- Brand strategies should be used to build up brand loyalty through for example guaranteeing superior quality of products, although this might lead to higher barriers to entry as new firms may find it more difficult to attract buyers, which have loyalty to products of existing firms (Vegsys, 2003).

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Situation in Australia

The development of an industry strategic plan is essential for the Australian processing potato industry as it moves into a period of intense global competition, rising costs and declining world prices. Domestic consumption is declining with estimates of around 63 kilograms per person per annum, although it appears that the proportion of processed potatoes consumed is rising at the expense of fresh products.

The marketing function of processing potato industry is predominantly driven by processing companies. For the last 10 years, production volume has been slowly falling with rising production costs and major threats of low cost competition from other countries. Australian industry is a relatively high cost producer selling to low cost, high value demanding consumer.

Australian supermarkets are moving to 30% private label products with many products sourced from overseas suppliers. The industry is at the crossroads of global competition and must make significant changes in order to remain viable in the long term. Industry costs are rising while returns to growers are declining, which means the industry must focus on increasing value chain productivity. The industry must improve collaboration through value chain in order to significantly improve productivity (Anonymous, 2006).

The Processing Potato Industry SWOT Analysis of Australia

Strengths	Weaknesses
• Good people-experience, knowledge, skills • Great product- well known, good demand, high quality, established consumption habits • Relatively good infrastructure and facilities • Good growing environment for potatoes	• Reliance on old cultivars • Poor health image of potatoes and processed foods • Fragmented industry: Lack of leadership group • High costs and regulation relative to competitors • Poor collaboration and communication through the value chain
Opportunities	**Threats**
• New Technologies in production, processing, packaging, transport and IT • Consumer focus on convenience, health and emergence of functional foods • Creating Positive image for domestically grown products • Improved communication technology and access • Alignment with global supply chains	• Bio-security breach- disease incursion • Imported products from low cost competitors • Rising business costs, regulation and compliance • Consumer attitudes to processed products and GM foods • Consolidation of Global supply chains • Closure of Australian plants- change in investment

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3. Price Strategies

- In free markets demand and supply determines prices, but in the South African potato processing industry this condition is not always met as there is not sufficient buyers and sellers to allow this.
- To ensure a more efficient industry barriers to entry should be decreased to ensure that more firms enters the industry breaking up market power of the leading firms which controls prices (Vegsys, 2003).

Conclusion

- The industry is dominated by a small number of firms (Frito-Lays, McCain) confirming the oligopolistic nature of the industry.
- A characteristic of this market form is the fact that the larger firms are the price setters as they control prices through their output decisions while the smaller firms just have to adapt to this.
- Price wars between firms in this industry will be detrimental to all parties concerned. Therefore firms within the South African potato industry should thus increase their efficiency by focusing on non price competition, such as brand strategies and contracting directly with farmers to increase sustainability with respect to quality and price.
- Differentiation is also a tool that can be used to increase competitiveness in the industry.
- Government can also adopt a more hands on approach to try and decrease barriers to entry in the industry which can be contributed to absolute cost advantage and economies of scale obtained by large firms with too much market power.
- No evidence of collusion was picked up from discussions with the processors.
- The reason for this might be due to the fact that low cost imports prevents collusion between firms as not all firms have equal processing cost due to differences in sizes and relative market share. Fixed price through collusion will be set below import price which is impossible for especially smaller potato processing firms which do not have economies of scale.
- The second reason for a lack in collusion might be due to the nature of potatoes which includes various cultivars with different characteristics.
- These characteristics of different cultivars cause specific cultivars to be suited for a specific product. McCain, for example contracts directly with the farmer to produce specific quality of a specific cultivar and only buys from these farmers making it impossible to collude.
- If we look at the Australian situation we can see that globalization plays an increasingly important role which makes it more important to lower costs and become more efficient to ensure the industry remains competitive and survives while having to compete with international firms.
- It can be concluded that the South African potato industry have to undergo some radical structural changes to increase competiveness and ensure the survival of the industry in an increasingly globalized economy.

Supply Chain Management in the South African Potato industry

Report on Fresh Potatoes

Compiled by

Department of Agricultural Economics, Extension and Rural Development
University of Pretoria
May 2008

- **INTRODUCTION**
- The potato industry is the single most important vegetable crop in South Africa (Food pricing monitoring committee (FPMC), 2003:158).
- Value chain management plays a crucial role all forms of production.
- The objectives of this study was to analyse the fresh potato value chain.
- The study focus on the importance of the informal and formal sectors.
- The study aims to understand the behaviour of each market participant and to identify the competitive forces and the way each participant does business.
- The food retail market was worth R165 billion in 2004 and vegetables DoA (2005a)
- Potatoes contributed 16 percent to this figure (Madevu *et al*, 2007).
- Potatoes are mainly distributed by 17 fresh produce markets (FPM) located countrywide. These fresh produce markets are responsible for 59% of potato distribution.

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Supply Chain Management in SA

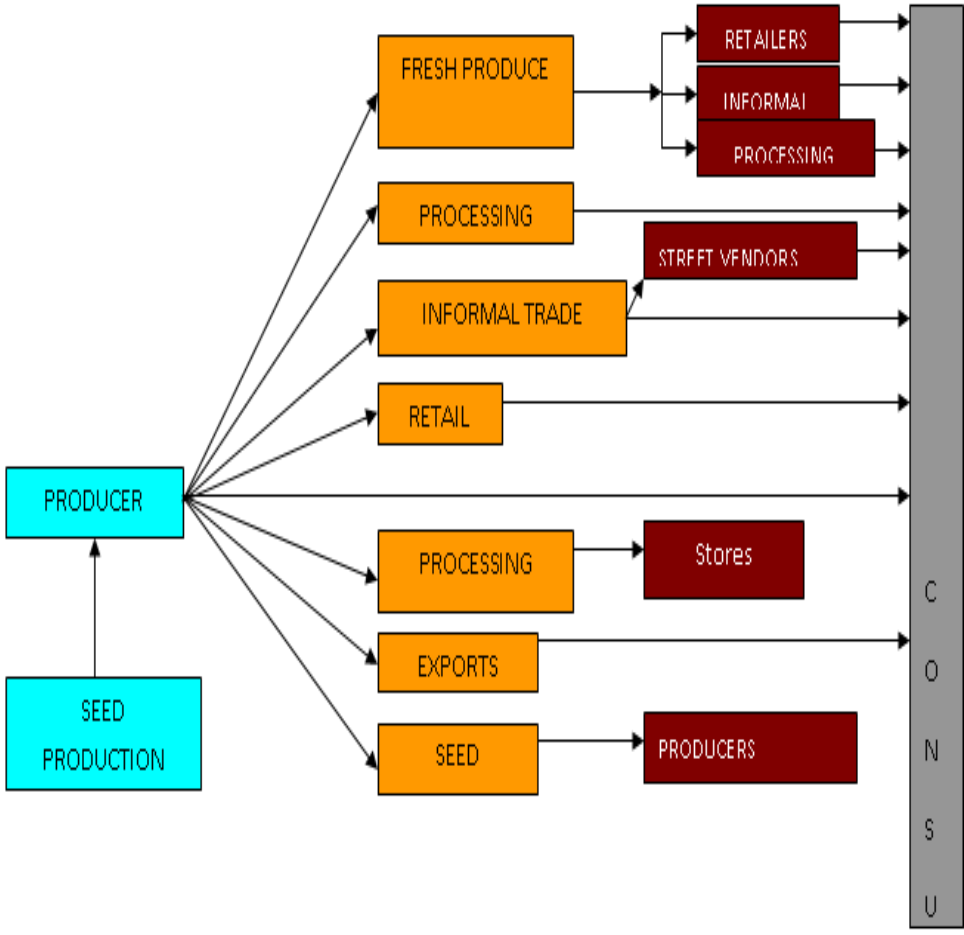
Overview of the South African Potato Industry

- Retailers :
  - Fruit and Veg cities,
  - Pick 'n Pay,
  - Shoprite/Checkers,
  - SPAR,
  - Woolworths,
  - Freshmark,
  - Housewife Markets and other.
- Processors like:
  - Willard's,
  - Simba,
  - Famous Brands,
  - Golden Harvest and
  - McCain.

- The informal sector is accountable for 50% of all potatoes sold. Potatoes are bought on the fresh produce markets in packets of ten kilograms and then sold in smaller packaging.
- Johannesburg is SA's biggest FPM (35% market share).
- The processed products include crisps, frozen and fresh fries and in fresh vegetables.
- The major potato producing provinces in South Africa include the Free State, Limpopo, Western-Cape and Mpumalanga (PSA, 2005).
- South Africa is not a major exporter of potatoes but is the biggest exporter in Southern African countries.
- South Africa contributes to 1% of worldwide exports of potatoes.

The South African Potato Supply Chain

- A total of 88% of the production is used for consumption and 12% for regeneration.
- Potatoes can leave the value chain at anytime or move along the entire span of the value chain.
- Value adding occurs at each level from production to the final consumer.
- The figure below illustrates supply chain of potatoes in South Africa.



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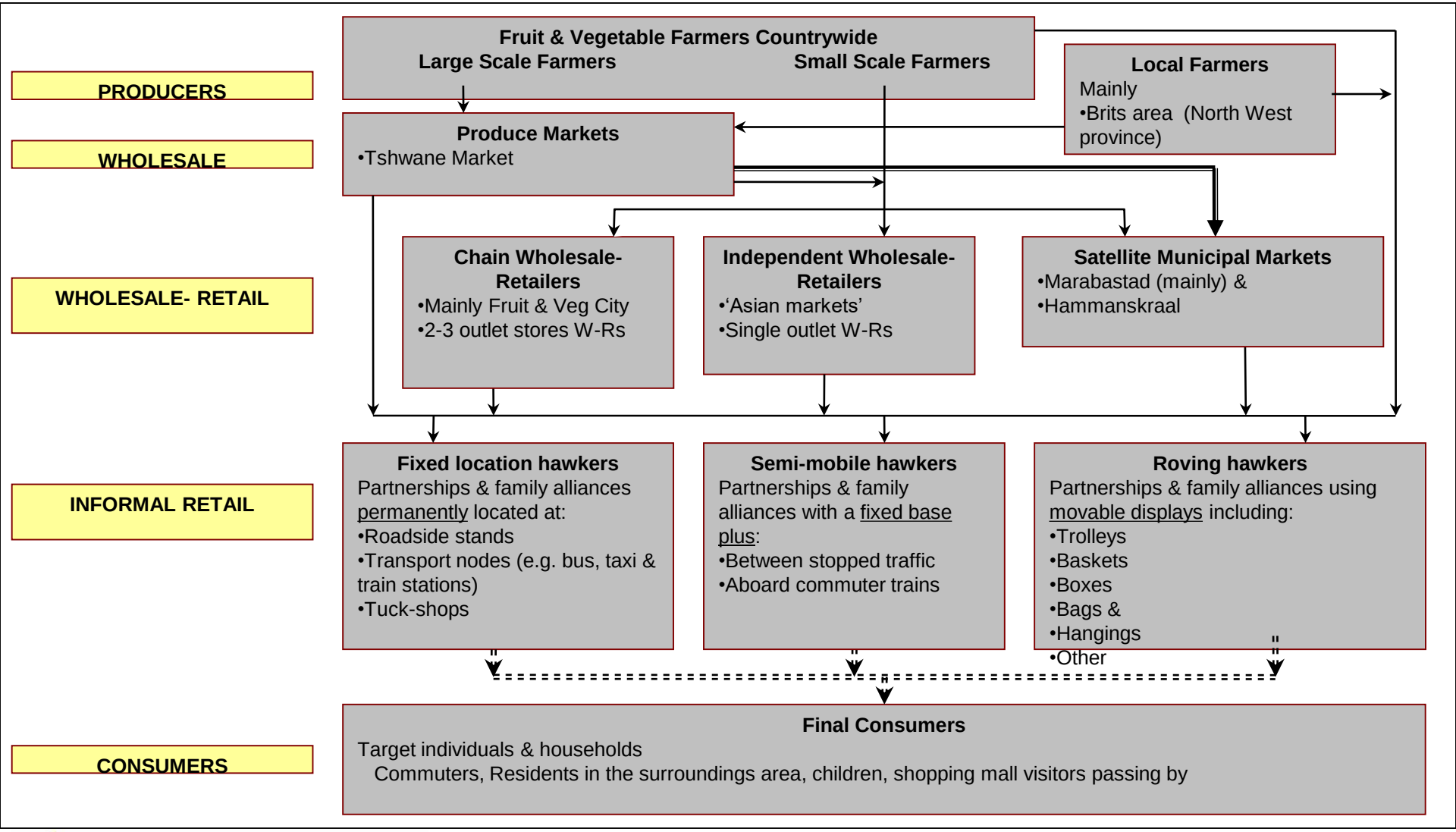
The informal trader channel for fresh fruit and vegetable in Tshwane



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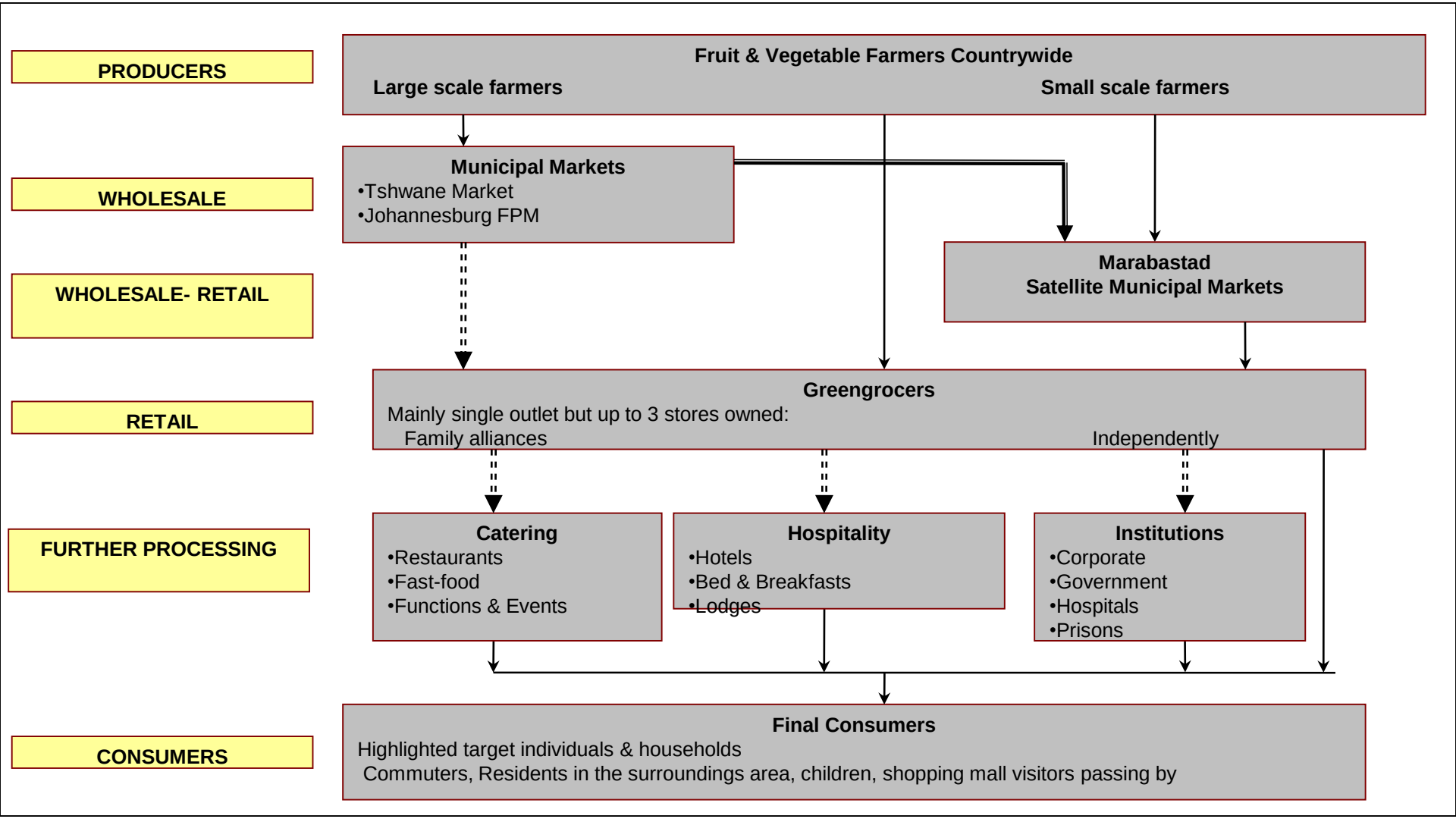
The greengrocer channel for fresh fruit and vegetables in Tshwane



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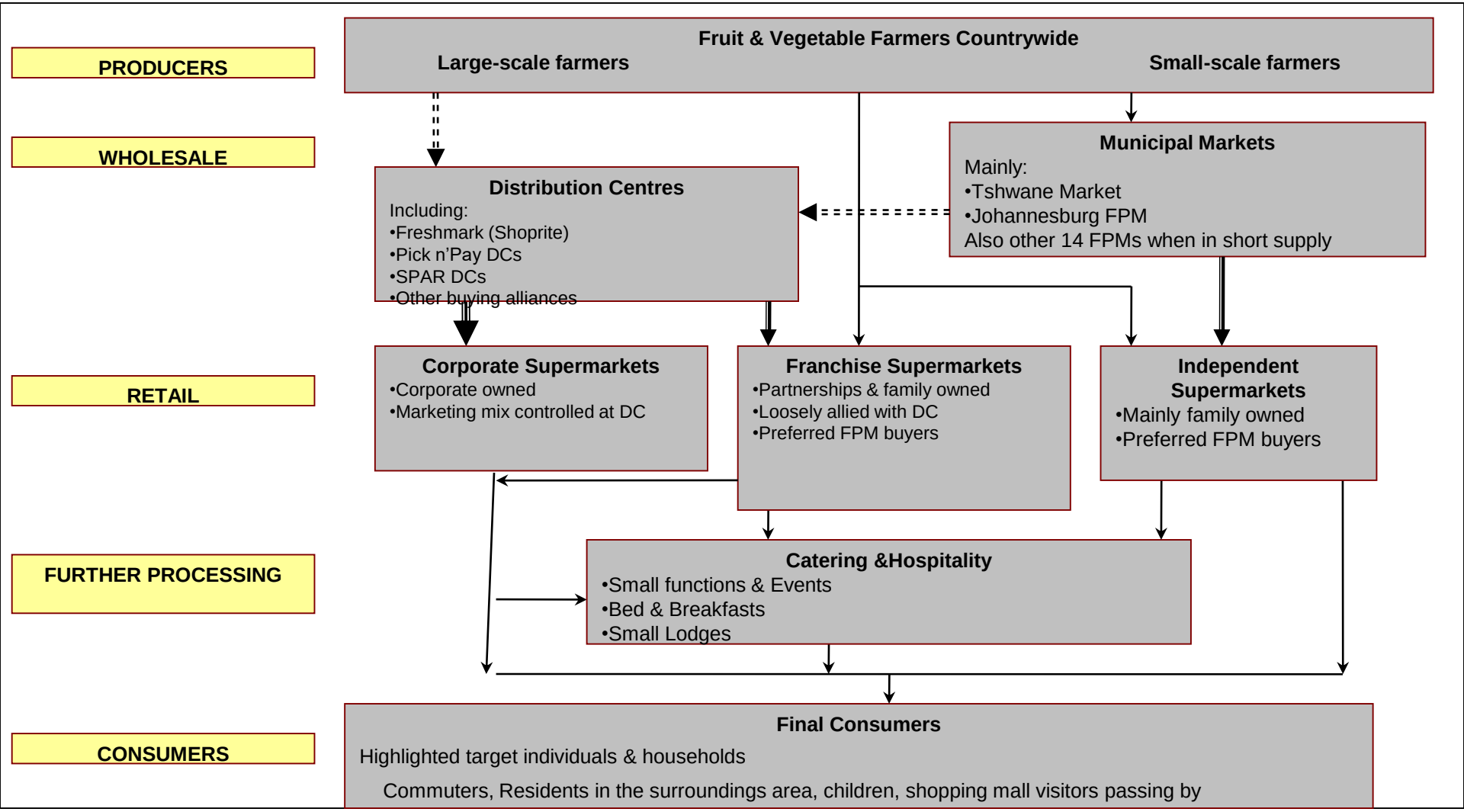
The Supermarket channel for fresh fruit and vegetables in Tshwane



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Previous studies

- Snyman (2004) – Found that the marketing & promotion situation is the main reason for PSA losing market share. A strategic overview of the potato value chain was conducted and the potato marketing chain was analysed. Snyman's study focussed more on the potato industry as a whole and didn't concentrate on different segments. This study aims to focus primarily on the informal- and formal markets.
- Jordaan – Aimed at analysing the status of BEE on Commercial Potato farms. The study concluded that in order for AgriBEE program to work effectively government needs to increase the number of black people that manage, own, and control enterprises and productive assets.
- Madevu (2007) – Madevu *et al* (2007) did a study on mapping the competitive food chain for fresh produce in Tshwane. Three different channels for the distribution of potatoes were identified in the study: The informal trade channel, the greengrocer channel and the supermarket channel as can be seen in figure 2,3 and 4. These different channels are very relevant when analysing the potato value chain and focus on specific areas within the value chain. A mapping of the fresh produce chain as a whole was also conducted. Fresh produce markets and the informal market are once again prominent in the value chain. Despite the relevance of this study, the study focuses mainly on fresh produce as a whole and does not single out the potato value chain.
- The literature above was reviewed to establish a basis of what type of studies have been conducted over the past five years. The study at hand will focus on some of these key concepts but will aim to intensify the focus on the fresh potato value chain.

Data collection

- Data has been gathered by means of structured questionnaires and interviews. The University of Pretoria will conduct 35 interviews with the various role players in the potato value chain, which include the following:
  - The 4 major fresh produce markets in South Africa Supermarkets
  - Agents
  - Packers
  - Processors
  - Hawkers
  - Green grocers
  - Export agents
  - Informal markets
  - Retailers
  - Wholesalers
  - Buyer for hawkers

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The Porter Approach

- It was agreed that Porter's approach to value the chain should be followed to evaluate the industry, key drivers, etc.
- Porter's five forces approach have been followed to value the chain.

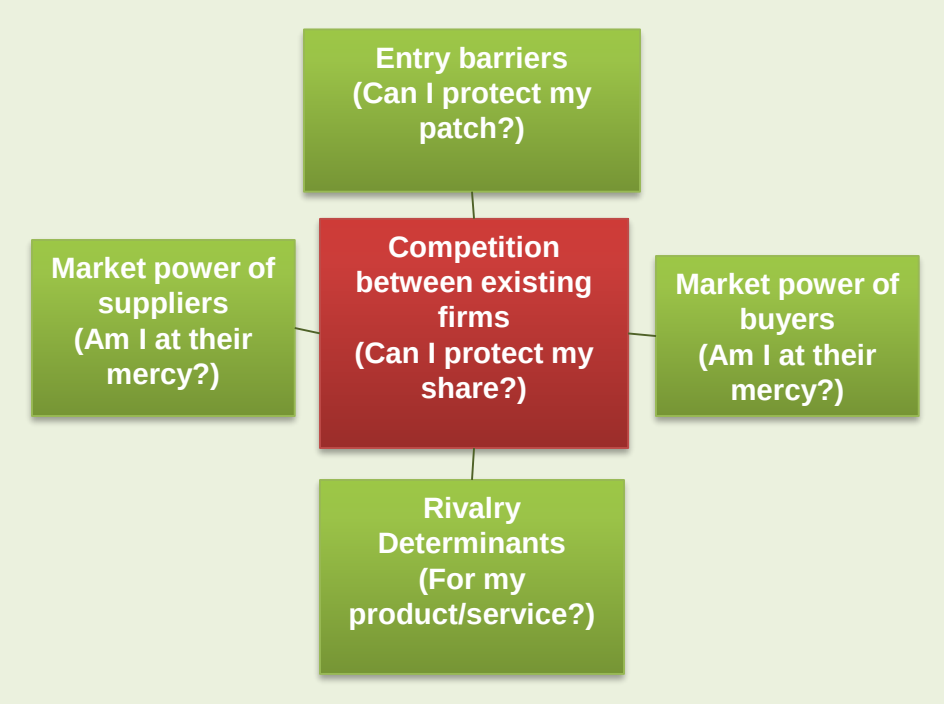

Figure : Example of Porters's Five Forces model
Source: Kaplinsky and morris,2000

Structure

Market Structure

- Mason and Bain founded the traditional analysis framework in industrial organisation theory. They indicated that market structure determines manufacturers conduct and manufacturers conduct determines market performance.
- Therefore the questionnaire was structured by looking at the different elements separately. Separate questions were formulated for the structure, conduct and performance within the supply chain. The market structure is the most basic concept and research motif and it reflects groundwork and environment in market economy environment
- It is on this basis that the SCP approach was used to analyse the various role players in the market and how these different elements feature in the potato industry.

Market Type

- Role players
  - The four major fresh produce markets in South Africa situated in Johannesburg, Pretoria, Cape Town and Durban.
  - Supermarkets in the various municipal areas
  - Agents at the different FPMs
  - Processors located near the FPMs and other areas
  - Hawkers operating from the FPMs and other areas
  - Export agents
  - Retailers
  - Wholesalers
  - Buyer for hawkers
  - Buyer for restaurants
- The four major fresh produce markets (FPM's) all play a significant role in the distribution of fresh produce between the farmer and the consumer.
- Johannesburg labelled as the price determiner of products is the largest fresh produce market with an estimated 35% market share, followed by Pretoria with a 25% market share.
- The remaining shares are distributed throughout the smaller fresh produce-, informal- and satellite markets.

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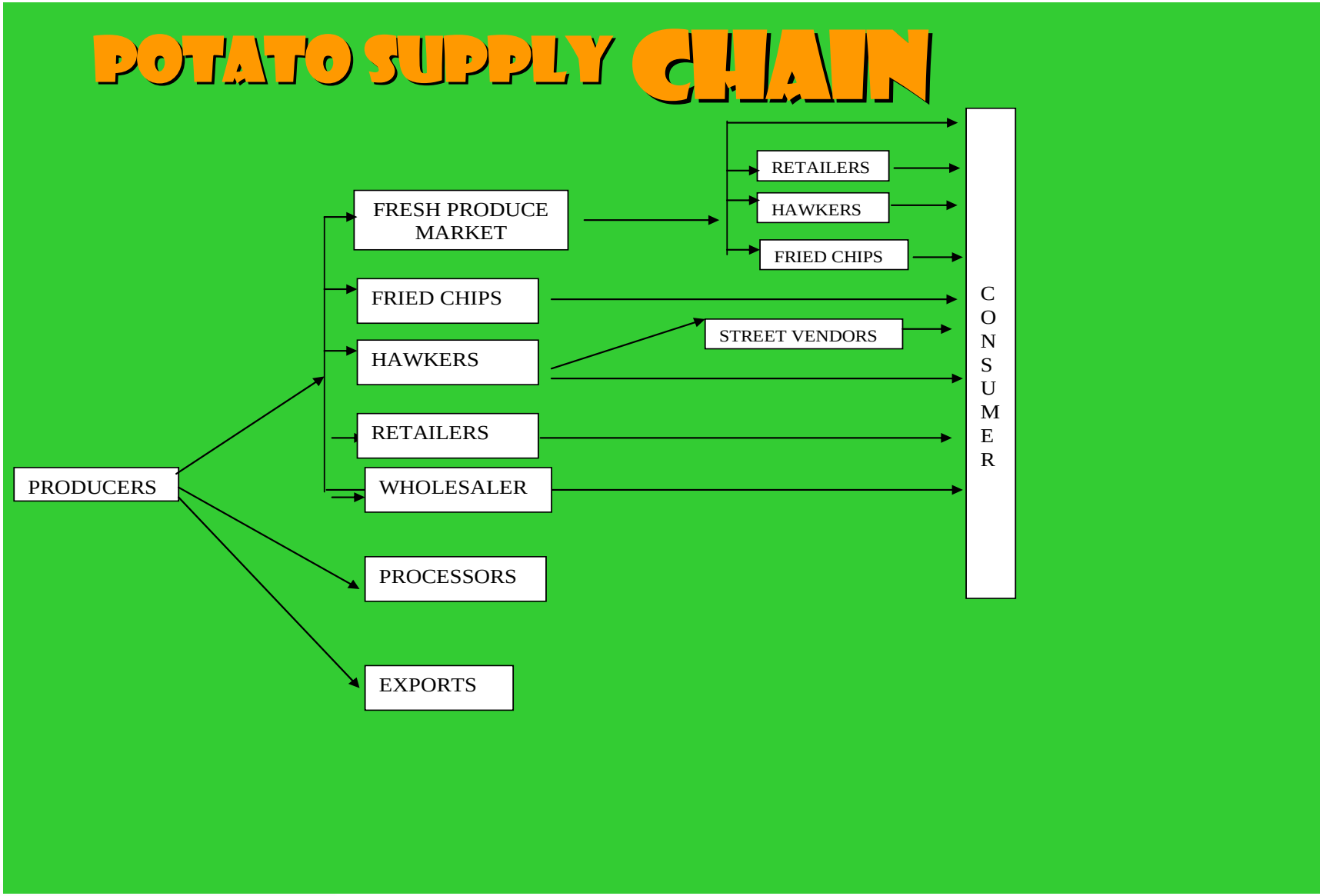
- Role players receive either their produce directly from the farmer, the FPM's or other personal suppliers.
- The fresh produce market can be seen as a reliable supplier of produce and information and price formation.
- Several role players do repackaging.
  - Include:
    Hawkers
    Exporters
    Retailers
    Wholeaslers
    Supermarkets
- Potatoes are exported to Botswana, Namibia, Mozambique, Zimbabwe, Lesotho, Swaziland, Ivory Coast, Ghana, Senegal, Mauritius and the DRC.
- A leading retailer/processor in the South African Quick Service Restaurant and Casual Dining services, Famous Brands Limited, which is responsible for 1502 franchised restaurant spread across its brand portfolio, is currently a monopolist in this trading environment.
- They comprise franchised restaurant which include Steers, Wimpy, Debonairs, FishAways, Whistle Stop, House of coffees, Brazilian Café, Baltimore and TruFruit.
- Market on Wheels, a private supplier to various restaurants and fast food diners in the Pretoria region deliver fresh produce to almost 120 restaurants.
- The Johannesburg, Pretoria and Durban FPM's are the property of the municipality in each of these cities.
- Cape Town Fresh produce market still remains the property of the municipality but, Altuis Investment Holdings bought the market from the municipality and privatized the fresh produce market. Altuis Investment Holdings possesses 74% of Cape Town market, the remaining 26% belongs to the agents, other producers on the market and BEE partners
- Most of the role players in the South Africa fresh produce supply chain operate on a daily basis from the FPMs of Johannesburg, Pretoria, Cape Town and Durban.
- However, many of the supermarkets eliminated the role that the fresh produce market play in the fresh chain.
- These supermarkets may from time to time buy produce from the fresh produce market if they are in short supply.
- The farmer is the main direct supplier to the supermarkets
- The market is concentrated with few big role players in the supply chain.
- These role players are all located at different stages of the supply chain making the flow of produce relatively complex. The dynamics within the supply chain causes the produce to follow various routes and key role players feature at the different stages.
- The supply chain for exporters is more difficult.
- Exporters do business beyond South Africa borders, legislation plays a major role and cause major problems in the exporter's business.
- Export permits are not difficult to obtain but inspections on the border may cause serious delays. Usually only a one day warning is given if borders will close due to sufficient supply in the exporting country.

Market Channels

- Channels is more complex than most will anticipate and some role players feature more prominently as expected.

1) Farmer – 1 – Local consumer
2) Farmer – 1 – Local retailer – 2 – Local consumer
3) Farmer – 1 – Local wholesaler – 2 – Local retailer – 3 – Local consumer
4) Farmer – 1 – Agents – 2 – Local wholesaler – 3 – Local trader
5) Farmer – 1 – Purchaser – 2 – Agent – 3 – Local wholesaler – 4 – Local trader
6) Farmer – 1 – Local processor – 2 – Local wholesaler – 3 – Local retailer – 4 – Local consumer
7) Farmer – 1 – Local processor – 2 – Local supermarket – 3 – Local consumer
8) Farmer – 1 – Local processor – 2 – Exporting company – 3 – Overseas trader
9) Farmer – 1 – Agents – 2 – Buyers for hawkers – 3 – Local consumer
10) Farmer – 1 – Buyer for hawkers – 2 – Hawkers – 3 – Local consumer


POTATO SUPPLY CHAIN
PRODUCERS
FRESH PRODUCE MARKET
FRIED CHIPS
HAWKERS
RETAILERS
WHOLESALER
PROCESSORS
EXPORTS
RETAILERS
HAWKERS
FRIED CHIPS
STREET VENDORS
CONSUMER

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Role Players

- Market masters
  - Could be referred as a referee on the fresh produce market.
  - Responsibility lies in the coordination and control of the different role players in the marketing channels.
  - Core responsibility lies in operating the market in a business environment & profitable.
  - Must ensure that a healthy relationship is maintained on the market between the different role players
  - That no fraud and dishonesty occurs.
  - Market masters also have to ensure the safety and guarantee of the product offered on the market. A company called APAC controls this issue for the Cape Town fresh produce market.
- Agents
  - Agents are the middle-link that connects farmers and wholesalers, and creates the outcome of spontaneous regulation and price formation in the fresh produce market.
  - The agents act as 'seller' on the fresh produce market where the produce of the farmer are offered on the market
- Supermarkets
  - The role of the supermarket is to ensure that the consumer is offered a good, healthy product at a reasonable price.
  - Supermarkets and vegetable stores like Fruit & Veg are role players in the fresh chain that add value to the potato by means of branding or repackaging
- Exporters
  - Is the link between a South African producer and an international consumer.

Market Actors

- The most important actors from a fresh marketing point can be identified as:
  - Supermarkets
  - Wholesalers
  - Retailers
  - Green grocers
  - Contract buyers
  - Hawkers
  - Exporter
  - Informal market
  - Restaurants and Fast Foods Restaurants
  - Hostels

Conduct

Variety Introduction and Grading

- With the continuous change in the market demand of potatoes, the various role players must ensure that all the different preferences of the consumer are satisfied.
- Farmers introduced the variety of BP1, Mondial, Van der Plank and Up-to-date potatoes which meet most of the consumer's preferences.
- The interviewees should ensure that specified standards regarding the quality, variety and grading of the products offered on the market are set.
- Grading is done by the producer according to the variety, form, specification and colour of the potato. It is important to note that certain markets, e.g. Durban, shows a strong preference towards the Up-to-date potato, since this is the preferred potato of the Indian population.
- Most of the buyers for hawkers prefers to buy Mondial (depending on cultural preference) and grade 1 large-medium potatoes.
- Repackaging is done by some of the buyer for hawkers in smaller preferable quantities. Consumers are however not informed about the various cultivars of potatoes used for different purposes of cooking, like the Rosa and Caren potato.
- Processors like Market on Wheels procure potatoes according to their client's requirements and deliver the potato either fresh or processed. A high perctentage of these potatoes are for chips purposes in the restaurant industry. Each of these restaurants has a preferable cultivar of potatoes, e.g. Steers prefer UTD, Van der Plank and BP1 potatoes

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Product quality and branding

- In order to satisfy the consumers demand for health care and security of the products quality, inspections are done on a continuous basis throughout the year.
- Some interviewees experience that inspection standard on the Fresh produce markets do not reach the touchstone and are not continuous.
- The fresh produce market experience problems during prolonged wet weather conditions as the quality of potatoes reiterated. Interviewees believe that repackaging of potatoes is done on the Fresh Produce market whenever the potato bags are damaged or spoiled. This repackaging involves the switching between the grades of the potatoes which influence the trustworthiness of the Fresh Produce market.
- Most role players on the market have a preference of potato origin. Most potato packages are branded which will generate the effect of brand loyalties.
- Supermarkets prefer a washed potato, with good packaging and at a good price.
- Supermarkets are also very sensitive towards consumer preference. Evergreens, located near the Tswane FPM, distinctly mentioned that farmers must start bar-coding their 10kg pockets.
- The colour of the packaging is very important. One colour that does not work on a bag is yellow.
- Pick ’n Pay and Freshmark both agreed that quality is important.
- Consumer behaviour does tend to vary from one region to another in term of
  - Preferred packaging and wire or stitch method used to close the bags.
  - The size of the potato
  - Packaging in the different sizes; 1kg, 2kg, 5kg, 7kg, 10kg;.
  - Grades
  - Consumers in different regions prefer different sizes and different grades of potatoes.
- The informal market prefers Mondial, BP1 and Up-to-date varieties.

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Primary Factors impacting the supply

- Weather conditions
  - Rainfall
  - Extreme temperatures
- Continuous supply on the market is available.
- Shortages only exist due to adverse weather conditions

Supply of potatoes in exporting business

- Some consumers may order potatoes from South Africa but legislation might prevent the produce from being delivered. This is one of the biggest problematic factors with exporting and can cause major losses. Due to an adequate supply in another country a South African exporter can be prohibited from selling his produce there.

FPM as a Safe house

- FPM acts as safe house for farmers, in which they can dump when their exist an over production and all other channels are burden with an over supply.

Technology used in potato marketing

- No specific new technology is in use
- Potatoes are not stored in cold rooms on the Fresh produce market as the shelve life time exceeds one to two weeks.
- Retailers however store potato products in cold rooms to increase the products shelve life.
- Interviewees only use forklifts where large quantities are bought on a daily basis.
- Packaging and repackaging is done on the farm by the producer or the different buyer for hawkers, hawkers, wholesalers and retailers on their premises.
- Some repacking also occurs when the potatoes trade at a high price – they repackage the potato into 1kg, 2kg or 5kg bags.
- Information systems that provide vital information regarding the price, quantities sold and demand on the market are available to all registered role players on the Fresh Produce market. The Market master must ensure that this data is updated on a daily basis.
- Markets on wheels ensure that they deliver in their client’s preferences by supplying the required cultivar and grade of potato.

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Transport

- The producer is responsible for delivery of his products to the FPM or distributor of choice on his own risk.
- All products been damaged or rotten are the accountability of the producer.
- Various retailers, wholesalers and supermarkets have transport contracts with their suppliers in which the supplier are responsible for the transportation of the goods.
- Market on wheels supplies the restaurants on a daily basis in delivering the required product with its own transportation.
- Buyer for hawkers distributes their products through various forms of transport. Some use their own transport (bakkie) others travel by taxi.
- Some exporters see efficiency of transport as a competitive advantage over their rivals. This advantage is however small and competition is fierce.

Shelf space

- The Fresh produce market accommodates the essential storage space required to trade.
- The market provides this trade facility with efficient storage space at a 6% tariff fee.
- Potatoes are packed on pallets, containing 110 packets per pallet, and thus reduce the amount of shelf space used.
- The fresh produce markets are however growing and market masters are forced to expand and develop the facilities of the different role players on the market.
- A few buyers for hawkers and hawkers complained about the availability of trading space in regions such as Pretoria station.
- The fresh produce markets in Johannesburg, Pretoria, Durban and Cape Town all provide facilities for buyers to rent a stand from which trading could proceed.
- These facilities are the property of the market, and are maintained with the rent income.
- Retailers, wholesalers and supermarkets only buy in quantities which they are able to accommodate.

Behaviour of interviewees on the market

- Most of the role players operate on a full time scale throughout the year.
- The fresh produce market operates throughout the year, offering the whole basket of fruits and vegetables.
- Full-time and part-time agents operates on the market
- The potato market is concentrated in terms of the number of players.
- Some interviewees were however of opinion that the FPMs are loosing market share due to the fact that a lot of potatoes are not moving through the market anymore.
- Direct contracting with role players such as Pick ‘n Pay, Woolworths and other distribution companies are to blame for this.
- Price formation of the FPMs is however still in place. By taking this very important function into consideration it is thus evident that FPMs still have power in the market.
- Role players, varying on average the smallest of an 8% market share to the leading with a 21% market share.
- Sales persons on the fresh produce market have a significant impact as they determine the power balance on the market.
- Potatoes consist of 20-35% of the total turnover of the agents.
- Potatoes however consist of 60-70% of the turnover for most of the buyer of hawkers.
- Retailers, wholesalers and supermarkets play an important role in the food service, manufacturing, repackaging and logistic division of the economy.

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Market fees and mark-up

- Potatoes of different cultivars have different purchasing prices due to:
  - the difference in the producing area,
  - the supply and stock levels, variety, quality and the preference of the consumer.
- The Fresh produce markets in Johannesburg, Pretoria, Cape Town and Durban supply potatoes in 10 kg , 7kg and 5 kg packets.
- The standards on market fees (excluding agent commissions) are fixed on 6% (this figure increases to 11-13% if agent commission fees are added).
- The standards on agent fees are fixed on 12.5%. This 12.5% consist of 5.5% commission for agents, 6% market fee, and 1% levy taken by PSA.
- The standard on buyer for hawker's mark-up varies from different regions on a scale from either a +R2 to +R5 per packet or R1/kg or a 15-20% mark-up. Mark-ups are between 6-9% for exporters, depending from one exporter to another. Price formation for the rest of the interviewees is done on a simple mark-up system where the company decides what percentage is added.
- Market on Wheels function on a "sliding scale" throughout the year in which the average sales to restaurants are calculated to determine the mark-up. In mid-year the mark-up are generally lower, due to the seasonal decline in sales in the restaurant and fast foods services. Role players withheld information with regards to the financial performance of the business.

Main cost item

- Most of the interviewees and Fresh Produce markets main cost items include salaries, waste removal, cleaning expenditures, maintenance, infrastructure and that account for 55% of their expenses. Operating cost such as fuel, forklifts, transport, electricity and generators account for the other 45% of the expenses.

- Some of the main costs items in an exporters' business are: Inspection-21^{c} per 10 kg pocket, import taxes-50% of total cost, harbour cost - R2,60 per 10kg and if transported by land 30^{c} per 10kg. No-specific training, knowledge or employment in potato offerings is required from most of the role players. Experience in the field of selecting the preferable varieties, at the right price and the correct quantity are the only knowledge required.

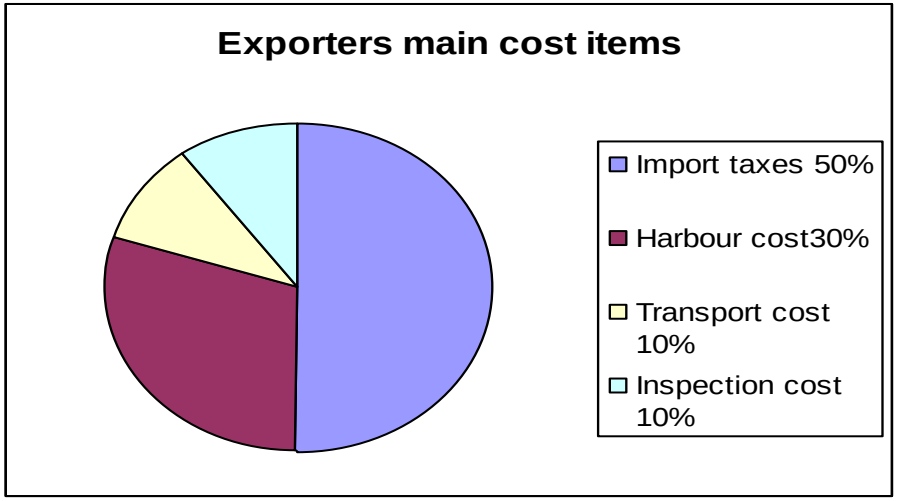

Figure : The main cost items in an exporter's business
Source: Information obtained from exporters interviewed, 2008

Competition

- Prices on the market are solely determined through supply and demand.
- Most of the role players involved compete on the availability, reputation and value-added service, quality of their product, food safety, location, logistics (inbound- and outbound logistics) and the price of potatoes.
- Retailers, wholesalers, supermarkets and other large role-players competitive advantages can be referred to their economies of scale, their size, the wide variety of products they offer, and their infrastructure.
- The major FPMs also compete amongst one another. Anti-competitive practices such as the marketing of class 1 potatoes at a higher price, if it is class 2 potatoes, exist among some role-players on the markets.

Potato Study | Competition

- Competitors on the FPM's include wholesalers such as Fruit & Veg, supermarkets such as Pick 'n Pay, Freshmark and other private fresh produce markets. Johannesburg FPM is the main competitor for the other smaller fresh produce markets as this market is labelled as the "price maker".
- FPM's are centralized, contain no middle man and are generally the cheapest to buy from.
- FPM's are sometimes falsely accused as a low quality distributor which supermarkets use to determine their price on a daily basis.
- Each of these FPMs have a competitive advantage above other participants in the market due to the strategic geographical location of each of these markets and generally with no other large markets in their respective regions. In Gauteng, the Johannesburg and Pretoria Fresh Produce markets compete with one another. If producers are not satisfied with the price they receive on the one market the producer will simply deliver his produce to another market. All of these markets handle large volumes of products allowing economies of scale.
- Market on Wheels competes with other major role players such as McCain, Golden Harvest and Fruitstop solely on the price and quality of their product.
- In the export market big role players such as Freshgold, Epping and RTMA compete with each other. These are some of the bigger exporters and several other smaller firms exist. Some of these smaller businesses only pose a threat to some of the bigger firms and cannot be seen as competition. This can mainly be attributed to economies of scale and simply the amount of produce one exporter can export.

Communication

- The interviewees communicate with other role players in the market by telephone, mobile telephone or via the internet on a regular basis. If the packaging or quality of a product is not up to standard, it is communicated to the producer. Information such as pricing, quality and promotional activities is communicated to the buyers and consumers.
- Information regarding the price on the market is exchanged on a daily basis to the role players. Otherwise, the buyer establishes the prices when buying on the market early in the morning. Prices on the market are however available to all role players. The interviewees all maintain a friendly, long-term professional business type relationship, enabling them to be branded as trustworthy and loyal.

Traceability

- Supermarkets, retailers, wholesalers and other buyers of fresh produce use the market as a price determinant for potatoes. These buyers have preferred suppliers of potatoes that comply to the set requirements and standards, and thus request that the product could be traced to its producer. These market participants ensure that their suppliers comply to ISO standards and comply with HACCP. Interviewees inform their suppliers if quality standards of their potato product are not met.
- The informal market however, shows little concern for the matter of traceability and no future problems concerning traceability of potatoes are predicted.
- These role-players fore see that continuous supply and availability of potatoes are been sustained in the market. Supermarkets, retailers, wholesalers and other buyers of fresh produce use the market as a price determinant for potatoes. These buyers have preferred suppliers of potatoes that comply to the set requirements and standards, and thus request that the product could be traced to its producer. These market participants ensure that their suppliers comply to ISO standards and comply with HACCP. Interviewees inform their suppliers if quality standards of their potato product are not met.
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Barriers

- Role players in the potato industry's function in the market are to ensure that a place is created in which the producer and the consumer interacts through a variety of role players, and creates the outcome of spontaneous regulation.
- There are only a few risks these interviewees are exposed to. These risks include quality inspections and rotten products, disloyalty and unfaithfulness, robbery and the problem to ensure on producer keeps delivering to him. Collusion among role players that create anti-competitive practices is problems market masters have to deal with on the Fresh produce markets. Capital investment and the availability of licences issued by the municipality is basically the only barrier to overcome when starting a fresh produce market.
- Barriers to overcome to entry the market include:
  - A developed infrastructure
  - Capital requirements and start-up-capital
  - Geographical positioning
  - A structured logistic system
  - Availability of transport
  - People skills, knowledge and experience of the market
  - Client base that is loyal (takes time to build)

Price formation

- The formation of the price is the outcome of a negotiation process. In the market, both parties form the base price in their minds. This base price is established through consulting and observing the dealt price of an earlier stage. The parties then negotiate. The buyer offers a price and both sides bargain with each other and try to reach some form of agreement that suits both parties. If both sides benefits from the negotiation a price is established. Thus the price on the market is solely determined through supply and demand of the product.
- Johannesburg Fresh produce market is the largest market in South Africa with a 35% market share. This market is a price determiner for many of the smaller markets.
- Famous Brands Limited negotiates the price on an annual meeting twice a year with their franchisees and their major suppliers.
- Other role-players negotiate the price on a weekly, monthly or semi-annual basis.
- Supermarkets have in the past made use of the various FPMs for price determination because of the fact that the price is determined by supply and demand.
- This function of the market is being used to a lesser extent by supermarkets and other role players that receive their produce directly from the farmer.
- Currently prices are agreed upon by the producer and the supermarket. This is however a very daunting task as producers aim to get the best price for his produce. Supermarkets made it clear that negotiations with their suppliers are very important to ensure the producer receives a good price and prevents him from taking his produce somewhere else.
- Some supermarkets are not in formal contracts but merely agreements with their producers making price determination extremely important.

Government intervention

- If necessarily the government have the power to carry out indirect intervention to the price on the basis of the economic law of the market. By-laws require that no trading outside the Fresh Produce market (within 150 km) is allowed, but double standards are set in the trading of the informal market outside the fresh produce markets. Buyers for hawkers currently trade outside the fresh produce market. The local municipalities of the different regions do provide some form of shelter, water and sanitary for the buyers for hawkers.
- Health inspectors, appointed by the government, ensure that the products sold on the market are suitable for human consumption. Further inspection by the SABS on the chemicals been used on the product, weight controls and the suitability for human consumption are done on a continuous basis.
- The National Credit Act has a significant impact on the potential to buy, as it restricts the capital expansion of many role players, like the FPM's ability to provide informal credit to their informal buyers.

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- The market seek to improve employment opportunities both within the agricultural sector and by default the fresh produce sub-sector for previously disadvantaged individuals who were excluded from the mainstream economy.
- Broad based black economic empowerment in the agricultural sector is anticipated to be based on the broad aims of the black economic empowerment framework which are to:
  - increase the number of black people that manage, own, and control enterprises and productive assets;
  - facilitate ownership and management of enterprises and productive assets by black communities, workers, cooperatives and other collective enterprises;
  - further human resource and skills development;
  - achieve equitable representation in all agricultural professions, occupational categories and levels in the workforce;
  - result in preferential procurement; and
  - Result in investment in black-owned enterprises.
- Many of the interviewees expressed concern that the small-scale producer will struggle to consistently produce potatoes of high quality since the farming barriers of entry are high and limited quality government support exist.
- The interviewees felt that government extension services do not have the capacity and expertise to advise farmers on crop disease and optimal farming practices.
- Exporters are further influenced by border tariffs and duties, standards, requirements of export permits and anti-dumping restrictions in other countries.
- The Botswana border, for instance, prohibit importing of certain fruits and vegetables to Botswana during certain periods of the year, especially when the Botswana farmers harvest the same crop.

Direct contracting

- Market masters in the fresh produce markets have formal contracts, as required by municipalities, with the role players trading on the market. This role players have to comply with this rules and regulations established by the market master. Most of the consumers on the fresh produce market pay cash for potatoes that have been bought from the preferred role player. The fresh produce markets do however provide informal credit to various role players like the buyers for hawkers.
- “Late sales” are not prohibited according to the law of the market but occurs on every fresh produce market. Permission from the producer is required and the producer must receive his money within five days from agreement.
- No agents in any of the fresh produce markets have any form of formal contract or agreement with potential buyers. Most of the consumers on the fresh produce market pay cash for potatoes been bought from the preferred agent.
- Some buyer of hawkers provide a kind of informal cash system to trustworthy buyers and hawkers in which these hawkers first sell their potato product in a different region and then pays the buyer for hawkers with this money. Direct contracting and grower agreements do feature in the supermarkets and retail business. Although some of the supermarkets and retailers are in formal contracts with producers, others are only in agreements with their suppliers. Famous Brands require direct contracts with their franchisee.
- Market on Wheels also closes contracts to deliver potatoes with restaurants and fast food diners

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Performance

- Market performance is a study that deals with the state of reality which is achieved by a given industry under a given market structure in the formation of price, output, cost, profit product quality and variety, etc.
- Figure 6 and 7 in the preceding section indicates the link between structure conduct and performance.
- These three elements are linked in the market and as mentioned market structure determines manufacturers conduct and manufacturers conduct determines market performance.
- All of the relevant factors that can be used to asses the market's performance are listed and explained in the section below.

Price fluctuations

- Potato prices are closely related with the planting season, marketing time and quantity supplied, as well as the seasonal law of price change.
- The marketing quantity in the mid-season tends to lower the price of potatoes, however farmers adjust their planting time in an attempt to avoid price decreases in the mid of the season.
- If the price of potatoes were to increase during a specific period, consumers tend to become more price sensitive. Consumers adjust their packaging to smaller preferential quantities of 7kg and 5kg potatoes and buy substitute products like sweet potato, maize meal, bread or cabbage. Customers however, do not necessarily switch to substitute products if prices tend to increase. Supermarkets, wholesalers and processors mentioned that in severe price increases, consumers may switch to substitute products.
- Fluctuating prices can heavily impact on any role-player. More so on exporters in the sense that it can either create an opportunity or can cause a loss.
- Consumers as mentioned are not that sensitive to price increases, but South African exporters must compete with other exporting countries in the Far East where potatoes are produced cheaper.
- Potatoes exported to Botswana are roughly R40 a bag more expensive than South Africa, due to transportation cost. If the South African price gets too expensive, the Botswana consumer would be reluctant to buy the expensive product and then switch to substitutes – making them in a sense more price sensitive.
- According to a few agents, an increase in the price of potatoes results in advantages of greater profits. For other role-players this may not be the case and may result in lower profits and the diminishing of profit margins. Famous Brands, are negatively affected by price volatility since the offer a fixed price at the beginning of each year.
- Some interviewees felt that Fruit and Veg plays games with consumers as they offer potatoes at a perceived lower price, but in smaller bags, and also at lower grades.

Market efficiency

- Market efficiency can be illustrated by means of a figure. Although the figure indicates a very complex process with various role players interacting at different levels, the market seems to be efficient in terms of business practices.
- All the role players have a distinct function in the market and are essential in ensuring efficiency. Some of these role players, although at the same stage in the supply chain, have different goals and strategic focus. Some supermarkets for instance ensure that promotional focus is put on potatoes whilst other let potatoes sell themselves.
- The market is very diverse in terms of role players' focus on business and especially potatoes

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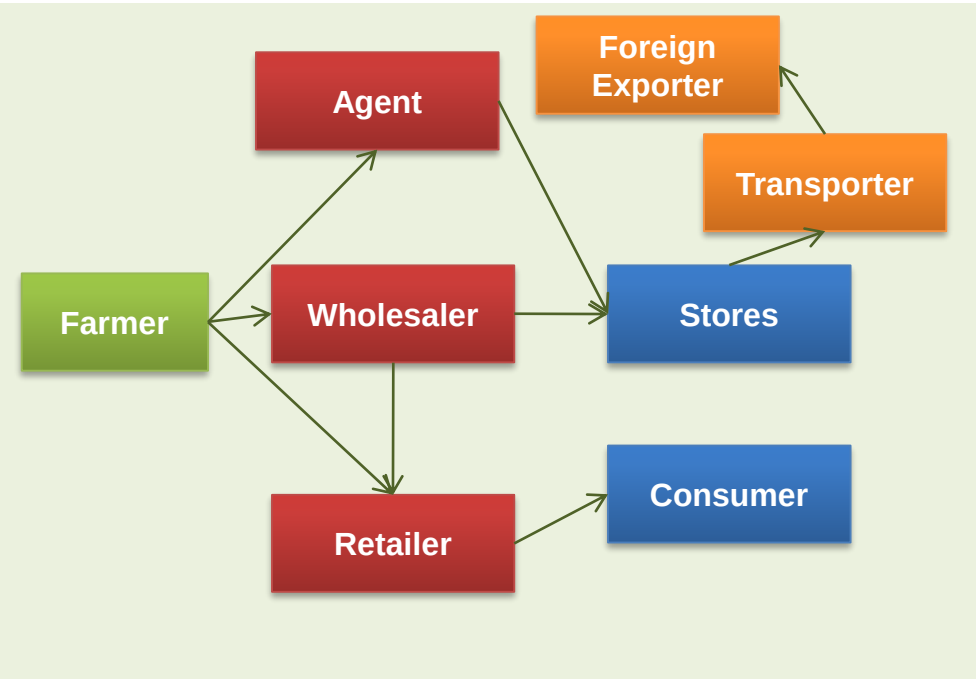

Figure : Market efficiency with certain role players
Source: Personal information obtained, 2008

Market effectiveness

Geographical:

- Producers are able to deliver to all role-players due to their distribution throughout the country.
- Potatoes are easily obtainable by the various role players.
- All of the different varieties are bought to satisfy all the consumers' needs.
- Specific varieties of potatoes were mentioned as different consumers in different areas prefer different varieties.
- This is dependent on what the consumer intends to use the potato for.
- Restaurants also have a preference for certain cultivars depended on what the end product is going to be.
- Logistics play a very important role in the potato industry as many role players are dependent on deliveries. For a supermarket such as Evergreens that are located near the Tshwane FPM, transport is not a problem. For other role players logistics must be done efficiently to ensure profits.
- All of the exporting is done by land and sea. Sea freight exporting is mainly to Angola and form a big part of the exporter's business.

Consumer's evaluation:

- Consumers require a quality product with a long shelf life.
- The FPM have good geographical position, being near rail stations or high ways and close to some of the consumers, this may not ensure a product of high quality.
- Quality is everything to the buyer and at the end of the day a good product received from the farmer will ensure buyer satisfaction.
- Retailers are capable of satisfying the consumers demand in the quality, quantity, packaging and variety of potatoes.
- Consumers however, have become more eager to consume washed potatoes in preference of the non-cleaned potato.
- Famous Brands Limited and Market on Wheels supplies the franchises with the various demands of potato product required.
- Retailers commit employees to high standards of integrity, behaviour and ethics.
- Market masters in the fresh produce markets of Johannesburg, Pretoria, Cape Town and Durban all ensure the consumers demand in the quantity and variety of potatoes are satisfied by the different traders supplying their offerings on the market.
- The fresh produce market in Pretoria and Johannesburg established a Housewife's market from which smaller quantities of products could be consumed according to preference.

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Information service:

- Supermarkets and wholesalers communicate with suppliers and consumers to ensure important information is given to them on a regular basis.
- Market on Wheels ensures good customer relationships through unremitting support to their restaurants, providing restaurants with advise on cultivars, prices and preparation practises. Restaurants are contact on a regular basis to ensure the quality of the product offered fulfil in their requirements.
- Agents and market masters collect and publicise data concerning the price of potatoes on a daily basis. This data is available to any person on query.

Trade negotiations:

- Market masters ensure that business on the market, and by agents, is done by cash as required by law, and no contract or credit negotiations are established with any buyer.
- This form of business is also followed buy buyers for hawkers.

Financial performance and growth

Supermarkets

- Some of the role players in the potato chain withheld some information with regards to the financial performance of the business for confidential reasons.
- A supermarket's investment ranged from R10 million to the larger supermarkets that invested R500 million. This R500 million is not on potatoes alone but their total fruit and vegetable offering. On average the ROA was 10%.
- The most prominent factors that impacted on the business' ROA are competition and the perishable nature of the product.
- All of the supermarkets wanted to expand their business by means of new stores and higher volumes.

Wholesalers

- Wholesalers reported a positive return on their investment.
- The most prominent factors that impacted on the businesses' ROA are profit margins and high costs in the business.

Exporters

- Exporters indicates that it was difficult to calculate their investment in their business.
- The biggest investment, apart from their transport, is intellectual property.
- An average growth of 15 % was mentioned by the exporters.
- Focus on expansion is towards the Far East & to "take back Mauritius".

Processors

- Processors' return on investment (RoA) varied between 10 and 15% but withheld the size of their investment.
- The number of labourers employed at the different processors varied from 170 – 380 and the employment of labourers increases as production increases.

Agents

- Agents were not capable of estimating the value of their current investment
- An average of 50% return on capital (RoA) is estimated for most agent companies.
- This RoA is driven and influenced to a great degree by the sales staff of the company who are responsible for maintaining client relations and achieving the profits.

Retailers

- Retailers, as with agents, were not capable of estimating the value of their current investment.
- Famous Brands Limited was able to provide valuable information regarding their financial performance:
- Gross revenue grew with 27% since 2006, R514.1 million, Operating profits up with 56% since 2006, R109.4 million, Operating margin up with 23% since 2006, 21.3%, Return on assets, 20.5%, Debt: Equity ratio, 31.4%

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Market Masters

- Market Masters could not estimate the exact value of their current investment in their business due to the difficulty of attaching the value of capital assets, replacement value and client services that the market has gained over recent years.
- For the Johannesburg Fresh produce market, current investment are estimated at R600 million. Complains regarding depreciation, maintenance, capital replacement programs, logistics and safety standards influence the estimated RoA of the markets.
- The same can be said for buyers for hawkers who could not give an indication of the value of current investment in the business.

Informal Markets

- All of the interviewees identified that the informal market continues to play a major part in the potato industry and will continue to grow in future.
- Some stated that informal buyers account for almost 50% or more of all potatoes bought on the market.
- Agents argue that the informal market account for 50-60% of their total sales each day and are growing over 15% per year. However, agents believe the informal market can be seen as a threat to the fresh produce market since this market are not complying with the rules and regulations set by the government concerning tax payment and sustainability. The playing field between the formal and informal market are unequal The informal market however, provides entrepreneurship opportunities to a great deal of unemployed people.
- Retailers and Market Masters had the same views as expressed above. There are however various solutions that are being explored. The Pretoria Fresh Produce market together with Metro police have established a “hawkers club” in which they substitute information regarding customer care, equal trading places and financial-, and credit management to the hawkers selling on the informal market. The CIT (City improvement district) provides facilities on the market premises in which hawkers can safely secure their product offerings at a minimum tariff of R50.00 per month. This allows hawkers to consume in large quantities, which includes discount advantages to them.
- Some role players that were interviewed identified a very important issue regarding producers. These interviewees were of opinion that sales directly from the farmer to informal traders are very common. As they stated it, farmers sell “bakkie loads” of potatoes to informal buyers. These potatoes are usually of inferior quality and the farmer does not want to market this produce on the market. Some of these “bakkie loads” are then exported to Mozambique or other neighbouring countries. Some role players that expressed their views on the reason for this type of business said that it was easy cash for the farmer and by selling potatoes in this manner, costs like transport, marketing etc. are saved. This was definitely a key issue that was identified by various interviewees.

Future of the potato industry

- All of the role-players that were interviewed agreed that potatoes are a profitable part of their business. Some however were of the opinion that this is dependant on the size of the operation and that economies of scale are very important. In some instances supermarkets mentioned that potatoes contributed 20% of their 80% fresh fruit and vegetable offering. These and other supermarkets had a positive outlook on the potato industry and acknowledged the potential for growth.
- Retailers noticed that consumer demand decreased due to food price inflation. Retailers supplying to the fast food services noticed that price increases lowered the percentage of people capable of buying food in this sector. Consumers rather prepare their own food. These are all factors that can influence the future of the potato industry and can be seen as concerning factors.
- Market masters argued that PSA should restructure themselves not just to be a producer organization but also a consumer organization. PSA could also participate in motivating the producer to deliver his produce to the fresh market. PSA should also provide a helping hand to young developing farmers as they are the future of this country.
- As food prices and inflation increases consumers tend to cut on their consumption of fresh produce products. Buyer for hawkers buys less on a daily basis due to a lowering in the demand of potatoes. Buyer for hawkers still has a positive outlook on the potato industry and foreseen economic growth. Buyer for hawkers requested that PSA should participate in advertising and promotional campaigns regarding potatoes on a more frequent basis.

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Future investment

- Agents and Market Masters expect a 10% annual growth on the market each year thus enabling them to secure their future existence. Future investment fields focusing on expanding the export market and promoting organic products on the fresh produce market are targets most agents would like to achieve in the near future. Cape Town market (Altuis Investment Holdings) plans to invest R250 million on infrastructures and development.
- Retailers' initial short term period plan acquires earnings enhancement. Retailers' investment will be aimed at reinvesting in their brand and exploiting and optimizing their potential and existing market. Retailers will be aggressively focusing on the organic market and improving demographic representation across their network. Retailers foresee substantial growth in their sector and they will ensure optimally positioning to capitalize on these opportunities. Supermarkets, wholesalers, exporters and processors would like to expand their operations with regard to potatoes. Only one wholesaler mentioned that he did not want to expand because of the fact that his operations are large enough.
- Buyers for hawkers would like to expect a 10% growth annually in their market share each year and thus enabling them to secure their future existence. A few buyers for hawkers preferred not to expand their business in the future, which could be referred to as tax preferences, that enables them to be classified under the tax payable line.

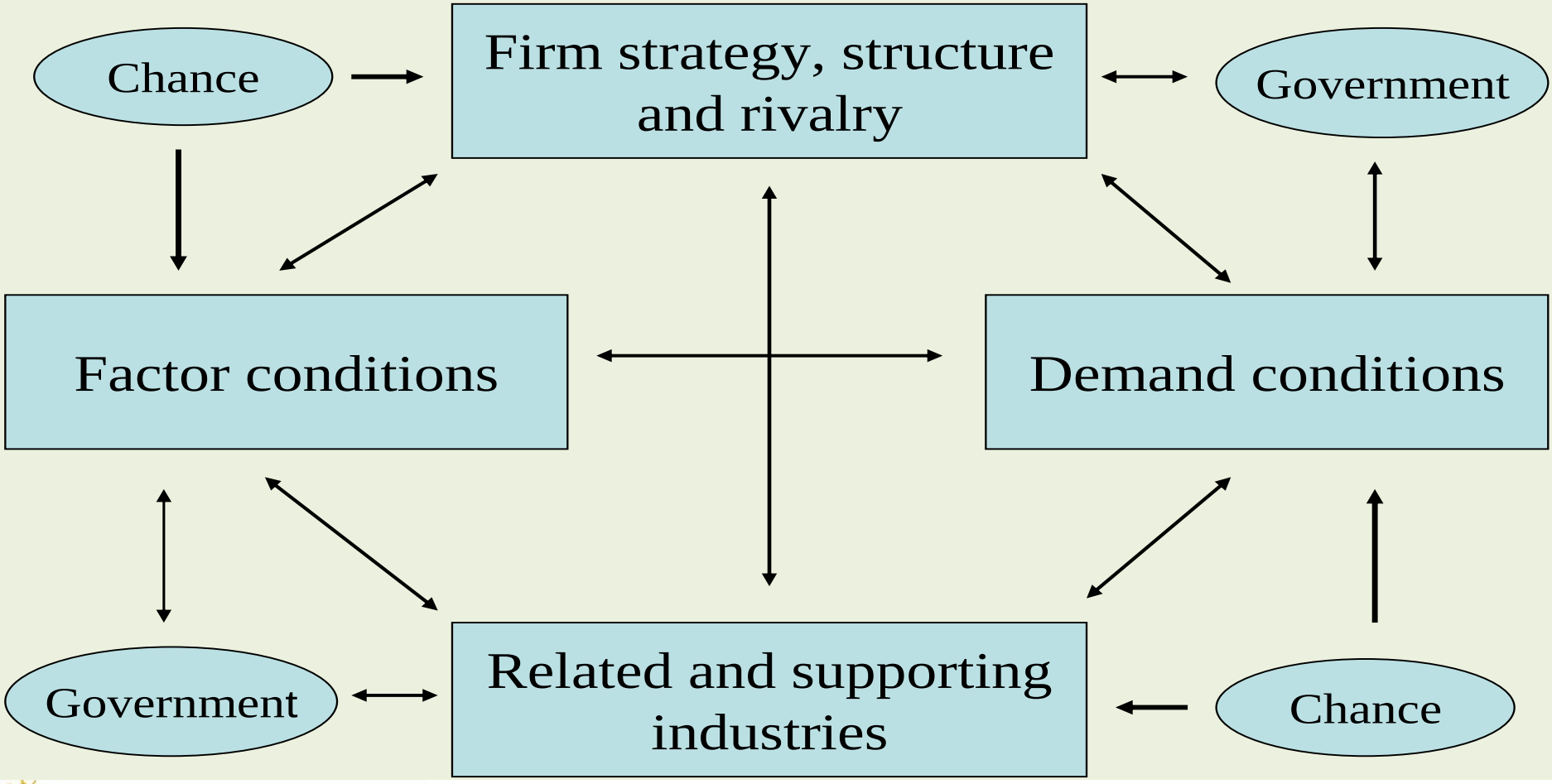
Risk factors

- Informal credit provided to the 'buyers for hawkers' and other consumers from the agents are the highest risk agents have to deal with, since they have to account for the risk of the producer and confirm product payment guarantees.
- Other risk involving theft and business risks like "load shedding" influence the agents to a great degree. Loyalty, honesty and trustworthiness of producers and consumers manipulate the way agents and other role-players are operating their companies. These factors are influencing all role-players that were interviewed, especially supermarkets and wholesalers who depend on a reliable source of produce.
- Market masters too have risks that influence them on a daily basis. These include theft and climate change.
- Furthermore, the problem of seasonal "come-backs" is a risk Market masters have to deal with. Financial risks are a major factor Market master must keep track with.
- The informal markets, satellite markets and markets developing like Nasrec hamper growth in the major markets.
- Informal credit to the buyers and other consumers are the highest risk the buyer for hawkers has to deal with, since they have to account for the risk.
- Other risk involving theft, crime and business risks like "load shedding" influence the buyer for hawkers to a great extent.
- Loyalty, honesty and trustworthiness of their suppliers also have a great influence. Buyers for hawkers have to deliver guarantees for the quality of their products to their buyers, and rotten and poor quality products can ruin their reputation.

Porter Model

- Due to the fact that Porter's model forms a big part of this study, it was necessary to review literature where Porter featured.
- Porter in Abdalla 2005 suggested that the management of linkages in the value chain can cause competitive advantages to arise by cost reduction and the enhancement of differentiation. These management tasks can only be done through correct cost information and effective and efficient management of value chains.
- Porter further mentioned the importance of viewing firm competitiveness as an element of an integral system of value added production.
- It is proposed that Porter's approach to the value chain should be followed to evaluate the industry, key drivers, etc. An example of the Porter framework is depicted on the next page.

THE PORTER FRAMEWORK



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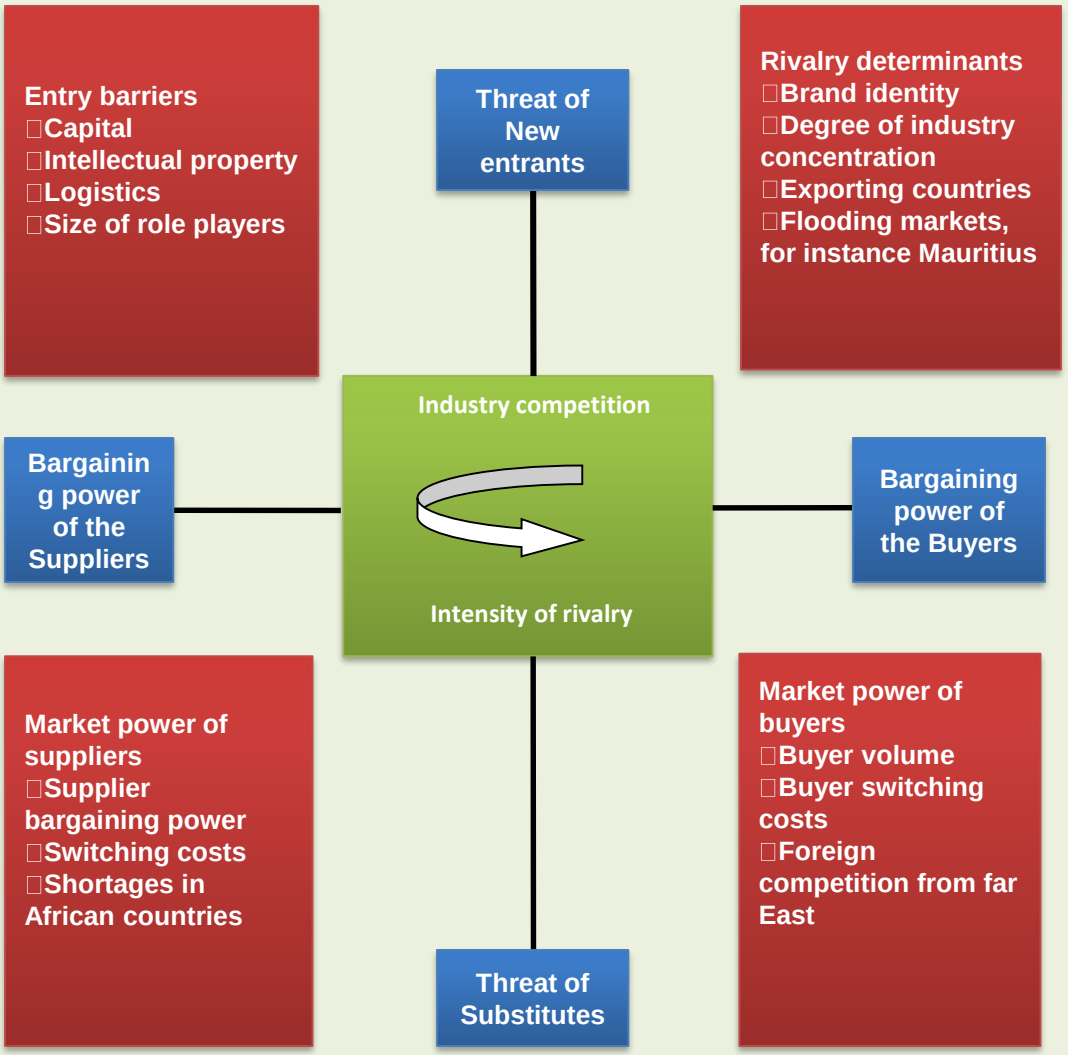
- Porter's 'five forces' model was used to determine the attractiveness of the potato industry in terms of its competitive environment in South Africa.
- This method allows to identify and analyze the structure of a sector and to point out the strengths and weaknesses.
- This can be done by indicating what changes have occurred in each of the five components that make up the competitive environment in which the potato industry operates.
- Government plays a vital role.
- Government can influence each of the above determinants either positively or negatively.
- That is why government as a determinant of competitiveness must be viewed apart from the four determinants.
- Chance as another factor, are events that occur that have little to do with circumstances in a nation and are often largely outside the power of firms (and often the national government) to influence.
- Events such as wars, political decisions by foreign governments, large increases in demand, shifts in world financial markets and exchange rates, discontinuity of technology and input demand can be described as chance events.

Porter's framework for exporters



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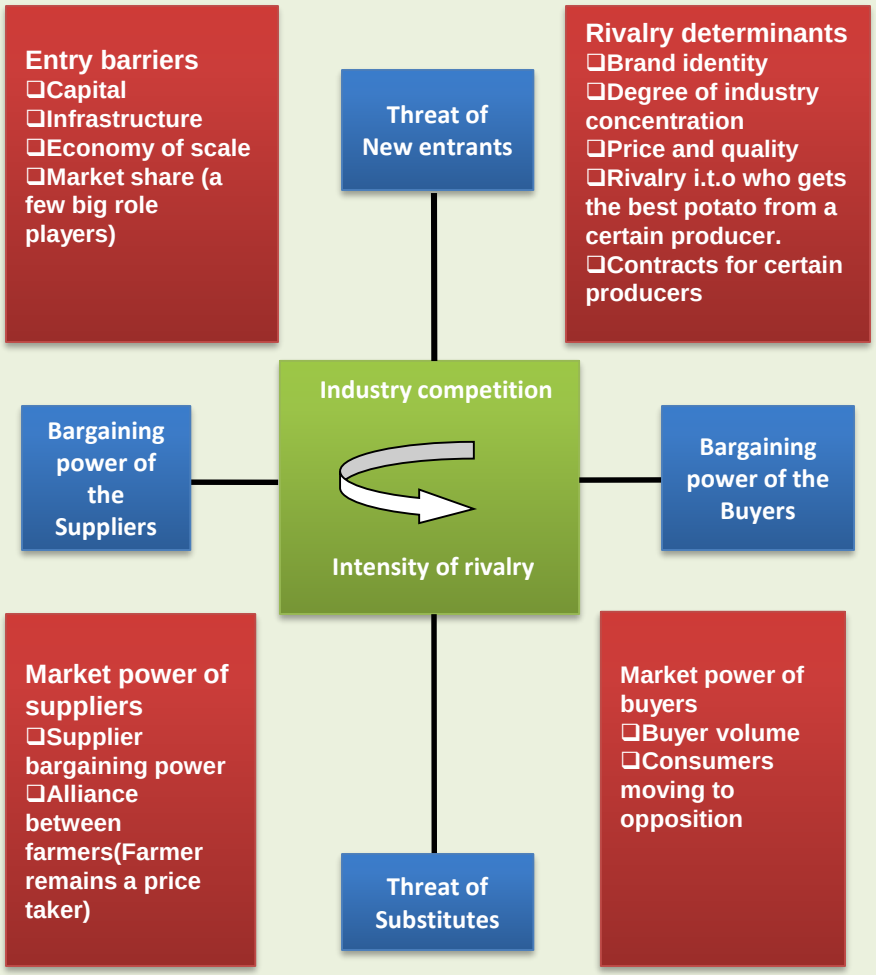
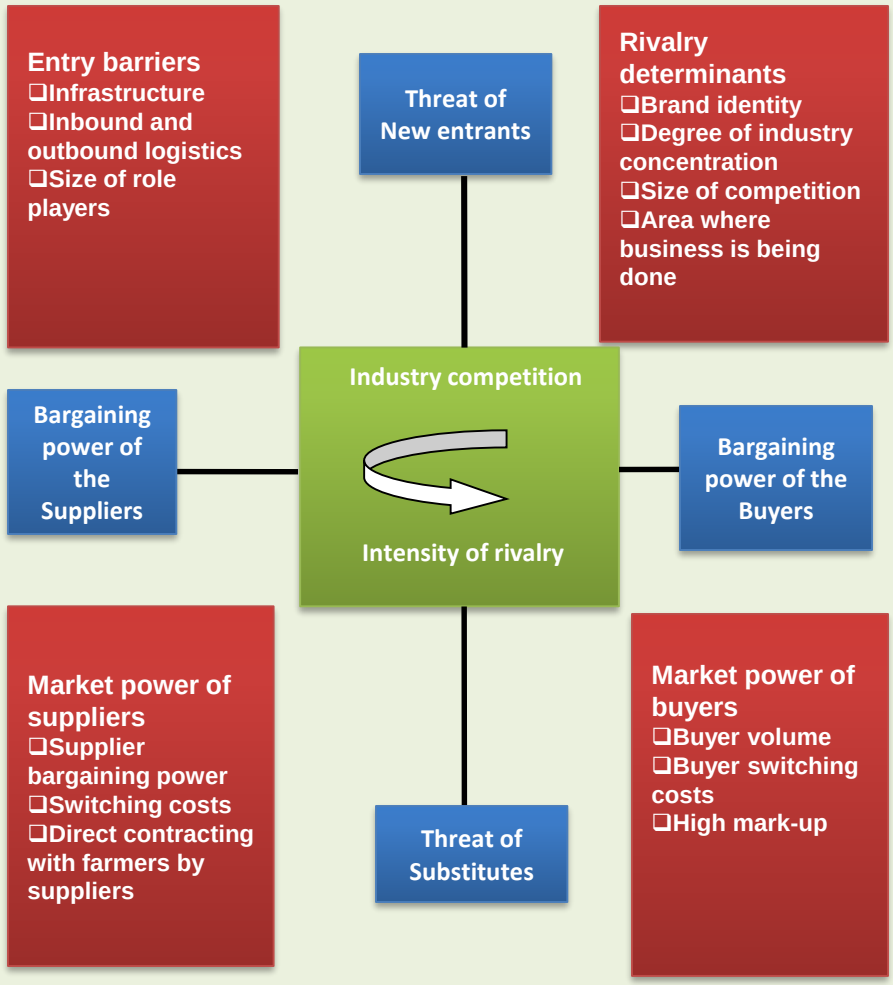
Porter's framework for supermarkets



Porter's framework for wholesalers



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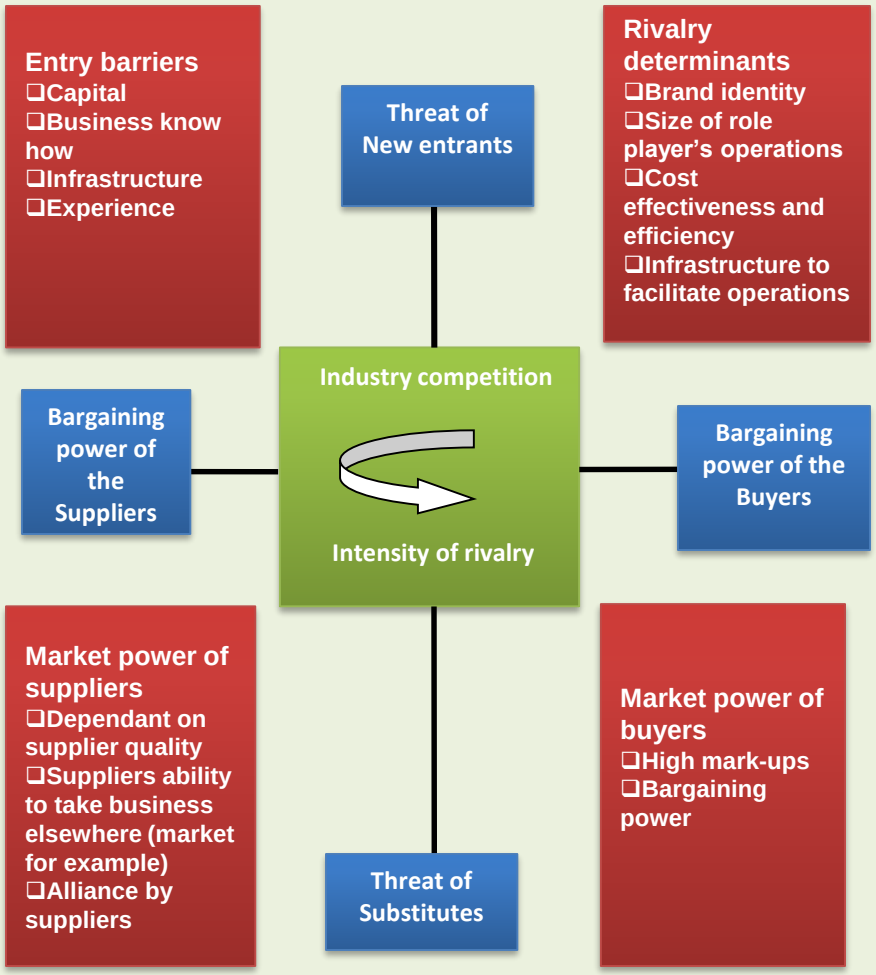
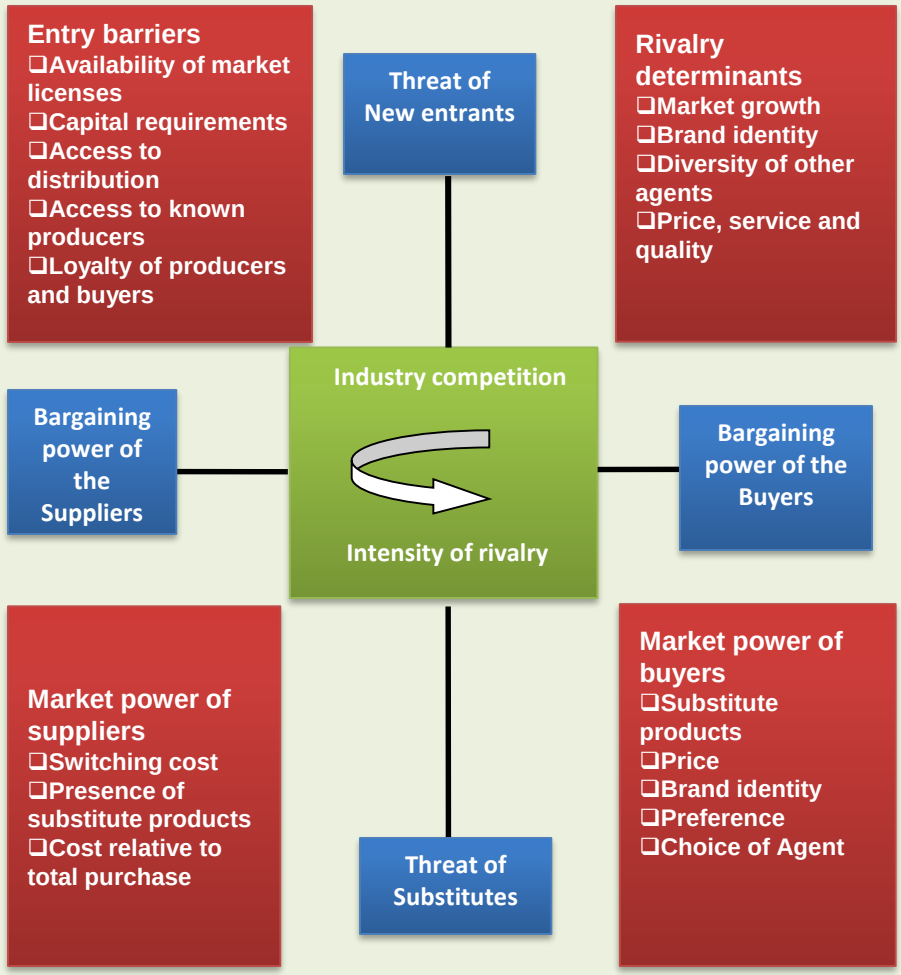
Porter's framework for processors



Porter's framework for agents



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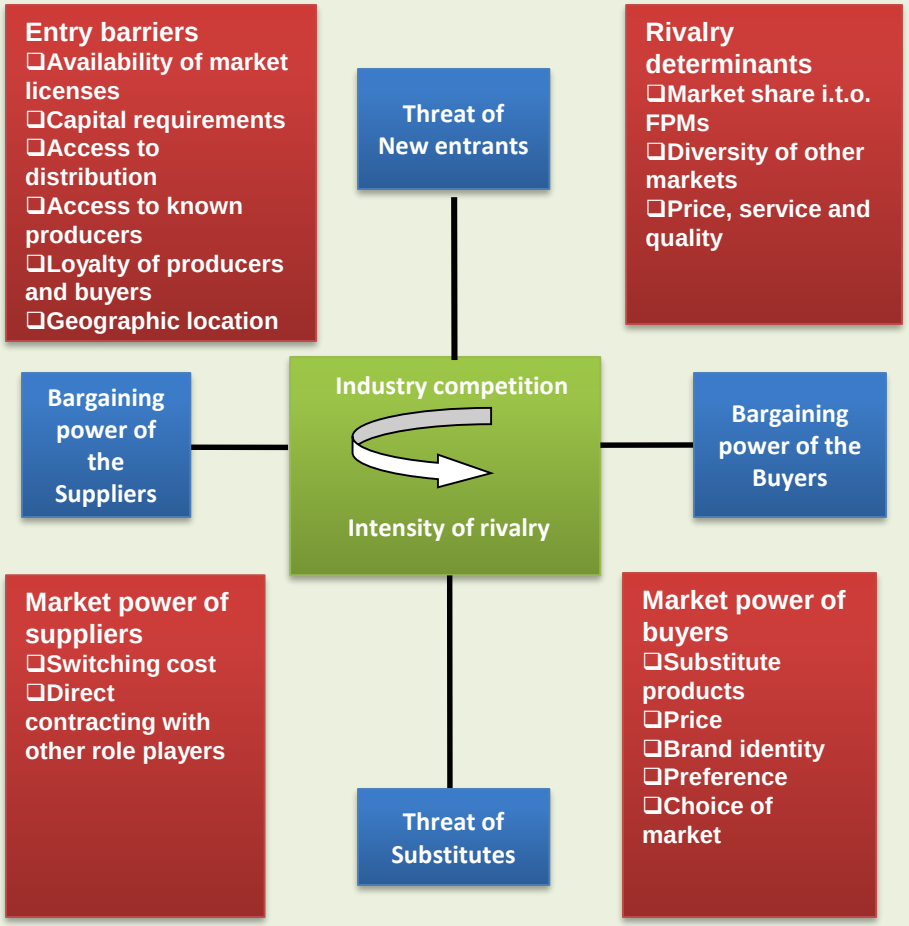
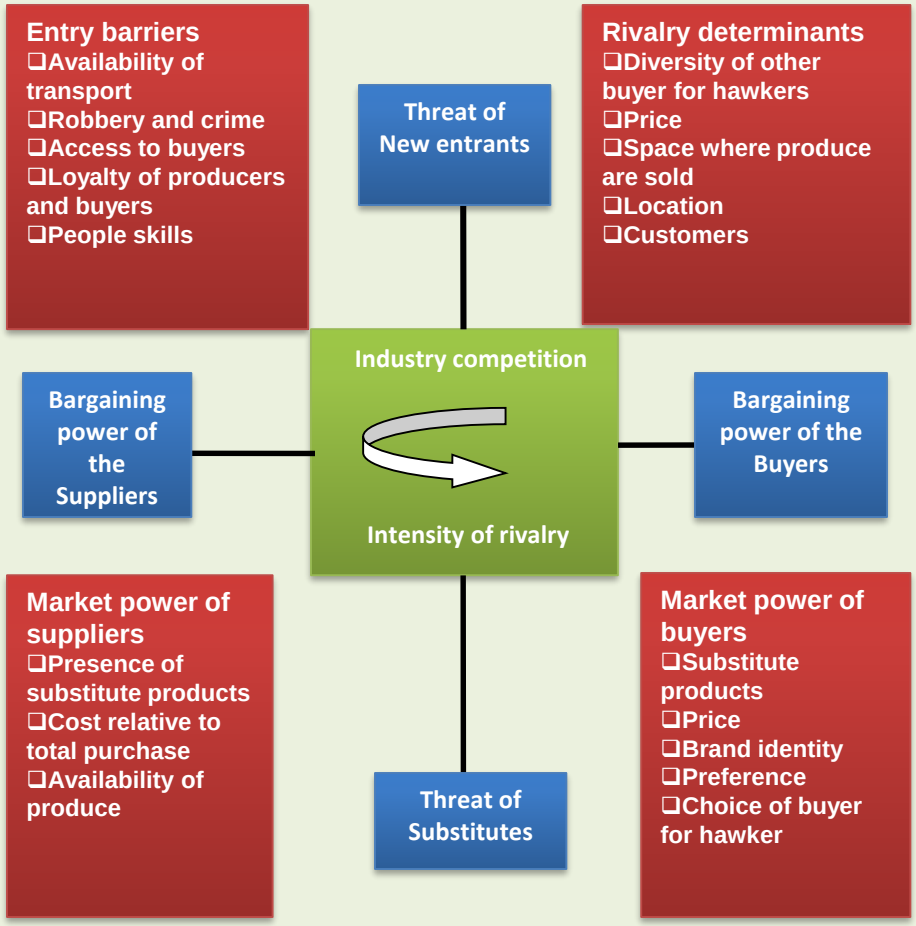
Porter's framework for market masters



Porter's framework for buyers for hawkers



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Feedback on interview and conclusion

Market masters

- The major FPM are situated in Johannesburg, Pta, Cape Town and Durban.
- They play a significant role in the distribution of fresh produce between the farmer and the consumer.
- Johannesburg labelled as the price determiner of products is the largest fresh produce market with an estimated 35% market share, followed by Pretoria with a 25% market share.
- A great challenge for Market masters is to ensure that their fresh produce markets don't stagnate.
- Market masters ensure this problem don't occur through continuous development and growth. In order to create an efficient and continuous supply chain in the potato industry, coordination between the different parties is essential.

Exporters

- All of the exporters agreed that potatoes are a profitable part of their business.
- They however felt that in order for the potato industry to be improved upon, role players must pro actively work together with PSA to promote a better industry.
- Focus must be put on the producer as well as other role players.

Processors

- All of the processors saw the potato industry as a profitable part of their business.
- Processors had a positive outlook on the potato industry and acknowledged the potential for growth. In order to do so, better human relations between role players in the industry are needed.

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Supermarkets

- Supermarkets are of opinion that role players must move closer together.
- All role players must work together with PSA and improve relationships with producers.
- Supermarkets had a positive outlook on the potato industry and mentioned that there is room for growth in the potato industry.

Wholesalers

- Direct contracting of farmers with retailers was identified as a worrying factor for some of the wholesalers.
- Due to direct contracting with retailers, wholesalers loose their function in the market and thus their share of the profit.
- Although these problematic factors worry wholesalers, all were positive with regards to the potato industry and saw huge potential for growth.

Agents

- Agents are the middle-link that connects farmers and wholesalers, and creates the outcome of spontaneous regulation in the fresh produce market.
- The agents act as seller' on the fresh produce market where the produce of the farmer are offered on the market. In order to create an efficient supply chain in the potato industry, coordination between the different parties is essential.
- Marketing support from the role players, like PSA, is of vital importance to the producer in order to maintain continuous supply.
- Producers need to stay loyal towards their participants and thus a great deal of motivation is required.

Retailers

- Retailers do their business with various role players in the potato industry. Many receive either their produce directly from the fresh produce markets or from the farmer. This is dependent on whether the retailer is in a contractual agreement with a farmer or not.
- The retailers' primary function is to act as a "middleman" between different role players in the fresh potato chain. They are the link between the farmer or the market and the consumer. They ease the job of obtaining produce for smaller role players but do this at a cost. This is just one of the many costs added to the farmers' product before it reaches the final consumer

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Buyers for hawkers

- In the trading business, there are various suppliers to the buyers for hawkers.
- Many receive either their produce directly from the fresh produce market or from the farmer.
- Buyers for hawkers buy their produce on the fresh produce market from a preferred agent with the best price, process or repackage it and distribute it from there.
- From a buyer for hawker's perspective, the fresh produce market can be seen as a reliable supplier of produce because of the fact that a steady supply of potatoes is available on a continuous basis.

Supermarkets

- Supermarkets are of opinion that role players must move closer together.
- All role players must work together with PSA and improve relationships with producers.
- Supermarkets had a positive outlook on the potato industry and mentioned that there is room for growth in the potato industry.

Hawkers

- Various hawkers were interviewed playing a cardinal role in the informal market. Weather seemed to be the biggest factor impacting on the hawker's business.
- Due to adverse weather conditions fewer consumers buy at their stalls decreasing their sales severely.

General Conclusion

- Every consumer will face the issue of food quality: how to choose the right product, considering the variety of characteristics? This choice can be done through the price, the origin, the brand name etc. The consumers are rational, they will choose the products considering their:
- Time and budget constraints
- The characteristics of the products
- Some specificities of agrifood sectors and markets
  -The interdependencies in agrifood chains
  -The product: perishable, fragile characteristics…
  -The institutional environment and legal constraints
- All actors in the agrifood chains try to differentiate their products (or services), source of market power. A successful differentiation strategy will create value for customer and/or consumer; it will maintain this value and transform this value in economic rents

Potato Study | Appendix

Appendix A: Input costs: Definitions of different price indices

- FRPI - Total includes price indices for machinery and implements, materials for fixed improvements and intermediate goods. The latter includes fertiliser, fuel, farm feed, animal health and crop protection, packing material, and maintenance and repairs
- PPI - Total includes indices of producer prices of field crops, horticulture and animal production.
- PPI - Vegetables include indices of producer prices for potatoes, onions, sweet potatoes, tomatoes, green beans, carrots, gem squashes, cabbage, lettuce pumpkins and green mealies.
- PPI - Potatoes is the price index for producer prices for potatoes.

Appendix B: Input Costs: Composition typical of production costs

- Table B.1 shows the different input cost components included in a typical input cost budget.
- Table B.1: Input cost components.
  Seed
  Seed production: registration & lab
  Fertilisation
  Packaging material
  Foliar feed
  Transport to market
  Herbicides
  Market commission
  Insecticides, fungicides and seed treatment
  Mechanisation (implements, vehicles & pack shed)
  Crop insurance
  Irrigation (electricity, water and repair)
  Seed transport and storage
  Regular labour and hired management
  Casual labour
  Admin and other overheads
  Consultants
  Interest paid (production credit)

Appendix C: "All other" cost items

- The "All other" cost category includes:
  Foliar feed
  Herbicides
  Crop insurance
  Seed transport and storage
  Casual labour
  Consultants
  Seed production: registration and lab fees
  Mechanisation (implements, vehicles and pack shed)
  Irrigation (electricity, water and repair)
  Regular labour and hired management
  Admin and other overheads
  Interest paid (production credit)

Appendix D: