



REASONS FOR DECLINING MAIZE CONSUMPTION IN GAUTENG

BY

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DECLARATION

This research has not been previously accepted for any degree and is not being currently submitted in candidature for any degree.

Signed:



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ABSTRACT

The effects of urbanisation on maize consumption are considered in the context of Gauteng as it is almost completely urbanized (96%) and would have data that would be more readily available and up to date.

Anecdotal evidence of a per capita decline in maize consumption is based on an expected greater degree of employment of the population. A greater proportion of women in the workforce is also expected placing time constraints on households. The resulting expected increase of disposable income combined with time constraints would cause higher consumption rates of convenience foods.

The envisaged declining trend of per capita maize consumption necessitated a need to discuss Engel's Law which states with rising incomes, the proportional share of expenditure on food declines (Engel, 1877). Bennett's Law is also discussed which is an empirical generalization of an inverse relationship between the percentage of total calories derived from cereals and other staple foods and per capita income (Bennett, 1954).

The population demographics of Gauteng are analysed, the main reference being a detailed comparison between the 1996 and 2001 censuses. Where data is available trends are extrapolated using South African Statistical Services' mid-year population estimates for 2004 (STATS SA, 2004). The demographics of the black African population, as the dominant consumers of maize meal, are paid particular attention.

It was revealed that unemployment and poverty rates are increasing placing considerable pressure on, in particular, black African households. It was also found that black African income levels had not increased to the degree of other population groups.

The HIV/AIDS pandemic, affecting mainly the black African population and mostly of an employable age, is considered. Mortality rates attributed to AIDS are controversial but an irrefutable dramatic declining life expectancy of the national population was found placing additional strain on household budgets.

Also considered are eating habits by population group and by region made available by the Bureau of Market Research.

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ACRONYM'S

ASSA	Actuarial Society of South Africa
BER	Bureau of Economic Research
BMR	Bureau of Market Research
CEC	Crop Estimation Committee
FAO	Food and Agriculture Organisation of the United Nations
HSRC	Human Sciences Research Council
NCM	National Chamber of Milling
NDA	National Department of Agriculture
NGO	Non-Governmental Organisations
SAFEX	South African Futures Exchange
SAGIS	South African Grain Information Services
STATS SA	Statistical Services of South Africa
WHO	World Health Organisation of the United Nations

CHAPTER 1: – INTRODUCTION

1.1 Introduction

The maize industry produces the staple food and is the primary source of nutrition and sustenance for the country's population.

This study differentiates between maize production, which is the agricultural sector of the maize value chain, and maize milling which is a more representative barometer of consumer demand and consumption.

The milling industry has experienced a decline in consumer demand over a number of years. Substantial effort has been spent in understanding the problem and has encountered anecdotal evidence of many reasons for the decline; from AIDS to lottery and cell phone expenditure, but has found very little focused research on the direct influence of urbanisation on maize consumption in Gauteng.

Internationally the phenomenon of urbanisation and its consequences has been cited as the culprit for communities and populations abandoning traditional staple foods and adopting a more western, convenient diet.

1.2 Motivation of the study

In the face of static or declining total consumption, maize millers are being forced into investing in newer technologies to increase yields. This would have the affect of providing a greater proportion of salable

product out of the same volume of raw material purchased. This is essential and unavoidable when the declining price trend of maize meal depicted in Figure 2.12 is considered.

The milling industry thus finds itself in a cycle of declining demand leading to declining prices which means declining margins which forces newer technology to increase yields to preserve margins which increases capacity in an environment of declining demand.

An additional feature of the new technology is improved quality of the milled meal. This is being driven by consumer demand, which, in the face of decreasing prices is able to afford better quality. It is revealed that whilst total demand is static, and per capita demand is declining, the demand which remains is being converted to a higher quality meal.

Maize is not a versatile product that lends itself to a variety of uses as wheat does. Attempts by the industry to find alternative uses for maize to utilize the available capacity have met with very limited success.

The industry has thus far reacted to anecdotal evidence of a number of reasons for declining volumes, but as yet very little substantive and objective research has been conducted into the phenomenon in an attempt to better understand it and to strategize accordingly.

1.3 Objectives of the study

This study attempts to understand urbanisation and its consequences on eating habits of an urban population and will postulate whether the impact in Gauteng is similar to rapidly urbanizing communities internationally.

The study would not be complete without a consideration of what alternatives are available to the milling industry to reverse the effects of declining volumes in a marginal industry.

1.4 Limitations of the study

To establish the extent to which consumption trends of staple foods are declining and to then attribute certain demographic phenomena as the reasons for the decline would normally demand extensive primary research of a substantial sample of the population over a period of time.

This study does not have access to the resources necessary to conduct surveys of the kind that would yield a result that could be confidently regarded as representative of the phenomena.

The study does however conclude with a reasonable degree of confidence that the demographic phenomena considered is directly responsible for the decline in maize consumption in Gauteng.

1.5 Structure of the study

A literature search was firstly conducted from a broader global perspective to determine the consequences of urbanisation that would have the greatest impact on altering eating habits internationally.

The most dominant features of the phenomenon were then considered in the context of Gauteng. At times literature is quoted from a national perspective where trends are evident and relevant but could not be found specific to Gauteng. This constitutes the primary research portion of the study. The methodology is explained.

The study then considers the new data revealed as a result of the primary research.

1.6 Summary of Chapters

1.6.1 Introduction

Introduces the issues facing the maize milling industry and outlines the motivation of the study as well as describing what the study attempts to achieve. Limitations of the study are highlighted and the structure to be found in the chapters which follow is described briefly.

1.6.2 Literature Review

A substantial literature review is conducted, firstly considering the urbanisation phenomena in a global context then focusing on specific

national and regional demographic trends and eating habits. A brief review is conducted on the milling industry with specific reference to trends recorded by the industry.

1.6.3 Research methodology

A detailed explanation of the steps undertaken to arrive at the conclusion of the study is described. The chapter highlights the research strategy and explains the data gathering techniques that were used.

1.6.4 Primary research

The primary research component of the study takes the form of extracting existing sets of data and representing them in alternative formats in order to be more representative of the issues under discussion. In addition new data was arrived at by applying formulae to existing statistics to highlight issues not present in the original sets.

1.6.5 Recommendations and conclusions

Lastly, the study considers the maize milling industry without the constraints of it being a source of food and recommends potential avenues of future growth as well as possible areas for updated and new research. Conclusions are arrived at when the new data is considered in light of the information uncovered in the literature search.

1.7 The research problem

The declining consumption of staple foods in a population undergoing rapid urbanisation is a phenomenon experienced globally. In a local context declining consumption has severe consequences for the maize milling industry arguably the most sophisticated and most capital intensive in the world. The study identifies causes for trends of maize consumption in Gauteng in an attempt to better understand them and then discusses which options are available to role players in the industry in the face of these trends.

1.8 Value of the research

The trends identified through exploring the research problem will be assessed and interpreted with a view to formulating a range of recommendations to the role players in the maize industry to safeguard their investments in the maize industry. Strategic decisions can then taken that will be better informed.

CHAPTER 2: - TRENDS IN EATING HABITS AND GAUTENG POPULATION DEMOGRAPHICS – a Literature Review

2.1 Introduction

A literature review of the affects of urbanisation on consumption of staple foods was first conducted from a global point of view.

Massari (2003) contextualizes the issues under discussion by explaining the migration from staple foods to livestock products and non-traditional cereals is a world wide phenomenon.

Personal income growth also affects eating habits and is best explained by Engel's law (1877), which states that as income rises, the proportion of income spent on food declines. Engel's law does not suggest that the consumption of food remains unchanged as income increases, but rather consumers increase their expenditure on food (in percentage terms) less than their increase in income. The income elasticity of demand for food will therefore not be a negative, but rather less than 1.

Bennett (1954) expands on Engel's law and proposes that there is an inverse relationship between the percentage of total calories derived from cereals and other staple foods and per capita income. In addition to the relative declining expenditure pattern, the make up of the family food basket purchased also alters significantly.

Schmidhuber (2003) identifies two steps in the shift of a diet: -

- The first step is described as the expansion effect, where at low income levels the change is concentrated on achieving higher energy levels from cheaper foodstuffs of vegetal origin. This would usually include rice, potatoes, baked breads and pasta's.
- The second step is largely a substitution effect and is a shift from carbohydrate rich staples to animal foods, vegetable oils and sugars.

Maize meal must be regarded as an inferior good, the definition of which has nothing to do with the quality of the good, but to do with the fact that more expensive, refined substitutes are available. In times where more disposable income is available people have a tendency to buy more expensive, luxury goods, substituting both within the food category, as well as buying proportionally less food in preference for other goods.

The Food and Agriculture Organisation (FAO) of the United Nations (1994) expands by explaining that low income earners derive 75% of their calories come from starchy staple carbohydrates such as maize, rice, wheat and tubers. As income levels increase, diets become more complex where animal fat intake increases, and the proportion of calories coming from the starchy staple falls to 30%. The proportion of calories coming from sugars increases, but the relative protein

contribution remains constant, though there is a switch from vegetable to animal sources of protein.

Both Engel's law and Bennett's law underscore the assumption which prevails, based on anecdotal evidence, that urbanisation results in increased employment and more disposable income per household.

These trends are universal and this study considers a variety of these aspects, commencing from a broader perspective and then narrowing to specific issues, each themselves ground for further: -

- Global trends and perspectives.
- National and regional population demographics
 - The impact of HIV/AIDS.
 - Population growth and migration streams
 - Age group dispersion
 - Population group proportions
 - Employment rates and income
- Eating habits by population group and region
- Maize production and milling & consumption trends
- Food security and nutritional trends.

2.2 Global Trends and Perspectives

Schmidhuber (2003) expands on a few of issues affecting global trends in the consumption of staple foods: -

2.2.1 Urbanisation to accelerate

Virtually all population growth between 2000 and 2030 will be urban.

Urbanisation will be slow to non-existent in many developed countries where the greater portion of the population is already urbanized.

However at the other end of the scale, Sub-Saharan Africa, with an urbanized population of 32%, will see this grow by up to 5% per annum, the highest regional growth rate in the world.

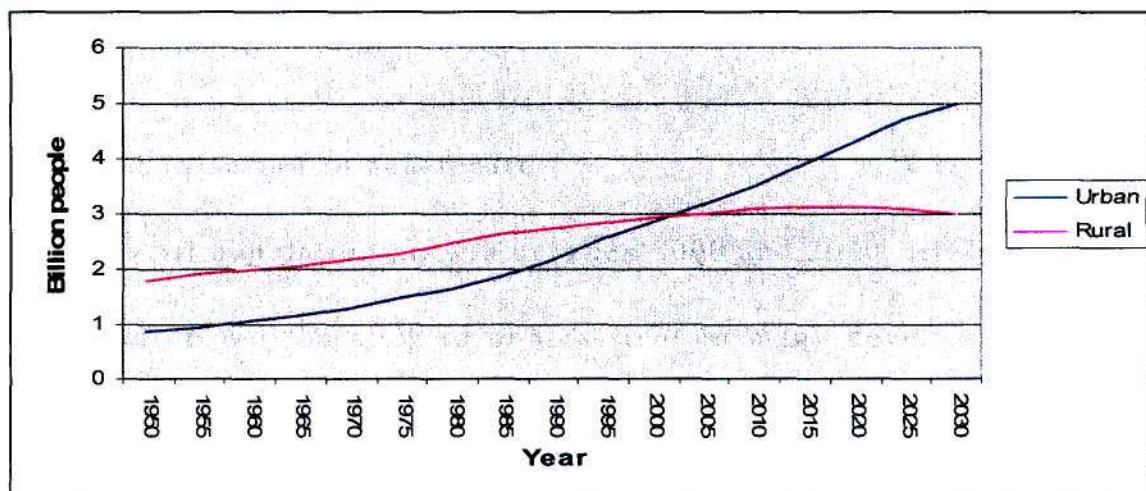


Figure 2.1: - World Population – Rural vs urban growth (Source: - Schmidhuber – 2003)

Urbanisation brings about socio-economic conditions that are typical wherever the phenomenon occurs. A significant factor influencing altering eating habits is the move away from traditional food preparation

activities. Smil (2000) cites time constraints brought about by a higher female participation in the work force as a further reason for a move toward convenience foods. Interestingly he emphasizes that this shift is also pronounced in the urban poor.

This observation is particularly relevant as this study reveals that poverty and unemployment in Gauteng is increasing. It was hypothesized that urbanisation will result in greater employment and disposable income. This is found to be not so and Smil argues that the substitution of traditional staple foods is not necessarily dependent on income.

Urbanisation and the subsequent geographic concentration of people provide markets that encourages cross border convergence which in turn facilitates the import of foreign and convenience foods. Bruinsma (2003) calculates that net imports of foreign food by developing countries as a whole will increase by a factor of 5, from approximately US\$ 11 billion in 1997/99 to approximately US\$ 50 billion in 2030 in real terms. Bruinsma suggests that in many fast growing metropolitan areas it may be easier to feed people with imported food than from the domestic sources where infrastructure deficiencies make sourcing cumbersome and expensive. Easier accessible imported convenient foods compete easily with more time consuming domestic staple grains.

2.2.2 The Globalization of the food distribution system.

Schmidhuber (2003) explains that where supermarkets have made inroads into the food retailing system, the entire food economy is affected, from farmers by way of quality and safety standards as well as packing and packaging, and for consumers, an abrupt change in available food supplies with mixed nutritional outcomes.

Reardon and Berdeque (2002) caution that supermarkets also provide distribution channels for cheaper and more unhealthy snacks as well as proving the platform for fast food outlets and convenience food and conclude that by the year 2000, supermarkets commanded roughly 60% of the national retail sectors in Latin America (From 15% in 1990) i.e. what took the USA 50 years to achieve, took only 10 years in Latin America.

Global food manufacturers and distributors now target developing countries simply because it is here where future economic growth can be expected. Growth in industrialised first world countries is static. It is estimated that 85 percent of the increase in global demand for cereals and meat between 1995 and 2020 will occur in developing countries.

2.2.3 The impact of the food processing and fast food industry.

The shift to more refined flour has a direct impact on nutrient intake particularly where wheat and maize are staple foods. Modern milling

techniques produces refined flour with better digestibility but destroys texture and valuable fibre as well as the mineral and vitamin content.

Refined flour makes baking a lot easier resulting in the proliferation of bread and a large variety of other baked goods. This has been the catalyst for adopting a Western diet. This trend is expected to continue and even accelerate. An increasing trend of white wheat flour consumption is expected in many developing countries.

Urbanisation means more frequent eating outside the home often under time and budgetary constraints. Fast food has catered for these constraints as well as catering for the increasing need for salt, sugar and fat rich diets.

2.2.4 Robust growth in personal income

An increasingly urban population will also become a more affluent one, although this is contradicted to a degree by evidence of some 3rd world societies where poverty and unemployment increases with urbanisation.

Over the next 30 years, average global per capita income is expected to rise at a rate of more than 2% per annum.

Developing countries, starting at a low base, are expected to grow faster than developed countries. At nearly 4%, their economies are expected to grow more than twice the speed as those in the developed world.

In relative terms developing countries stand to gain from freer trade and gain greater efficiencies from trade liberalization, freer capital & technology flows.

There is a caution from the United Nations (UN) (2003): - “Low per capita income combined with rapid rural to urban migration is likely to result in “premature” urbanisation, with slums, HIV/AIDS and urban poverty rising at a rapid rate”.

These factors are from a global perspective and are dealt with briefly. Population shifts occurring in Gauteng are similar to those being experienced globally and for similar reasons and with similar results. Gauteng’s population demographics are an integral part of the global phenomenon and are dealt with in more detail in later in this chapter.

Gauteng can also be regarded as a microcosm of socio-economic trends in the country as a whole. Schlemmer (1998) describes Gauteng as South Africa’s magnifying glass and largely reflects what is happening in rest of the country, but even more so, as the economic heartland, profoundly affects what is happening in the rest of the country.

2.3 National and regional population demographics

The preceding section discussed the urbanisation phenomena and in particular its impact on the eating habits of the population from a global

perspective. The literature review now considers these and other aspects from a more local perspective.

2.3.1 The Impact of HIV/AIDS

Balyamujura H et al (2002) in a study conducted on behalf of the United Nations determined that the portion of the population most affected by HIV/AIDS is the most economically active. This would result in reduced economic growth and pressures on income. Changes in expenditure patterns would definitely have an impact on the demand for food. In constant 1995 terms, AIDS will cause a reduction in food expenditure in 2004 from R265.6 million to R258.8 million, while by the year 2009 the pandemic would have resulted in a 6.52 per cent reduction from R294.5million to R275.3 million.

These figures, although 4 years old are sobering and will need to be further researched due to the compounding nature of HIV/AIDS.

The National Chamber of Milling (NCM) (undated) quotes the Bureau of Market Research (BMR) as estimating that for every 1% decrease in population growth maize meal demand will decrease by 1.3%. Extrapolated to 2006, this would result in maize sales being 143 000 tons less per annum and by the year 2011 sales would be reduced by 429 000 tons per annum.

For the first time, during 2005, AIDS related deaths exceeded other causes of death according to Statistics South Africa (STATS SA).

	1985	1990	1995	2000	2005
<u>Life Expectancy at Birth</u>					
Stats	61.8	63.3	62.4	55.6	50.7
HSRC	57.8	59.9	59.3	50.4	45.2
<u>% of AIDS related deaths</u>					
Stats	-	0.1	6.8	34.4	50.8
HSRC	-	-	-	40.0	57.8

Table 2.1: - Comparison of selected population estimates between STATS SA and the HSRC (Source: - STATS SA – 2004)

Table 2.1 reveals substantial differences of opinion between the Human Sciences Research Council (HSRC) and STATS SA regarding the life expectancy of the population. Where they do agree, however, is on the trended effect of AIDS on population growth and in particular the decline in the life expectancy of the population. The group most affected by this decline is the most economically active one, as depicted in Figure 2.3, with the effects alluded to by Balyamujura H *et al* (2002).

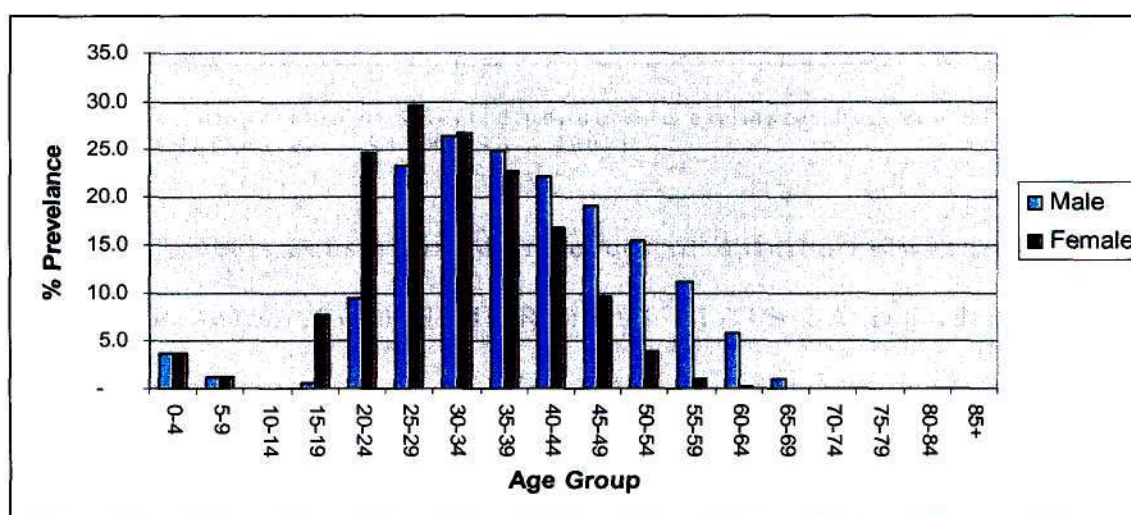


Figure 2.2: - Estimated prevalence of HIV by sex and age: 2004 (Source: - Dorrington *et al* – 2004)

This trend is dominated by the infection rate of black Africans. Whilst the Actuarial Society of South Africa (ASSA) does not differentiate between population groups in its published data, Table 2.2 is extracted from STATS SA's Mid Year population estimates for 2004 and reveals the infection rate increase is most prevalent among black African adults.

	African	Coloured	Indian/Asian	White	
2000	14.21	5.39	1.96	4.41	13.05
2001	14.50	5.50	2.00	4.50	13.42
2002	15.40	5.80	2.12	4.79	14.30
2003	15.72	6.31	2.41	5.19	14.79
2004	16.04	6.84	2.70	5.58	15.20

Table 2.2: - Estimated Adult HIV % prevalence rates
(Source: - STATS SA – 2004)

The debilitating affect that HIV/AIDS is projected to have on Gauteng's population is graphically depicted in Figure 2.3 following: -

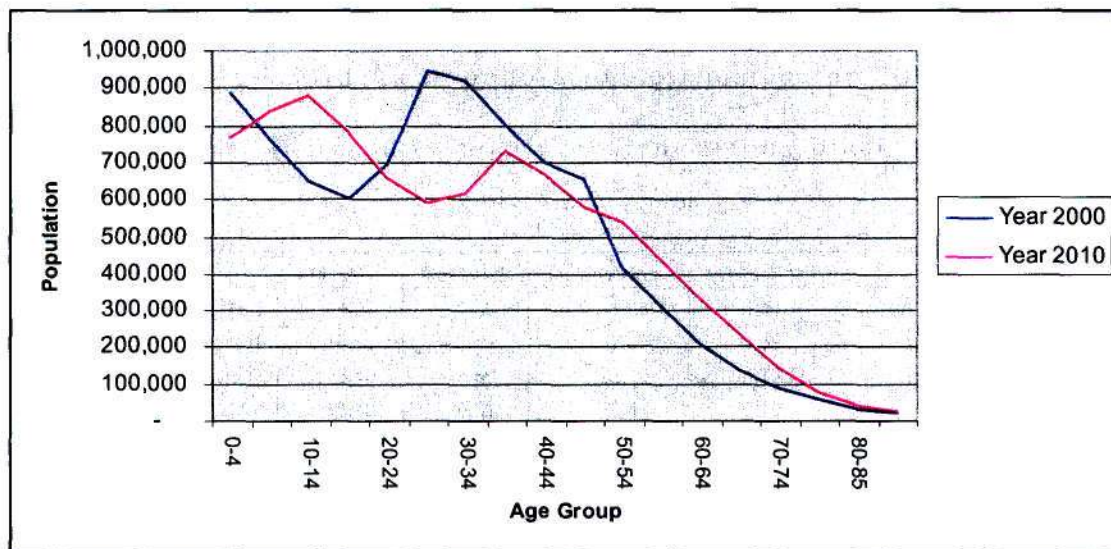


Figure 2.3: - Gauteng population by age group, years 2000 and 2010 compared
(Source: - Dorrington *et al* – 2002)

The age group most affected is the employable economically active group, age 20 to 49. The work force is being decimated whilst the older groups and younger groups are increasing in number, placing additional strain on provincial budgets.

There is a net gain in population of 81 000 people over the period under review, however the gain is mainly in the age group 0-19 where the population increased by 485 000 people, and the age group 50 + where the population increased by 572 000 people. The age group 20-49 shrunk by 852 000 people.

Black African's consume 93% of national maize milled. A reduction in population growth resulting from the disease, in turn affecting the maize demand alluded to earlier, is depicted in Figure 2.4 following.

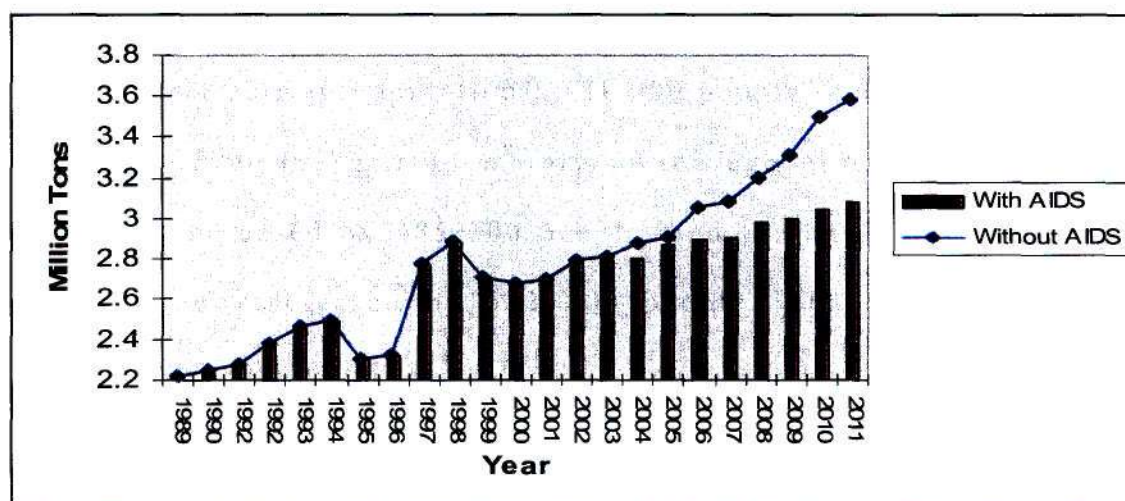


Figure 2.4: - Projected Maize Sales – with and without AIDS scenario (Source: - de Villiers J – 2001)

The projected trends depicted in Figure 2.4 contradict somewhat the demand history reflected in Table 2.17, also gleaned from the NCM's database. Once again this study cautions that whilst data from different sources as well as from the same source may conflict, the trends nonetheless are what are emphasized and what is considered important in the context of this study.

2.3.2 Population growth and migration streams

The primary source of information for this section was drawn from the censuses of 1996 and 2001, and in particular "Statistics South Africa (2001), *Primary Tables Gauteng, Census '96 and 2001 compared*, Statistics, Pretoria 2001".

2.3.2.1 Population growth

The population of Gauteng grew from 7,348,432 in 1996 to 8,837,177 in 2001 (a 17% increase), during the same period the country's population grew from 40,583,573 to 44,819,778 (a 9.5% increase).

During this period the proportions that each population group makes up of this total demonstrated dramatic turnarounds.

	Black African	Coloured	Asian	White	Unspecified	Total
Population						
1996	5,147,444	278,692	161,289	1,702,343	58,655	7,348,423
2001	6,522,792	337,974	218,015	1,758,396		8,837,177
Growth %	21.09	17.54	26.02	3.19		16.85
Households						
1996	1,282,549	61,799	39,709	569,733	10,375	1,964,165
2001	1,945,427	81,153	54,318	570,346		2,651,244
Growth %	34.07	23.85	26.90	0.11		25.92

Table 2.3: - Gauteng population growth by population group – Census 1996 and 2001 (Source: - STATS SA – 2001)

The outstanding feature of Table 2.3 is the growth in the black African population of Gauteng, coupled with the growth in households. This will be contextualized in Chapter 4.

The growth in households is underpinned by both an increase in households and a corresponding decrease in members per household. Once again the data representing the Gauteng black African population is considered.

	Black African – 1996 (%)			Black African - 2001 (%)		
	Male	Female	Total	Male	Female	Total
Never Married	48.8	46	47.5	51.7	47.8	49.8
Widower/widow	1.1	6.4	3.6	1.2	6.6	3.8
Divorced/Separated	1.6	4.2	2.8	1.7	4	2.9
Total	51.5	56.6	53.9	54.6	58.4	56.5
Married: Civil – Religious	24.3	22.8	23.6	20	19.1	19.5
Married: Traditional	15.1	11.3	13.3	13.6	10.4	11.9
Living Together	7.5	8.1	7.8	11.8	12.1	11.9
Total	46.9	42.2	44.7	45.4	41.6	43.3
Unspecified/Other	1.6	1.2	1.4			

Table 2.4: - Marital status amongst those 15 years and older – Gauteng – censuses 1996 and 2001 (Source: - STATS SA – 2001)

The purpose of Table 2.4 is to illustrate the growth in single people between the two censuses. Quantified, the data reveals that the number of single people in Gauteng increased by 808,000 people while during

the same period, the number of people in a relationship sharing a household increased by 505,000 people.

It must be pointed out that the study does not imply that by being single one automatically lives alone, the data however does corroborate the trend in households consisting of fewer people.

This would nevertheless most likely have an impact on maize consumption in that single people tend to seek out convenience foods, whether employed or not.

The data from STATS SA is backed up by and expanded upon by a HSRC (2005) publication, *"Poverty Pockets in Gauteng – How migration impacts poverty"* which details an in-depth analysis of poverty pockets, migration patterns and population demographics in Gauteng.

2.3.2.2 Migration patterns

Table 2.5 illustrates the effect of migration patterns on each provinces share of the country's population. An increasing share of the total population was only experienced by Western Cape (9.4% in 2001 to 9.9% in 2005) and Gauteng (18.5% in 2001 to 19.2% in 2005).

Gauteng's gain is attributed to domestic migration patterns. Gauteng, the country's most urbanized province attracted population movements primarily from Limpopo, a province almost devoid of urban area and

demonstrated a net population gain of 515,900 people during the period 2001 to 2005 due solely to migration.

Oosthuisen, Peberdy et al (2004) made the following observations in their publication "*Migration into Gauteng Province*": -

- i) The relative abundance of employment opportunities in Gauteng tended to attract migrants, the bulk of whom were semi and unskilled thus contributing to a lowering of income levels in the province and of the population group.
- ii) Almost 31% of recent migrants into Gauteng reside in informal dwellings, as opposed to 24% of households that have lived in the province for 5 years or more.
- iii) Access to living standards indicators such as radios and televisions tend to be very different between recently migrated and more established Gauteng households.
- iv) Migrants living and working in Gauteng almost inevitably maintain households in their home provinces. Gauteng hosts some 1.3 million migrant workers (or 46% of the national total) who remit an estimated R2.6 billion back home (period Sept. 2001 to Aug. 2002). This would impact on spending patterns in Gauteng.

Percentage distribution of the projected provincial share of the total population: 2001 – 2005					
	2001	2002	2003	2004	2005
E Cape	15.5	15.4	15.3	15.1	15
Free State	6.5	6.4	6.4	6.3	6.3
Gauteng	18.5	18.7	18.9	19	19.2
KZN	20.7	20.7	20.7	20.6	20.6
Limpopo	12.3	12.2	12.1	12.1	12
Mpumulanga	6.9	6.9	6.9	6.9	6.9
N Cape	1.9	1.9	1.9	1.9	1.9
N West	8.2	8.2	8.2	8.2	8.2
W Cape	9.4	9.5	9.7	9.8	9.9
	100	100	100	100	100

Table 2.5: Provincial Proportional share of National Population
(Source: - STATS SA – 2005)

Table 2.5 highlights the effect of migration in the country. Gauteng and the Western Cape's share of the national population increased at the expense of in particular the Eastern Cape, the Free State, Limpopo and Kwa-Zulu Natal. This trend is quantified in Table 2.6 which follows.

Migration Streams for the Total Population: 2001 – 2005												
Origin	Did not migrate	E Cape	Free State	Gauteng	KZN	Limpopo	Mpum.	N Cape	N West	W Cape	Total out	Net Migration
Eastern Cape	6,801,200	-	21,200	100,000	89,600	8,400	13,100	5,400	27,700	175,000	440,400	-323,200
Free State	2,820,100	12,000	-	73,600	10,700	5,800	8,700	8,200	25,000	16,000	160,000	-57,700
Gauteng	8,288,800	35,800	29,400	-	63,500	39,000	41,700	6,400	50,200	67,500	333,500	519,900
Kwa-Zulu Natal	9,390,600	18,800	10,600	124,200	-	6,300	16,300	2,300	5,900	24,800	209,200	4,000
Limpopo	5,470,900	3,700	5,200	249,100	8,700	-	49,900	1,900	26,900	6,400	351,800	-249,300
Mpum.	3,062,000	4,400	7,100	107,500	17,600	22,800	-	1,800	13,900	7,100	182,200	-38,700
Northern Cape	840,400	3,900	9,800	15,000	2,500	2,300	1,900	-	9,700	31,900	77,000	-23,900
North West	3,635,500	6,100	12,600	144,700	7,100	14,600	7,900	17,600	-	8,600	219,200	-55,500
Western Cape	4,350,200	32,500	6,400	39,300	13,500	3,300	4,000	9,500	4,400	-	112,900	224,400
	44,659,700	117,200	102,300	853,400	213,200	102,500	143,500	53,100	163,700	337,300		-

Table 2.6: - Net Migration streams – South Africa – 2001 to 2005(Source: - STATS SA – 2005)

Migration streams of people moving into Gauteng looking for employment and better opportunities tended to result in an age group dispersion of people resident in Gauteng that is dominated by people of a young, employable age as Section 2.3.3 will reveal. A point to consider is the projected decimation of this age group by the AIDS pandemic detailed in section 2.3.1.

This trend naturally compounds as time goes by and as Gauteng's reputation as the economic powerhouse (and subsequent provider of employment opportunities) of the continent becomes entrenched. The HSRC's report (2005) expands: -

"Gauteng is a preferred destination for migrants from many African countries since migration to Gauteng is an established tradition close to two centuries old."

Oosthuizen, Peberdy *et al* (2004) are quoted in the HSRC report as observing that Gauteng, whilst being successful in attracting many highly skilled migrants from other regions, tended to attract mainly semi and un-skilled migrants who are employed in the less skills intensive sectors (notably women migrants in domestic employment), most likely contributing to a lowering of income levels of the province.

This contradiction of anecdotal evidence – that of a perception that the average income levels of Gauteng residents is increasing at rates greater

than the rest of the country – is expanded on in Section 2.3.5 and Chapter 4.

2.3.2.3 Gauteng's urban areas

The HSRC (2005) identified 3 main metropolitan areas in Gauteng: -

i) Johannesburg

The 2001 census estimated a population of 3.2 million. Between the 1996 and 2001 censuses the number of people in the typically migrating bracket (15 to 34) grew by 27.8% and the number of households with only 1 member grew to 23.9%. This statistic is significant in the context of meal preparation and maize consumption where it can be reasonably concluded that the likelihood of single consumers preparing and eating maize is significantly lower than households consisting of members who are able to assume the role of meal preparers.

Unemployment was estimated at 37% in 2001 with 22% of households without formal shelter and 15% without running water.

ii) Tshwane

The country's seat of executive government, with a population of 2 million people, provides much employment in the government sector; however motor manufacturing provided a 25% increase in

jobs. Despite this growth, unemployment was still estimated to be at 18.9%. Migration accounted for an increase of 57.7% of informal dwellings to 20.8% while 15.6% of dwellings were without running water.

iii) Ekurhuleni

The country's manufacturing heartland had a population of 2.5 million people in 2001. Between 1980 and 1996 the metropolis shed 117,000 jobs but is showing signs of re-birth by re-gaining 30,230 jobs between 1996 and 2001. This region experiences the fastest population growth in the country, some 4.2% per annum in the period 1996 to 2001 during which period the number of households grew 39.2%. Of all households 29.8% were without formal shelter and 30.3% were without running water.

The three dominant urban areas account for approximately 7.7 million people out of a total provincial population of 8.8 million people. An urban area not included in the above synopsis is the Vereeniging region which would account for a further approximately 1 million people. This would indicate Gauteng province as being almost completely urbanized.

2.3.3 Age Group Dispersion

A comparison between the censuses of 1996 and 2001 reveals a growing percentage of the population is in the employable age bracket 20 to 39,

whilst the younger end of the spectrum, ages 0 to 14, demonstrates signs of decreasing as a proportion of total population.

Figures 2.5 and 2.6 represent the age group proportions of Gauteng's population for 1996 and then 2001 as gleaned from the censuses of the respective years.

Table 2.7 quantifies the age group comparisons between the 2 censuses, graphically represented in Figures 2.5 and 2.6 respectively.

The trend of an increasing proportion of people of an employable age is a direct result of migration of people into Gauteng looking for employment opportunities and would certainly have an impact of maize consumption in the province.

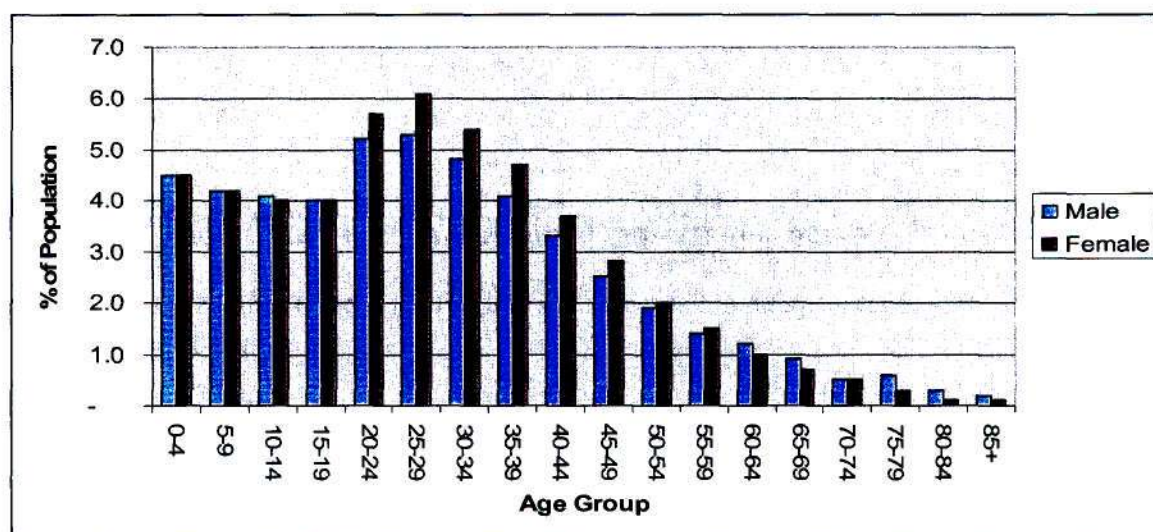


Figure 2.5: - Age group dispersion - Gauteng 1996 (Source: - STATS SA - 2001)

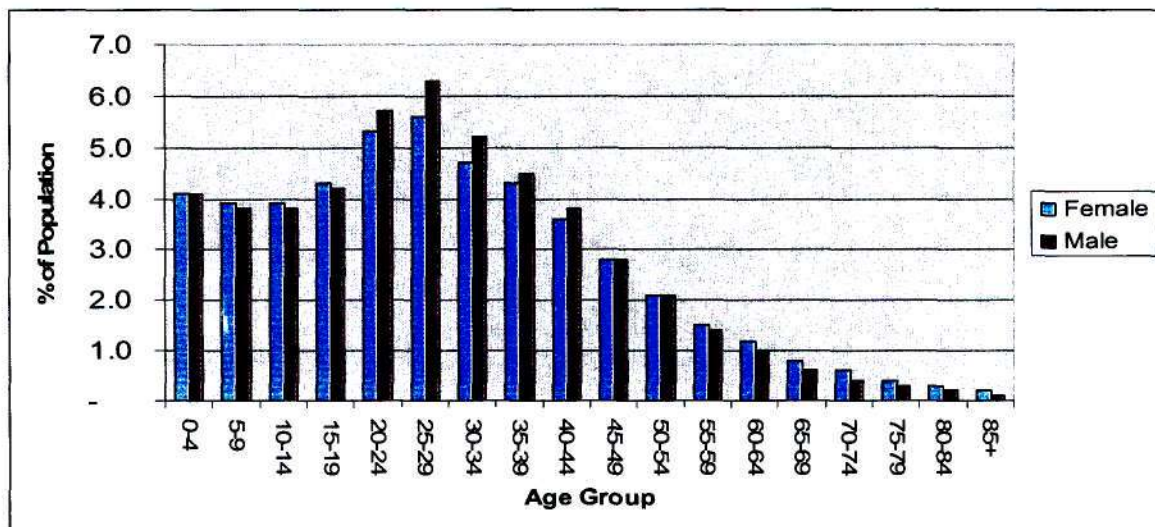


Figure 2.6: - Age group dispersion - Gauteng 2001 (Source: - STATS SA - 2001)

Age Group	1996				2001			
	Male	Female	Total	%	Male	Female	Total	%
0-4	323,778	328,382	652,160	8.9	361,816	363,980	725,796	8.2
5-9	301,316	304,697	606,013	8.2	337,379	340,927	678,306	7.7
10-14	287,137	294,843	581,980	7.9	338,157	344,692	682,849	7.7
15-19	288,982	292,333	581,315	7.9	368,686	383,554	752,240	8.5
20-24	410,707	379,412	790,119	10.8	505,789	469,661	975,450	11.0
25-29	442,391	387,066	829,457	11.3	553,095	493,662	1,046,757	11.8
30-34	388,001	346,722	734,723	10.0	460,404	417,031	877,435	9.9
35-39	338,402	298,234	636,636	8.7	396,949	376,461	773,410	8.8
40-44	266,603	238,437	505,040	6.9	331,432	319,263	650,695	7.4
45-49	203,602	178,662	382,264	5.2	247,199	250,266	497,465	5.6
50-54	144,843	135,868	280,711	3.8	187,687	184,363	372,050	4.2
55-59	106,072	105,057	211,129	2.9	126,934	133,266	260,200	2.9
60-64	69,767	83,682	153,449	2.1	89,586	105,197	194,783	2.2
65-69	51,637	65,018	116,655	1.6	55,086	74,493	129,579	1.5
70-74	33,400	45,658	79,058	1.1	38,616	56,412	95,028	1.1
75-79	22,737	34,065	56,802	0.8	23,559	37,005	60,564	0.7
80-84	10,497	19,654	30,151	0.4	14,956	25,644	40,600	0.5
85+	6,708	13,923	20,631	0.3	7,350	16,622	23,972	0.3
Unspecified	54,267	45,761	100,028	1.4	-	-	-	-
	3,750,847	3,597,474	7,348,321	100.0	4,444,680	4,392,499	8,837,179	100.0

Table 2.7: - Age distribution in 5 year intervals by gender - Gauteng 1996 and 2001 census compared (Source: - STATS SA - 2001)

In 1996 a quarter of the population was made up of children under the age of 15. This proportion dropped to 23.6% in the 2001 census.

The decreasing proportion of children, and increasing proportion of people in their late teen's and 20's would suggest a greater proportion of the population would be made up of single people, i.e. not members of a family unit resident in Gauteng. This assumption is supported by migration statistics detailed in the HSRC (2005) report.

This would have an impact on maize consumption in that single people, whether economically active or not, would most likely seek out meals that were convenient.

2.3.4 Population Group proportions of Gauteng population

As indicated earlier, the black African population group account for approximately 93% of maize consumption nationally and therefore play a pivotal role in the consumption trends of maize.

The study notes in Section 2.3.2, covering population growth and migration streams in Gauteng, that the proportion of black Africans resident in Gauteng are increasing both by virtue of a higher birth rate as well as migration into Gauteng being dominated by black Africans.

Once again this would indicate that Gauteng is becoming an increasingly attractive market for maize millers and distributors.

	Black African		Coloured		Indian/Asian		White		Unspecified/Other		Total
	Numbers	%	Numbers	%	Numbers	%	Numbers	%	Numbers	%	Numbers
1996 Census											
Gauteng	5,147,444	70.0	278,692	3.8	161,289	2.2	1,702,343	23.2	58,654	0.8	7,348,422
South Africa	31,127,631		3,600,446		1,045,596		4,434,697		375,204		40,583,574
2001 Census											
Gauteng	6,522,792	73.8	337,974	3.8	218,015	2.5	1,758,398	19.9			8,837,178
South Africa	35,416,166		3,994,505		1,115,467		4,293,640				44,819,778

Table 2.8: - Population group proportions of total population: Gauteng - 1996 and 2001 censuses compared (Source: - STATS SA - 2001)

Table 2.8 reveals the black African population group increasing its proportional share of the Gauteng population from 70% to 73.8% when comparing the 1996 census to the 2001 census. The black African population itself has grown from 5,147,444 to 6,522,792, or 21% over this period.

Further analysis is revealed in Chapter 4 which combines population growth rates with employment data.

A rapidly increasing population presents significant challenges for local government, in that the main priority must be to provide employment to all residents to give them the ability to provide for themselves.

2.3.5 Employment rates and income.

This assumption that an urbanizing population is finding work and earning more money dominates strategic decision making in the industry and is supported a survey conducted by Ebony Consulting (2002)

commissioned by the National Agricultural Marketing Council. Whilst the data depicted in Table 2.9 does not differentiate between population group or region, it is nevertheless an indication of the effect of having a regular income can have on eating habits of a household.

Further analysis of Table 2.9 is found in Chapter 4 and reveals dominant trends between regular income earners which can be assumed to be mainly urban residents and the unemployed, whether urban or not.

Food Item	Wage Earners	Self Employed	Unemployed	Farm Workers	Pension Earners
Maize meal (kg)	19	27	30	26	28
White Bread (loaves)	29	25	21	15	22
Brown bread (loaves)	22	17	18	12	15
Milk (lt)	5	2	3	1	4
Chicken (kg)	2.3	2	2	2	2
Beef (kg)	1	1	1	-	1
Mutton (kg)	2	1	0.1	1	1
Margarine (kg)	0.5	0.5	0.5	0.5	0.4
Samp (kg)	4	8	8	5	8
Sugar (kg)	5	9	8	4.5	10
Cooking Oil (lt)	2	2.4	2	2	2
Cheese (kg)	-	-	-	-	-
Rice (kg)	5	7	6	5	7
White Flour (kg)	7	10	10	7	11
Potatoes (kg)	8	7	7	9	9
Sorghum (kg)	6	8	13	3	6

Table 2.9: - Average monthly consumption of selected food items per household (Source: - Ebony Consulting - 2002)

Also discussed in Chapter 4 and 5 is the higher consumption rate of maize by the unemployed in conjunction with the increasing unemployment rates in Gauteng.

2.3.5.1 Employment rates

An analysis of employment rates and income levels, particularly of the black African population of Gauteng would reveal that the assumption that urbanisation being responsible for greater employment rates cannot be reliably taken at face value and requires qualification.

A grasp of actual income levels and employment rates is crucial to the conclusions arrived at in Chapters 4 and 5 in determining reasons for the declining consumption trend.

This section therefore refines the total population statistics detailed in Section 2.3.4 and focuses on the population of an employable age, specifically between 15 to 65 years of age.

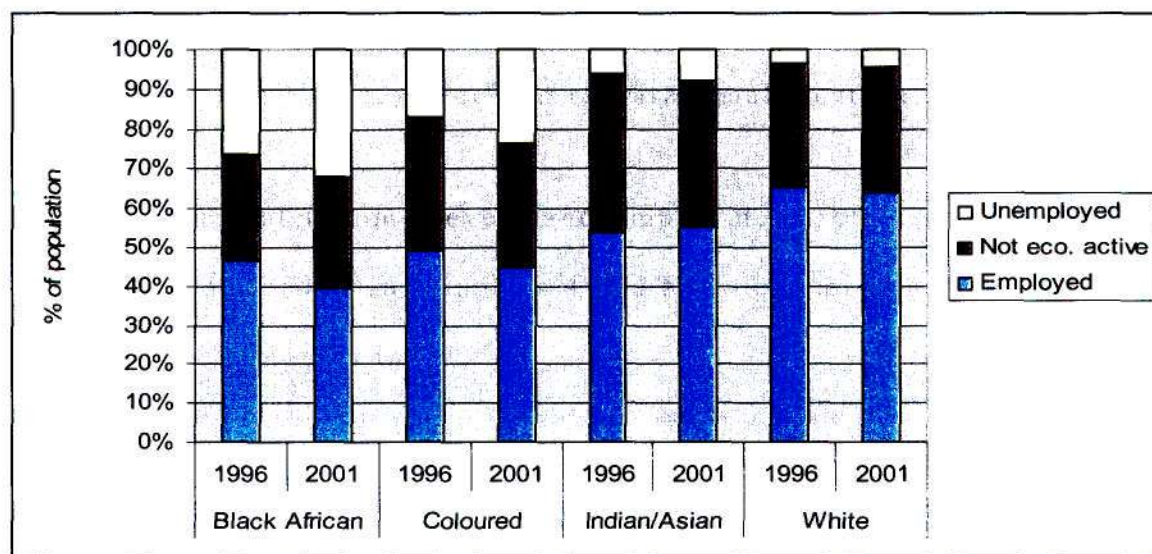


Figure 2.7: - Distribution of the population aged 15-65 by labour market status and population group – Gauteng: 1996 and 2001 censuses compared (Source: - STATS SA – 2001)

Figure 2.7 reveals an increasing level of unemployment amongst all population groups, but most prevalent in the black African group, between the censuses of 1996 and 2001.

The data from which Figure 2.7 is derived is represented in Table 2.10

Table 2.8 reveals that the black African population of Gauteng swelled 21% or 1,375,748 people over this period. Of this increase, 1,231,407 were of an employable age of between 15 to 65 years of age, as revealed in table 2.7. This 1.2 million increase in the total of employable black Africans resident in Gauteng resulted in the total unemployed black Africans increasing by 0.6 million, or 50% of the age bracket growth.

Gauteng's unemployed is thus increasing by the year, severely affecting the population group's per capita income growth over the period. This is underpinned by the majority of migrants into Gauteng during this period being black African of an employable age and semi-skilled or unskilled, as detailed in the HSRC report discussed in Section 2.3.2.

	Black African		Coloured		Indian/Asian		White		Total	
	1996	2001	1996	2001	1996	2001	1996	2001	1996	2001
Employed	1,648,668	1,878,737	87,598	104,789	58,120	89,611	754,695	821,640	2,549,081	2,894,777
Not eco active	950,613	1,346,294	60,648	73,476	42,760	59,239	361,242	398,655	1,415,263	1,877,664
Unemployed	927,366	1,533,023	30,438	26,848	6,539	13,189	38,243	58,265	1,002,586	1,631,325
	3,526,647	4,758,054	178,684	233,400	107,419	162,039	1,154,180	1,278,560	4,966,930	6,432,053

Table 2.10: - Labour Market status of the age group 15 to 65 by population group - Gauteng: 1996 and 2001 censuses compared (Source: - STATS SA - 2001)

The natural consequence of employment is income and an analysis of one would not be complete without the other.

2.3.5.2 Income distribution

Income statistics reported in this study do not include old age pensions, child support grants and unemployment insurance.

The earning of an income would imply the ability of the income earner to exercise a degree of choice where the income is spent. As this study discussed earlier lower income earners are compelled to spend greater portions of their income on basic needs such as shelter and food.

This portion of the literature review attempts to determine the rate at which the black African population's income has grown in order to allow the population to afford to migrate to alternative foods.

Whilst the thrust of this study is to concentrate on black African demographics, Chapter 4 shall amongst other things, draw interesting parallels between the population groups on for instance per capita income growth.

	Black African	Colored	Asian	White	Unspecified	Total
	Total	Total	Total	Total	Total	Total
None	13,427	1,020	483	7,723	175	22,828
R1 - R200	81,242	1,944	1,044	9,666	542	94,438
R201 - R500	238,110	4,915	1,751	15,196	1,434	261,406
R501 - R1000	407,843	8,666	3,235	24,120	2,202	446,066
R1001 - R1500	406,954	15,774	6,554	43,624	2,384	475,290
R1501 - R2500	251,005	19,203	10,262	92,146	2,062	374,678
R2501 - R3500	99,796	13,375	9,668	104,449	1,362	228,650
R3501 - R4500	48,067	8,067	7,117	95,440	917	159,608
R4501 - R6000	29,124	5,309	6,291	102,536	891	144,151
R6001 - R8000	12,192	2,126	3,580	70,738	498	89,134
R8001 - R11000	7,095	1,056	2,241	55,256	361	66,009
R11001 - R16000	3,714	500	1,301	37,799	277	43,591
R16001 - R30000	1,947	275	694	24,230	128	27,274
R30001 >	795	90	219	8,622	46	9,772
Unspecified	47,357	5,276	3,683	63,148	1,884	121,348
	1,648,668	87,596	58,123	754,693	15,163	2,564,243

Employed	1,648,668	87,598	58,120	754,695	15,163	2,564,244
Unemployed	927,366	30,438	6,539	38,243	5,179	1,007,765
Not economically active	950,613	60,648	42,760	361,242	11,830	1,427,093
Total	3,526,647	178,684	107,419	1,154,180	32,172	4,999,102

Table 2.11: - Individual monthly income earners amongst the employed aged 15 - 65 by population group and gender - Gauteng 1996 (Source: - STATS SA - 2001)

Table 2.11 reveals that in excess of 70% of black African income earners, or 1,147 million people, earned R1500 or less in 1996.

	Black African	Colored	Asian	White	Unspecified	Total
	Total	Total	Total	Total	Total	Total
None	38,347	2,438	1,585	15,603	-	57,973
R1 - R400	170,162	3,720	1,114	9,894	-	184,890
R401 - R800	353,467	7,014	2,205	14,931	-	377,617
R801 - R1600	626,066	17,501	7,517	44,501	-	695,585
R1601- R3200	421,774	29,208	19,162	121,044	-	591,188
R3201 - R6400	178,119	26,998	27,222	225,314	-	457,653
R6401 - R12800	61,320	12,815	19,088	207,217	-	300,440
R12801 - R25600	19,159	3,569	8,260	115,027	-	146,015
R25601 - R51200	6,317	886	2,174	43,033	-	52,410
R51201 - R102400	2,052	369	700	14,200	-	17,321
R102401 - R204800	1,101	182	402	6,691	-	8,376
R204801 >	854	87	183	4,183	-	5,307
	1,878,738	104,787	89,612	821,638	-	2,894,775

Employed	1,878,737	104,789	89,611	821,640	-	2,894,777
Unemployed	1,533,023	55,135	13,189	58,265	-	1,659,612
Not economically active	1,346,294	73,476	59,239	398,655	-	1,877,665
Total	4,758,054	233,400	162,039	1,278,560	-	6,432,054

Table 2.12: - Individual monthly income earners amongst the employed aged 15 - 65 by population group and gender - Gauteng 2001 (Source: - STATSA SA - 2001)

By 2001 there had been a marginal improvement in the number of black African income earners earning below R1 600 per month had reduced to 63% of black African income earners, or 1.188 million people out of the total 1.878 million employed.

An in depth comparison between the sets of data from 1996 and 2001 shall be conducted in Chapter 4. Included in the analysis shall be calculations of actual income earned per total age group to determine purchasing power trends per population group as well as to determine per capita income rates.

Black African - age 15 to 65 – trend % 1996 to 2001			
	Male	Female	Total
Employed	9.63	21.69	13.95
Unemployed	81.07	53.42	65.31
Not economically active	46.20	38.32	41.62
Total Group Population growth	32.85	37.21	34.92
Employed % of group	(17.48)	(11.31)	(15.54)
Unemployed % of group	36.30	11.81	22.53

Table 2.13: - Trend percentage of Black African demographics in the age group 15 to 65 – Gauteng – 1996 and 2001 censuses compared (Source: - STATS SA – 2001)

Table 2.13 reveals an increase in unemployment in the black African population and in particular the male group. This demonstrates the increasingly important role of women in the work force.

Various authorities have arrived at the same conclusion regarding increasing poverty levels in Gauteng. Hoogeveen and Ozler (2004): - “Gauteng, the wealthiest province in 1995, has experienced large increases in poverty, where more than one third of the population lived in poverty by 2000, up from less than a quarter five years prior to that”

The study cautions that sampling problems underestimated the levels of poverty in 1995 but another factor likely to contribute to an increase in poverty is migration into Gauteng from the poorer provinces after 1994.

There are many factors which influence a population’s eating habits, section 2.3 deals with what can be considered the dominant factors which result from the process of urbanisation, namely: -

- The impact of HIV/AIDS
- Population growth and migration streams

- Age group dispersion
- Population group proportions
- Employment rates and income.

Section 2.4 which follows goes on to discuss and quantify eating habits nationally and regionally with specific regard to Gauteng in an attempt to demonstrate parallel between the provinces eating habits and the urbanization process described in Chapter 2.3.

2.4 Eating habits by population group and region

Section 2.3 considers characteristics of urbanisation which influences eating habits of a population. The section which follows goes on to quantify these eating habits.

The primary literature source here was recent research conducted by Professor J H Martins of the BMR of the University of South Africa (2003) and was made available courtesy of Premier Foods.

The BMR study reflects circumstances prevailing at a point. No comparisons are drawn between time periods apart from top line comparisons, and as such trends cannot be calculated. It does, however, draw comparisons between regions, population groups and food groups. As such it is of particular interest when considering Gauteng food expenditure, and in particular maize expenditure in relation to other

items in the food basket of Gauteng resident's as well as in relation to the food buying habits of other provinces.

Table 2.14 reveals that maize meal only accounts for some 3.2% of total food expenditure on a food basket of 125 different items in a Gauteng resident's food basket. The same figure for the country is 5.5%.

	Maize Meal Spend	Total Food Spend	Maize Meal Spend % of Total Food	Total Population 2003	Total African Population 2003	African population % of Prov.
East Cape	874,063	13,164,054	6.6	7,207,405	6,307,557	87.5
Free State	518,647	7,088,258	7.3	2,974,879	2,520,133	84.7
Gauteng	1,445,769	45,475,247	3.2	8,499,904	5,965,074	70.2
Kwa Zulu Natal	1,373,643	23,054,741	6.0	9,664,111	8,045,878	83.3
Limpopo	1,557,392	9,372,944	16.6	5,696,749	5,539,624	97.2
Mpumalanga	626,109	7,412,604	8.4	3,235,521	2,896,321	89.5
North Cape	73,907	2,268,798	3.3	896,735	311,000	34.7
North West	672,170	9,315,735	7.2	3,801,588	3,477,408	91.5
West Cape	190,383	16,498,056	1.2	4,344,899	972,108	22.4
	7,332,083	133,650,437	5.5	46,321,791	36,914,284	79.7

Table 2.14 - Total 2003 Maize Meal and Food spend per province – R'000's
(Source: - BMR – 2003)

Table 2.14 requires explanation: -

The inference that can be drawn from the data is that Gauteng, a highly urbanized environment, and the 2nd most populous province in the country spends the highest total on maize meal, R1,557 billion in 2003, but this only represented 3.2% of the province's total food bill. Only the Western Cape spent proportionately less on maize in their total food bill, some 1.2%

The Western Cape is also a highly urbanized region, but in addition, black African's only account for 22.4% of the regions population.

There is therefore a direct correlation between the proportions that black African's make up of a provinces total population, and the proportion of total food expenditure in that province spent on maize meal. This is demonstrated in Figure 2.8. Gauteng's low proportional maize spend and comparatively high black population is best explained by urbanisation and its consequences.

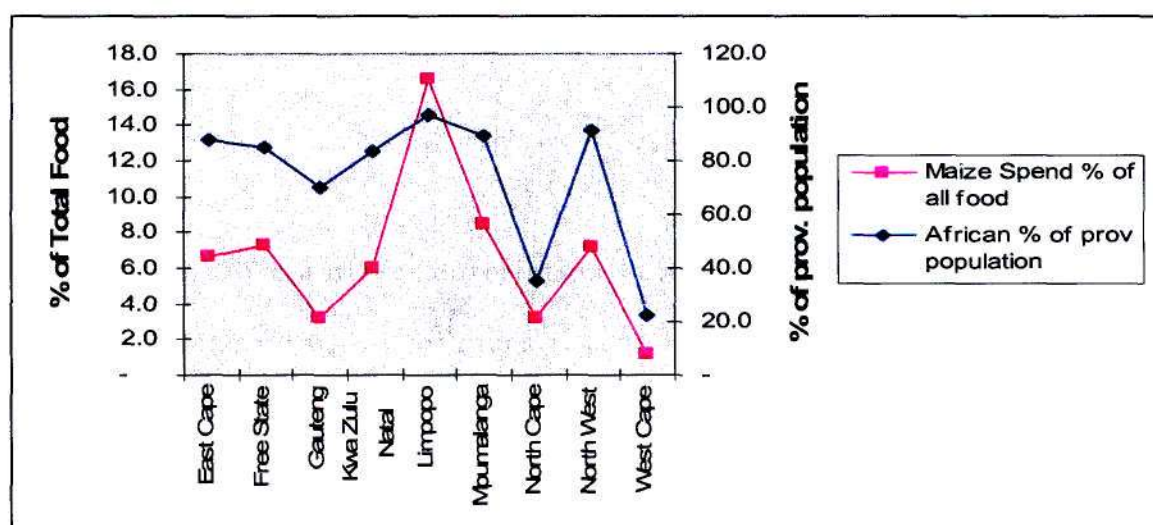


Figure 2.8: - Provincial black African population maize meal expenditure – 2003 (Source: - BMR – 2003)

The importance of the black African population in maize meal consumption is demonstrated in Table 2.15.

	Africans	Asians	Coloureds	Whites	Total
East Cape	95.5	0.1	2.1	2.3	100.0
Free State	96.2	-	0.6	3.2	100.0
Gauteng	88.7	0.8	1.7	8.8	100.0
Kwa Zulu Natal	94.4	2.3	0.6	2.7	100.0
Limpopo	99.5	-	0.1	0.4	100.0
Mpumulanga	97.8	0.1	0.2	1.9	100.0
North Cape	72.0	0.1	19.7	8.2	100.0
North West	97.5	0.1	0.3	2.1	100.0
Western Cape	26.8	1.2	51.7	20.3	100.0
	93.1	0.7	2.4	3.8	100.0

Table 2.15: - Estimated market share of household spend on maize meal by population group and region, 2003 - R'000's (Source: - BMR - 2003)

Table 2.16 considers expenditure on a basket of food items regarded as fast or convenience foods. An analysis of the food basket used in the BMR study would reveal that 11 items can be categorized as fast or convenience foods, including meals eaten away from home: -

	Gauteng		Gauteng % of total
White Bread	1,780,053	5,204,337	34.2
Brown bread	2,325,854	6,735,931	34.5
Other bread, rolls	171,113	383,120	44.7
Other baked products	337,302	845,006	39.9
Pre-cooked frozen meat	60,299	107,633	56.0
Prepared salads	72,325	134,438	53.8
Oven ready dishes/meals (meat, fish poultry)	92,313	241,349	38.2
Oven ready dishes/meals (vegetables)	21,607	55,406	39.0
Meals and snacks	1,533,041	3,591,685	42.7
Take away meals and snacks	1,396,930	2,955,851	47.3
Meals and snacks in cafeterias	835,192	1,563,840	53.4
Total Convenience Food Spend	8,626,029	21,818,596	39.5
Total Food Spend	45,475,247	133,623,423	34.0
% of total food expenditure made up of convenience food	19.0	16.3	-

Table 2.16: - Gauteng expenditure compared to national spend on convenience and fast food - 2003 - R'000's (Source: - BMR - 2003)

Table 2.16 reveals that Gauteng residents, totaling 18% of the nation's population, spend a disproportionately high share of the national food expenditure on higher value, fast and convenience food types.

Other authors offer opinions on the previous points as well as fresh views on the aspect of urbanisation and fast foods, like Massari (2003).

“Largely due to media, western lifestyle has increasingly influenced developing countries in the last decade. Because of increased international trade, western companies are attempting to export to the emerging new markets and the advertising and other marketing tools which are employed tend to export not only food products but also negative aspects of the lifestyle.”

Clearly urbanisation with all its consequences is a global one, caused by similar circumstances and with similar results. Southern Africa is where urbanisation will be at its most intense.

2.5 Maize milling and maize consumption

2.5.1 Maize Milling

Maize milling is the primary downstream value added process that maize production is channeled through. Maize milling statistics are an important indicator of consumption/demand as mills tend to mill to demand and not to stock.

The industry possesses underutilized capacity which is increasing by the year as total demand remains static and as millers incorporate newer technology to improve yields, achieve market quality demands and protect profit margins.

Table 2.17 shows a trend of milling for human consumption that is in a prolonged decline.

Whilst these statistics reflect national milling output, Gauteng's maize demand will roughly reflect the national trend. A 23.4% decline in demand over 4 years is revealed. A portion of milling production is most likely not reported through the National Chamber of Milling (NCM) (approximately 30% according to the NCM's own estimate), the trend, however, is nevertheless evident.

	2004/05	2003/04	2002/03	2001/02	2000/01	1999/2000	1998/99	1997/98	1996/97
May	212 095	242 553	284 386	293 247	298 946	290 757	276 501	285 989	281 150
June	207 569	223 613	244 462	265 772	279 145	248 864	262 478	260 429	248 850
July	189 749	224 624	252 755	257 745	266 443	271 837	275 477	279 873	259 668
August		206 004	242 616	285 889	287 041	259 147	255 495	265 551	261 285
September		222 644	248 765	272 744	256 143	249 410	244 279	238 266	240 994
October		245 778	260 408	279 733	301 311	288 858	276 715	317 000	318 876
November		206 115	250 548	288 083	282 372	284 894	270 654	270 436	287 247
December		211 618	229 411	253 610	250 944	255 603	245 806	255 480	266 592
January		191 517	215 584	296 631	284 617	232 005	239 168	284 063	276 264
February		221 644	204 128	268 412	264 689	254 602	240 378	284 792	248 693
March		186 444	249 727	268 001	306 941	278 388	258 503	301 062	251 166
April		177 084	237 588	274 659	262 182	240 511	252 652	278 112	254 140
TOTAL	609 413	2 559 638	2 920 378	3 304 527	3 340 773	3 154 876	3 098 106	3 313 015	3 194 926

Table 2.17: - Monthly maize milling statistics (tons) (Source: - NCM - 2004)

Table 2.17 requires explanation in that in addition to the declining trend, the data here represents total consumption. When the population growth, particularly amongst the black African population is considered, a more amplified downward trend is found, as is the case in Figure 2.10.

In the context of human consumption it is important to differentiate between tons milled and actual output. This would imply that consumption should be measured against milling output which simply put is: -

$$\text{Output} = \text{input} - \text{waste}$$

This is otherwise known as extraction.

2.5.1.1 Milling extraction

Milling extraction, or the mill divide, is the result of the process that converts maize into an edible product, removing the husk, bran and other inedible components of the seed. The maize meal that remains can be further divided into different qualities of meal, usually based on the maize oil content of the meal. Typically maize meal with lesser proportions of maize oil is regarded as superior to maize meal with higher proportions of maize oil. Paradoxically the nutritional value of the maize meal is higher in meal with a higher oil content.

Traditionally approximately 25% of the milling process's input was lost as waste. The divide (or extraction) associated with maize milling was typically: -

- Waste (or offal) 25%
- "Super" (oil <1%) 40%
- "Special" (oil >1%) 35%

"Super", as the product with a higher perceived quality, would attract a greater margin in the market, usually in the region of 10% more than "Special".

As demand and prices declined, the milling industry focused on extracting a greater portion of "Super" out of the process. This trend is prompted by consumers who are increasing their demand for "Super" supported in part by its increasing affordability. Technology now allows a mill divide that, although yielding a greater waste factor, effectively eliminates "Special".

- Waste (offal) 30%
- Super (oil <1%) 70%

Available capacity for "Super" being the product of choice in the market, now far exceeds demand, primarily as a result of 2 factors: -

- Declining demand in general (the focus of this study),

- More capacity for “Super” being introduced into the system, due to the incorporation of new technology, necessitated by the need to protect margins and provide the demanded level of quality.

2.5.2 Maize Consumption

Maize milling figures reflect domestic consumption which is in decline nationally and has been for a number of years.

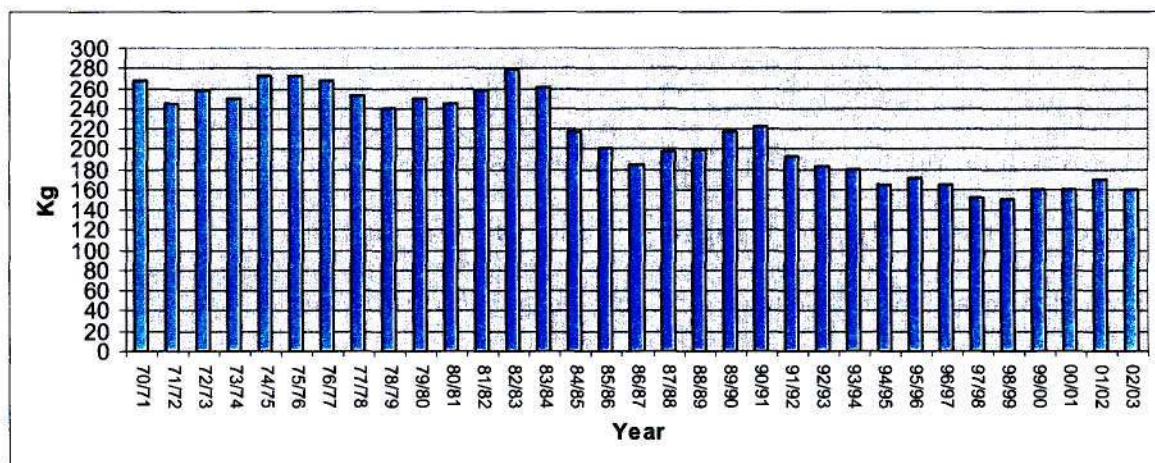


Figure 2.9: - Per capita consumption of maize in South Africa (Source: - Bhata – 2004)

Figure 2.9 reveals a 38% decline in the per capita consumption of maize over the past 30 years. Once again, these are national statistics and the trend for Gauteng can be safely assumed to be even more pronounced due to the greater degree of urbanisation in that province.

Further detailed analysis is presented in Chapter 4 which presents milling statistics and compares them to extraction rates as well as population growth rates.

Poleman (1983), in a study of eating habits and income distribution in Peru, clearly defined a shift from grain as a staple to white bread and potatoes. The result of this study is depicted in Figure 2.10 and, although conducted more than 20 years ago and in another continent, is nonetheless relevant to the nation and Gauteng, today.

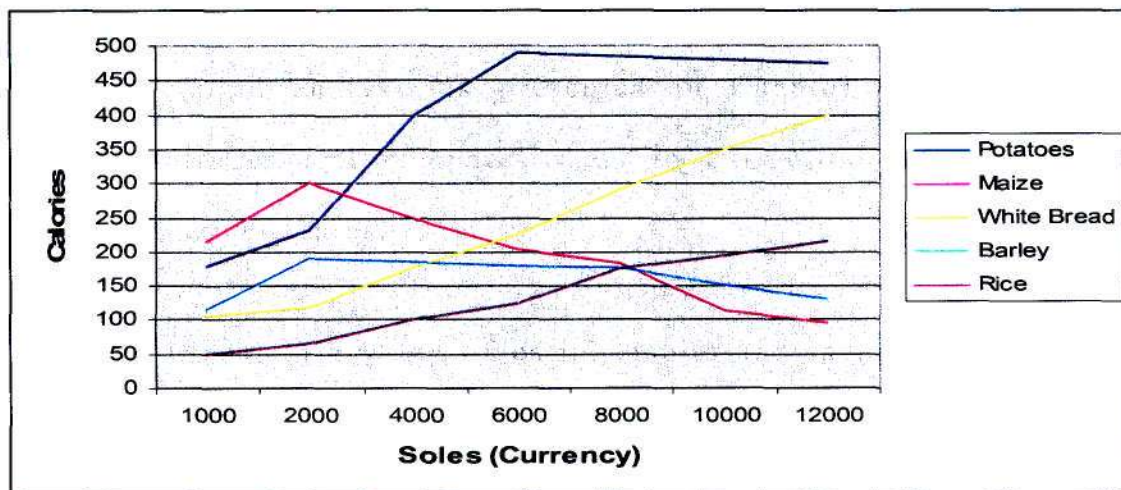


Figure 2.10: - Consumption of starchy staples by income group - Peru (Source: - Poleman T - 1983)

This is a confirmation of Bennett's law, explained in the introduction of Chapter 2.

Other researchers such as Bhata (2004) and Taljaard *et al* (2003), briefly mention other reasons to be considered for the decline of staple food

consumption, such as the Westernization of the population and higher levels of income.

2.5.2.1 Consumption and pricing

Figure 2.11 represents one of the most tumultuous periods of raw maize and milled maize pricing in recent times. So much so that it prompted Government investigation into the causes for the sudden escalation and the consequences for the many who rely on it for daily sustenance.

In the short space of 6 months the price of maize had doubled which had an immediate effect on the retail price of “super” maize meal.

The retail price hit a peak of R3 500/ton in December 2002. Figure 2.12 reveals a temporary dip in demand which bottomed out in February 2003.

The longer term demand pattern over the period, however, remains static. This is particularly interesting when the period July 2003 to November 2003 is considered. Demand during this period remains static.

More detailed discussion around this phenomenon will appear in Chapter 4 together with a discussion questioning the price elasticity of demand theorem in the case of maize meal pricing.

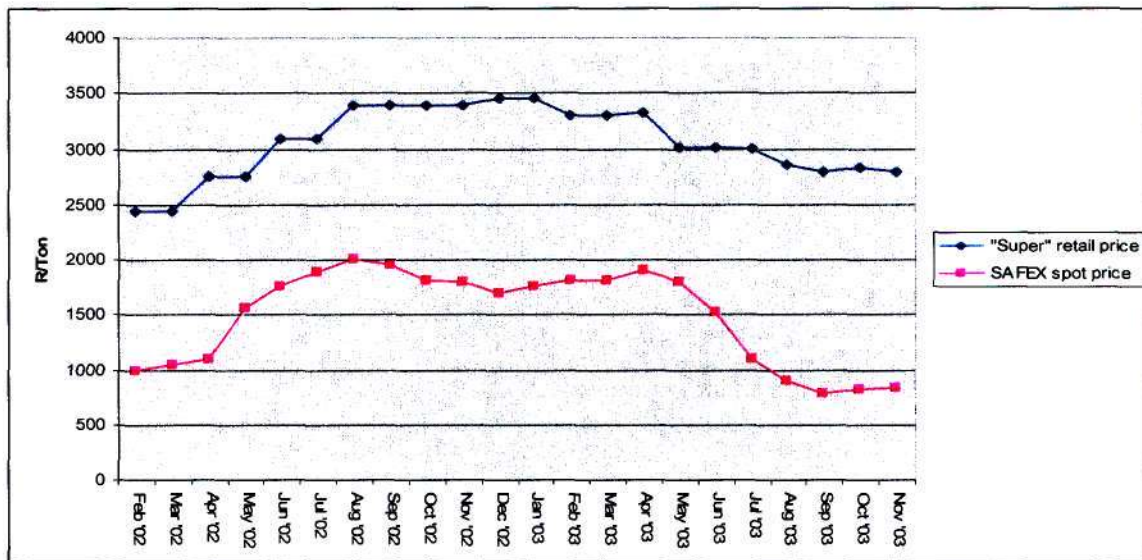


Figure 2.11: - White maize spot price and "Super" maize meal retail price (Source NDA - 2003)

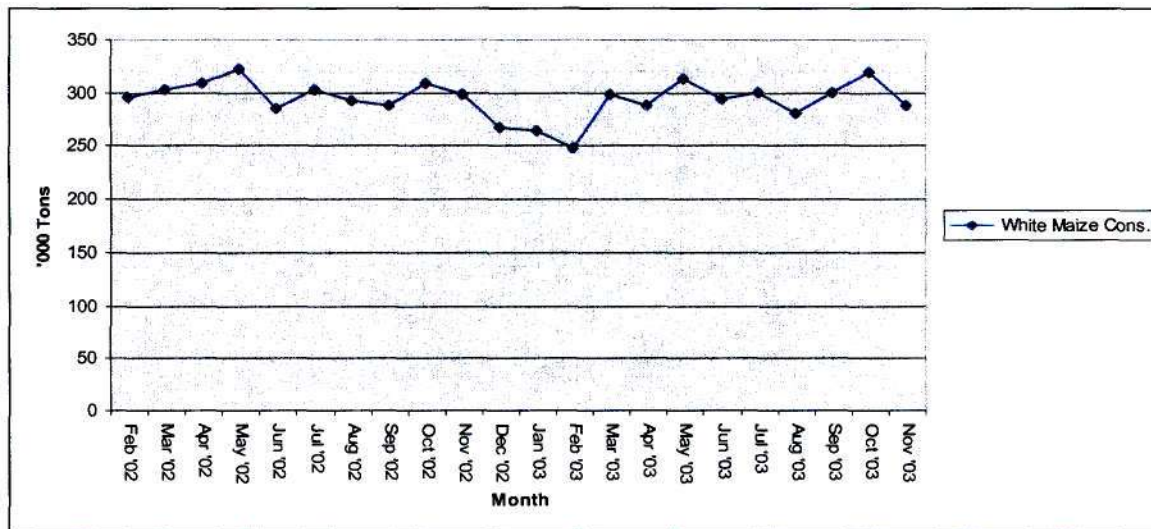


Figure 2.12: - "Super" maize meal total consumption (Source: - SAGIS)

A comparison between Figures 2.11 and 2.12 reveals that finished product prices are extremely sensitive to raw material price trends but these do not affect consumption trends.

2.5.3 The demand substitution effect

It would be logical to assume a similar impact on maize production (agriculture) as there has been on maize milling with the declining trend in per capita consumption.

This assumption would be erroneous as the decline in per capita consumption is off-set by 2 dominant factors: -

- A steadily increasing population, particularly the black African population group as revealed in Table 2.3. This off-sets the declining per capita rate.
- Consumers are replacing maize for higher value foods such as read meat and chicken. A substantial portion of maize production previously channeled into maize meal for human consumption is being diverted into animal feed to supply the corresponding increase in demand for livestock products.

Massari (2003) concurs: -

“The increased use of grain crops such as maize and soy in feeding livestock for human consumption is a problem. One of the most important phenomena of the last two decades has been the shift of entire populations from grain based diets to consumption of meat and dairy produce.”

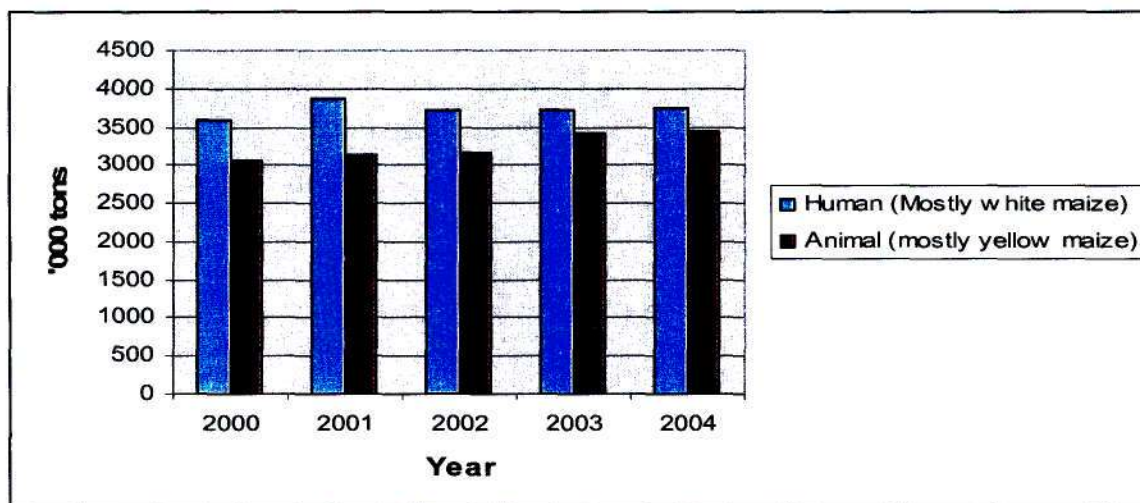


Figure 2.13: - Maize Consumption – human vs animal (Source: - SAGIS)

These factors would, to a degree, preserve current maize milling trends which is showing a slight increase in output. An understanding of this factor is crucial to this study.

While maize production (agriculture) continues unabated, maize milling and consumption shows static if not marginal increases in output, but it is the declining PER CAPITA consumption of maize as depicted in Table 4.5 that is of concern to the industry.

2.6 Conclusion

The impact of urbanisation on the consumption of cereals, and in particular staple cereals such as maize is irrefutable.

The extent to which specific aspects of the global phenomenon of urbanisation affects staple food consumption has been investigated with

a view to understand specific aspects of the phenomenon and its affect on staple food consumption.

The study then conducted an in-depth examination of existing literature detailing demographics in Gauteng in an attempt to draw parallels between circumstances prevailing in the province and to determine whether there is sufficient evidence to concluded with a reasonable degree of confidence that prevailing circumstances in Gauteng will mirror eating trends globally.

The literature review concluded that certain published sets of data need to be analysed further and presented in alternate formats to add credence to the picture emerging from the literature review.

This necessitates a research plan to be formulated to facilitate a systematic and structured research process

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Introduction

In determining the research requirements necessary to achieve the objectives set out: to determine whether circumstances revolving around urbanisation in Gauteng will result in a decline in maize consumption, it was evident that the subject matter of urbanization and its effect on dietary habits is one where trends, research and history are more than adequately documented in existing literature. It is evident that the subject has attracted considerable attention from Government agencies and NGO's around the world to the extent that the main bodies of research drawn from and represented in this study were conducted by various agencies of the United Nations.

There was, however, very little research to be found on the effect of urbanization specific to the eating habits of the population of Gauteng. There is, however, a substantial work conducted by the BMR (2002) into the eating habits of the country's population, by region and by population group. In addition the censuses of 1996 and 2001 provided not only adequate demographic data but comparisons between the two censuses proved invaluable in arriving at conclusions.

It is therefore not a coincidence that this study draws heavily on the publications of STATS SA and in particular the comparison between the primary tables of Gauteng for the censuses of 1996 and 2001.

In achieving the objectives of the study, the following plan of action was put into effect: -

3.2 Step 1: - Choosing and developing a subject to study

This study originates from within the maize milling industry and as such is exposed to the cycles of the industry. The current declining trend in consumption is of great concern to the industry and is not only confined to urban areas.

Current milling company strategy is to focus on urban areas which are experiencing high rates of population growth. This is to preserve margins by rationalizing, amongst others, the logistics of distribution.

This strategy, whilst unavoidable, is not considering the broader issues, consequences of urbanisation and future prospects for the industry.

This study is made available to the industry in the hope that it will be of value to better understand the demographic changes occurring in the urban areas of the country and to begin the process to innovate “out of the problem”.

The industry remains a critical link in the nation’s food chain and still provides the necessary nutrition and sustenance for a great portion of the country’s population. It is therefore of national interest that the industry remain competitive and viable in the longer term.

3.3 Step 2: - Determine research strategy

In the context of this study, research was “applied” in that an attempt was made to understand the phenomenon of urbanisation and to determine whether the demographics that prevail in Gauteng could be reliably assumed to result in a similar decline in the demand for a staple food as is the case elsewhere in the world.

It was decided at the outset not to do surveys to pursue primary research data, mainly for the following reasons: -

- It would be too onerous a task within the limited resources of the study to research a representative sample of the population of Gauteng. It would in any event have to be repeated after a period of time in order for trends to be revealed.
- The next alternative would be to research retail and wholesale sales trends in Gauteng. After discussions with various role players in the retail and wholesale industry, it became apparent that a significant number of rural residents conduct their purchases in Gauteng shops. It was difficult to determine the extent of this phenomenon but anecdotal evidence reveals that it is significant.
- It became apparent that between STATS SA, the BMR, the HSRC and Ebony Consulting, sufficient data existed specific to Gauteng demographics that could be combined and represented in different

formats to allow readers to attain a level of confidence in the conclusions reached in this study.

- A variety of techniques were employed, utilizing both qualitative and quantitative methods: -

Qualitative: - Descriptions of the urbanization phenomenon as depicted by agencies of the United Nations were collected and analyzed to determine relevance in the context of altering eating habits. This occurred in the “inductive” stage of the literature search.

Quantitative: - STATS SA data, backed by HSRC data and BMR data were analyzed and compared. Comparisons between key indicators have been made by sorting the data to determine, *et al*: -

- Per capita income growth
- Per capita maize consumption
- Eating habits of income earners
- Household size

This was a result of the “deductive” stage of the literature search.

3.4 Step 3: - Literature search strategy

The research approach adopted to review existing literature was the “inductive” approach in that existing literature was explored in an attempt to better understand the phenomenon of urbanization and its subsequent impact on eating habits. This was a theory building process and was approached from a global and generic point of view and to achieve the following objectives (Saunders M, Lewis P, Thornhill A, 2003): -

- Help refine further research questions and objectives
- Highlight research possibilities that have been previously overlooked
- Discover explicit recommendations for further research
- To help avoid work that has already been done
- To sample current opinion in the media to gain insight into aspects of the study that are considered newsworthy
- To discover and provide insight into research approaches, strategies and techniques that may be appropriate to the study

The findings here are depicted in Chapter 2.2 of the study.

Having now obtained a better understanding of the process of urbanization and its various consequences, the literature search could then take on a more specific objective in that data relevant to Gauteng population demographics and eating habits was sought.

This approach was a more “deductive” analysis where the study took the learning from the broad literature review, and then researched prevailing demographics in Gauteng in an attempt determine whether they could be assumed to mirror the global phenomenon and with the same consequences.

This process is depicted in Chapter 2.3, 2.4 and 2.5 while the cross referencing of data is reflected in Chapter 4.

The literature review process postulated by Saunders, Lewis, Thornhill and Jenkins was considered most helpful. This is graphically depicted in Figure 3.1

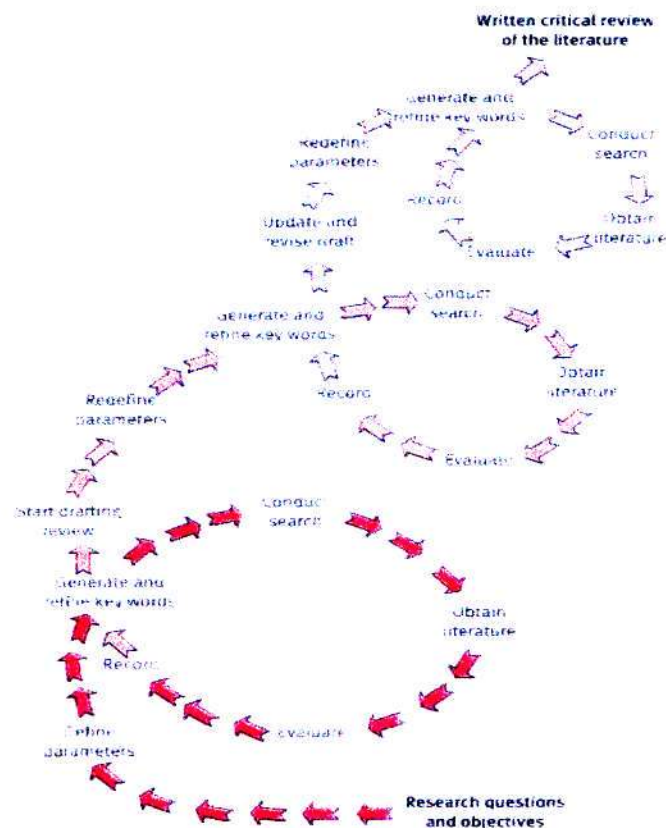


Figure 3.1: - The literature review process (Source: - Saunders M, Lewis P, Thornhill A and Jenkins M – 2003)

After determining the research approach in the literature review, the research strategy could now be formulated.

3.5 Step 4: - The research strategy

A combination of research strategies were used, in particular, Case Study, which involved the investigation into a phenomenon using multiple sources of evidence (STATS SA, HSRC, BMR, Ebony Consulting) to understand the phenomenon of urbanizations effect on eating habits.

3.6 Conclusion

The research approaches and research strategies were aimed specifically at the research problem: understanding to what extent urbanization affected the eating habits of a population.

Firstly the process of urbanization was researched from an inductive point of view where data and information gathering was qualitative in nature. Data collected here can be described as secondary and consisted of an extensive literature review.

Secondly the demographic trends prevailing in Gauteng were analyzed from a deductive point of view where data was quantitative and already partially existed in the publications of STATS SA and the BMR report. These data sets, however, were not originally gathered with the subject in mind and required a certain degree of “re-representing” but this time in the context of various consequences of urbanization.

This process is described in chapter 4 and can be regarded as primary research.

CHAPTER 4: - RESULTS OF NEW DATA

4.1 Introduction

In order to arrive at sets of data from which conclusions could be arrived at with regard to identified aspects of urbanization, specific and relevant aspects had to first be identified for analysis.

Existing data was used as a basis for the relevant calculations but was presented in different formats to facilitate calculations specific to the aspects being considered.

4.2 Per Capita Income growth and population spending power

This aspect was chosen specifically to test anecdotal evidence of one of the main reasons for declining consumption of maize was a greater degree of income distribution due to a higher rate of employment. This then would result in a higher degree of disposable income to facilitate the buying of more expensive convenience foods.

The purpose of this calculation is to determine whether the per capita income for the black African population group had increased with at least the inflation rate over the period under review.

Also considered is the purchasing power of the respective population groups in Gauteng.

STATS SA provided the data regarding the number of income earners in each of the income brackets as well as the number of individuals in the population group that were employed. Total income for age brackets and population groups was calculated using the following formulae: -

Where: - LIB = Lower limit of the income bracket (Table 2.9)
 UIB = Upper limit of the income bracket (Table 2.9)
 NB = Population of the income bracket (Table 2.9)
 IG = Total income for the population group (Table 2.9)
 NG = Total population of the group (Table 2.9)

1) Total monthly income for the various income brackets: -

$$\left(\left(\frac{\text{LIB}^1 + \text{UIB}^1}{2} \right) \times \text{NB}^1 \right)$$

2) Total income for the population group: -

$$\sum \left(\left(\frac{\text{LIB}^1 + \text{UIB}^1}{2} \right) \times \text{NB}^1 \right) + \left(\left(\frac{\text{LIB}^2 + \text{UIB}^2}{2} \right) \times \text{NB}^2 \right) + \left(\left(\frac{\text{LIB}^n + \text{UIB}^n}{2} \right) \times \text{NB}^n \right)$$

3) Average income per individual within the population group: -

$$\frac{\text{IG}}{\text{NG}}$$

Black African - 1996						
Salary bracket	Male		Female		Total	
	# people	Total Salary	# people	Total Salary	# people	Total Salary
None	7,239	-	6,188	-	13,427	-
R1 – R200	37,993	3,818,297	43,249	4,346,525	81,242	8,164,821
R201 - R500	98,092	34,381,246	140,018	49,076,309	238,110	83,457,555
R501 - R1000	242,515	182,007,508	165,328	124,078,664	407,843	306,086,172
R1001 - R1500	311,276	389,250,638	95,678	119,645,339	406,954	508,895,977
R1501 - R2500	191,833	383,761,917	59,172	118,373,586	251,005	502,135,503
R2501 - R3500	69,536	208,642,768	30,260	90,795,130	99,796	299,437,898
R3501 - R4500	31,160	124,655,580	16,907	67,636,454	48,067	192,292,034
R4501 - R6000	19,012	99,822,506	10,112	53,093,056	29,124	152,915,562
R6001 - R8000	8,624	60,372,312	3,568	24,977,784	12,192	85,350,096
R8001 - R11000	5,243	49,811,122	1,852	17,594,926	7,095	67,406,048
R11001 - R16000	2,838	38,314,419	876	11,826,438	3,714	50,140,857
R16001 - R30000	1,511	34,753,756	436	10,028,218	1,947	44,781,974
R30001 >	609	18,270,609	186	5,580,186	795	23,850,795
Unspecified	29,916	149,580,000	17,441	87,205,000	47,357	236,785,000
	1,057,397	1,777,442,676	591,271	784,257,614	1,648,668	2,561,700,290
Employed	1,057,397	1,681	591,271	1,326	1,648,668	1,554
Unemployed	398,782		528,584		927,366	
Not economically active	399,025		551,588		950,613	
Total	1,855,204	958	1,671,443	469	3,526,647	726
Employed % of group	57.00		35.37		46.75	
Unemployed % of group	21.50		31.62		26.30	

Table 4.1: - Monthly Income for the age group 15 to 65 – black African – Gauteng: 1996 (Source: - STATS SA – 2001 & own calculations)

Table 4.1 depicts the employed profile of the age 15 to 65 black African sector of the Gauteng population as at the time of the 1996 census. The black African population was chosen due to the fact that at this time it accounted for 70% of the total Gauteng population as well as the fact that this population group accounts for 88.7% (Table 2.14) of maize meal consumption in the province.

Similarly Table 4.2 depicts the black African income earners and employed at the time of the 2001 census.

Black African - 2001						
Income bracket	Male		Female		Total	
	# people	Total Income	# people	Total Income	# people	Total Income
None	22,025	-	16,322	-	38,347	-
R1 – R400	80,897	16,219,849	89,265	17,897,633	170,162	34,117,481
R401 - R800	171,032	102,704,716	182,435	109,552,218	353,467	212,256,934
R801 - R1600	408,785	490,746,393	217,281	260,845,841	626,066	751,592,233
R1601- R3200	304,521	731,002,661	117,253	281,465,827	421,774	1,012,468,487
R3201 - R6400	112,727	541,145,964	65,392	313,914,296	178,119	855,060,260
R6401 - R12800	38,175	366,499,088	23,145	222,203,573	61,320	588,702,660
R12801 - R25600	13,767	264,333,284	5,392	103,529,096	19,159	367,862,380
R25601 - R51200	4,636	178,024,718	1,681	64,551,241	6,317	242,575,959
R51201 - R102400	1,378	105,831,089	674	51,763,537	2,052	157,594,626
R102401 - R204800	726	111,513,963	375	57,600,188	1,101	169,114,151
R204801 >	572	117,146,172	282	57,753,882	854	174,900,054
	1,159,241	3,025,167,894	719,497	1,541,077,329	1,878,738	4,566,245,223
Employed	1,159,241	2,610	719,496	2,142	1,878,737	2,430
Unemployed	722,080		810,943		1,533,023	
Not economically active	583,357		762,938		1,346,294	
Total	2,464,678	1,227	2,293,377	672	4,758,054	960
Employed % of group	47.03		31.37		39.49	
Unemployed % of group	29.30		35.36		32.22	

Table 4.2: - Monthly Income for the age group 15 to 65 – Black African – Gauteng: 2001 (Source: - STATS SA – 2001 & own calculations)

Table 4.1 must be compared to Table 4.2.

To determine whether the population groups income increased with, at least the inflation rate over the period, the per capita income for the group displayed in Table 4.1 for 1996 is escalated by the consumer price index (CPI) rates of the years 1997, 1998, 1999, 2000 and 2001, as depicted in Table 4.3

Black African						
Income adjusted for CPI	Income Earners			Total population group		
	Male	Female	Total	Male	Female	Total
1997 – 8.6%	1,826	1,440	1,687	1,040	510	789
1998 – 6.9%	1,951	1,540	1,804	1,112	545	843
1999 – 5.2%	2,053	1,620	1,898	1,170	573	887
2000 – 5.3%	2,162	1,706	1,998	1,232	603	934
2001 – 5.7%	2,285	1,803	2,112	1,302	638	987

Table 4.3: - 1996 Black African Individual income increased by annual CPI
(Source: - STATS SA & own calculations)

It is now possible to compare a 2001 salary rate benchmark, indicated by the row “2001 – 5.7%” in Table 4.3, to actual per capita income prevailing in 2001. The comparison is viewed from 2 perspectives: -

- To determine whether actual wage and salary increases had kept in line with inflation. This is depicted by a comparison between income earners of 1996 and income earners of 2001.
- To determine whether the population group had improved their circumstances by virtue of population group per capita income between 1996 and 2001. This is depicted by a comparison between total population group per capita earnings for 1996 and 2001.

These issues are summarized and depicted in Table 4.4 following: -

	1996 base adjusted for CPI	2001 actual	Difference	Difference %
Male income earners (per capita)	2,285	2,610	325	12.40%
Female income earners (per capita)	1,803	2,142	339	15.80%
Total group income earners (per capita)	2,112	2,430	318	13.10%
Total male population group (per capita)	1,302	1,227	(75)	-6%
Total female population group (per capita)	638	672	34	5.10%
Total population group (per capita)	987	960	(28)	-2.90%

Table 4.4: - Comparison between 1996 and 2001 – wage increases for income earners and total population group – Gauteng (Source: - STATS SA & own calculations)

Table 4.4 highlights two main issues: -

- Wage and salary increases had exceeded inflation by 13 percent
- Per capita income for the population group had fallen behind inflation by nearly 3%, except for women who had exceeded inflation by 5 percent. This is due to the changes in employment demographics described in Chapter 2.3.5. Unemployment for the population group is increasing as a whole but participation of women in the workforce is increasing.

Of interest is a comparison in fortunes between the population groups in Gauteng. Table 4.5 following refers.

Individual monthly income amongst the age group 15 - 65 by population group - Gauteng - 1996						
	Black African	Coloured	Indian/Asian	White	Unspecified	Total
Income - Total for the group	2,561,700,290	233,912,595	227,246,838	4,159,038,922	46,148,925	7,228,047,570
Employed	1,648,668	87,598	58,120	754,695	15,163	2,564,244
Unemployed	927,366	30,438	6,539	38,243	5,179	1,007,765
Not Eco Active	950,613	60,648	42,760	361,242	11,830	1,427,093
Population - Total for the group	3,526,647	178,684	107,419	1,154,180	32,172	4,999,102
Avg Income - Employed	1,554	2,670	3,910	5,511	3,044	2,819
Avg Income - Total group	726	1,309	2,116	3,603	1,434	1,446
Individual monthly income amongst the age group 15 - 65 by population group - Gauteng - 2001						
	Black African	Coloured	Indian/Asian	White	Unspecified	Total
Income - Total for the group	4,566,245,223	525,377,618	765,568,705	10,262,001,309		16,119,192,855
Employed	1,878,737	104,789	89,611	821,640		2,894,777
Unemployed	1,533,023	55,135	13,189	58,265		1,659,612
Not Eco Active	1,346,294	73,476	59,239	398,655		1,877,664
Population - Total for the group	4,758,054	233,400	162,039	1,278,560		6,432,053
Avg Income - Employed	2,430	5,014	8,543	12,490		5,568
Avg Income - Total group	960	2,251	4,725	8,026		2,506
Growth % - 1996 to 2001						
	Black African	Coloured	Indian/Asian	White	Unspecified	Total
Income - Total for the group	78	125	237	147		123
Employed	14	20	54	9		13
Unemployed	65	81	102	52		65
Not Eco Active	42	21	39	10		32
Population - Total for the group	35	31	51	11		29
Avg Income - Employed	56	88	118	127		98
Avg Income - Total group	32	72	123	123		73

Table 4.5: - Monthly Income for the age group 15 – 65 – by population group – Gauteng: 1996 and 2001 censuses compared (Source: - STATS SA – 2001 & own calculations)

The average income for the black African “employed” category grew by 56% over the period whilst during the same period the white employed income grew by 127%.

The increase in unemployment of the black African population group resulted in the total per capita income for the whole group to have escalated by only 32% while during the same period, total per capita income for the white group increased by over 123%.

This monthly purchasing power of the white population group has a significant impact on retail advertising and product availability in the province. It is graphically depicted in Figure's 4.1 and 4.2 being a comparison between the censuses of 1996 and 2001.

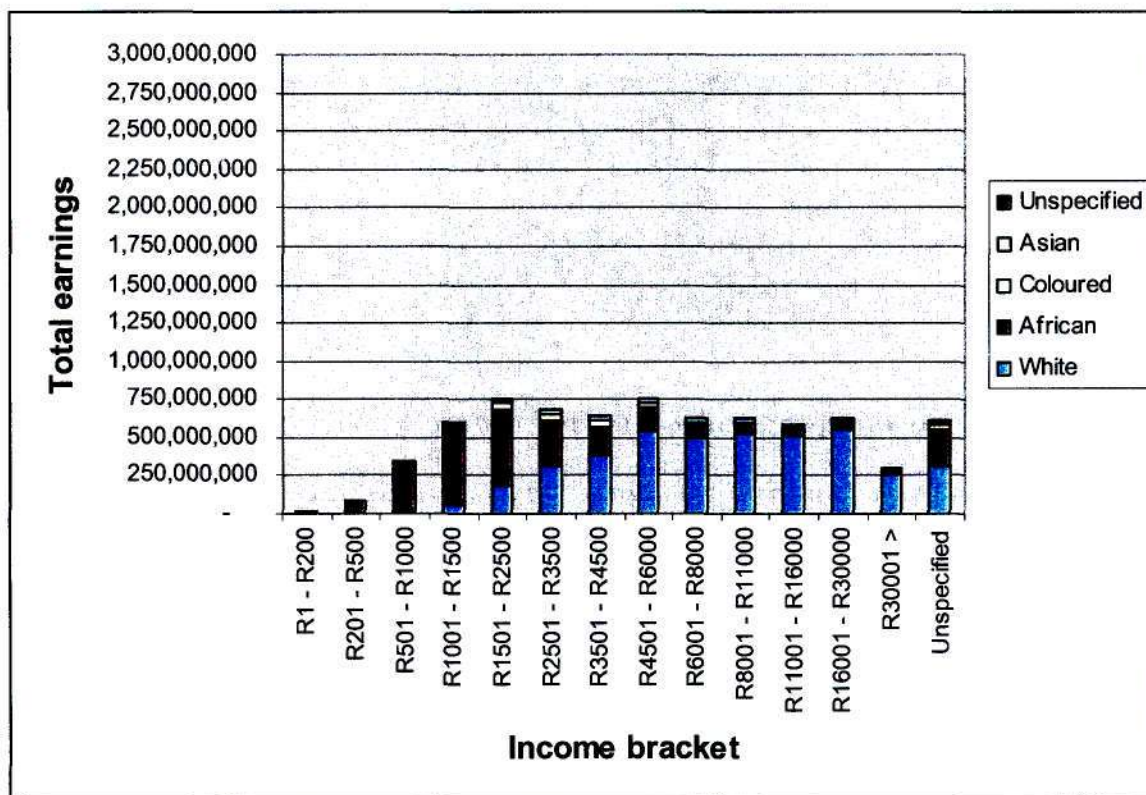


Figure 4.1: - Monthly earnings per population group – Gauteng 1996 (Source: - STATS SA 2001 and own calculations)

Note: - The Y Axis for Figures 4.1 and 4.2 has been deliberately kept the same for ease of comparison between the two Figures.

In 1996 total monthly earnings of the Gauteng population was R7 228 million, broken up as: -

Whites	R4 159 million
Black African	R2 562 million
Coloured	R 234 million
Asian	R 227 million
Unspecified	R 46 million

The white population group therefore enjoyed a 58% share in the purchasing power of the province.

A challenge occurred depicting the earnings per population group and per income bracket from the 1996 census data: -

- A total of 121 348 income earners (economically active) across all population groups did not indicate the income bracket in which they fell. To insure that a provision was made in the total income for this omission, an arbitrary income of R5 000 per month per individual was factored in. These people are denoted as “Unspecified” in the income bracket column of Table 4.1 and are included the “Income - Total for the group” category in Table 4.4
- A total of 15 163 income earners (economically active) did not specify their population group. These earnings are calculated into the totals but in Figure 4.1 are accommodated as “unspecified” in the key of the graph.

These issues were not repeated in the census of 2001.

Figure 4.2 depicts the circumstances prevailing during the time of the 2001 census.

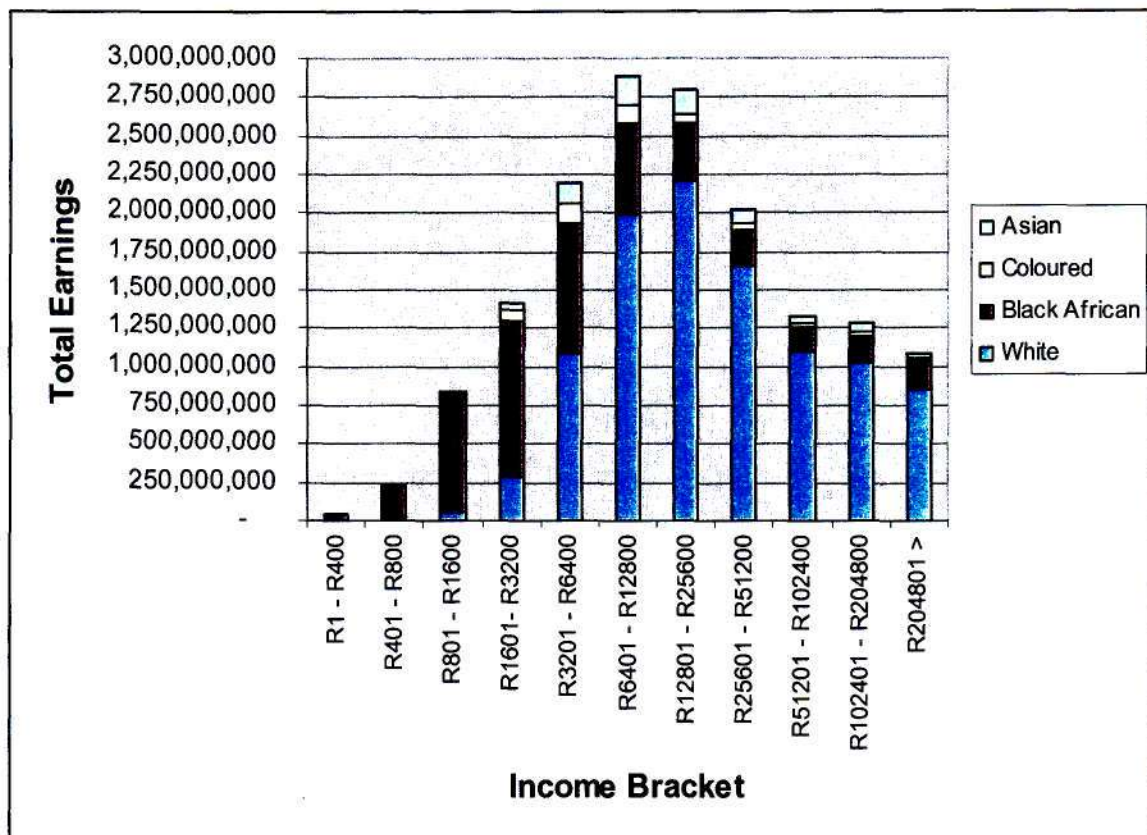


Figure 4.2: - Monthly earnings per population group – Gauteng 2001 (Source: - STATS SA - 2001 and own calculations)

The earnings movement between the two censuses is significant: -

Total monthly earnings for all population groups for Gauteng at the time of the 2001 census are R16 119 million, or a 123% increase over the 1996 total earnings. However when the fortunes of the individual population groups are considered: -

Whites R10 262 million (147% increase)
 Black African R 4 566 million (78% increase)

Total consumption figures specific to Gauteng could not be obtained with a satisfactory degree of accuracy within the confines of this study. Therefore national consumption figures and national population growth rate figures are used. The objective of the study is then to determine the likelihood of whether the national trend would prevail in Gauteng.

These statistics reflect national consumption trends.

Season	Year	Human Cons. Total Tons	Extraction	Total Pop.	Total Black Pop.	Per Capita Consumption Kg	
						Total Pop.	Black Pop.
00/01	2001	3,858	2,847	43,686	33,879	65.17	84.03
01/02	2002	3,643	2,882	44,564	34,668	64.67	83.13
02/03	2003	3,687	2,571	45,454	35,474	56.56	72.48
03/04	2004	3,766	2,806	46,586	36,934	60.23	75.97
04/05	2005	3,824	2,583	46,888	37,205	55.09	69.43

Table 4.6: - Total human consumption and per capita consumption - white maize (Source: - SAGIS, STATS SA and own calculations)

In brief, the black African population's per capita consumption of maize, representing 94% of the nations maize consumers, has declined by approximately 17% over 5 years.

These statistics do not correspond with Bhata's reported per capita consumption figures represented in Figure 1.3, but nevertheless concur with the declining trend.

4.4 Eating habits of income earners verses the unemployed

This is primarily an extract and re-arrangement of data presented by Ebony Consulting (2002) depicted in Table 2.9 in Chapter 2.3.5. The table presented below groups the respective food types into categories to

enable a comparison to be drawn between income earners consumption of grain based foods and convenience foods and that of non-income earners. The table demonstrates a clear migration from grain based foods to convenience foods and meat, from the unemployed to the employed.

These are national statistics as no data of this nature was available on a provincial basis.

Food Item	Wage Earners	Self Employed	Unemployed	Farm Workers	Pension Earners
<u>Grain</u>					
Maize (kg)	19	27	30	26	28
Samp (kg)	4	8	8	5	8
Sorgum (kg)	6	8	13	3	6
Total	29	43	51	34	42
<u>Convenience</u>					
White Bread (loaf)	29	25	21	15	22
Brown Bread (loaf)	22	17	18	12	15
Total	51	42	39	27	37
<u>Alt. Carbohydrates</u>					
Rice (kg)	5	7	6	5	7
White Flour (kg)	7	10	10	7	11
Potatoes (kg)	8	7	7	9	9
Total	20	24	23	21	27
<u>Meat</u>					
Chicken (kg)	2	2	2	2	2
Beef (kg)	1	1	1	-	1
Mutton (kg)	2	1	0	1	1
Total	5	4	3	3	4

Table 4.7: - Average monthly consumption of selected food items per household – sorted by food group (Source: - Ebony Consulting – 2002 and own calculations)

The table is self explanatory but what is of interest is that even in the “Wage Earner” category, consumption of grain overwhelms that of meat. Bread, however, dominates the diet indicating a need for convenience. In the context of this study, as “Wage earners” are differentiated from

“Farm Workers” it can be assumed with a degree of confidence that the wage earners are mostly urban residents.

4.5 Members per household

A significant pointer to consumption patterns of maize is household size. Firstly households with fewer members decrease the likelihood of any member of that household able to assume the role of meal preparer, particularly in light of the time consuming nature of meals consisting of maize.

Secondly a declining average of household size in the province, in light of an increasing population would indicate an increasing proportion of single people resident in the province. An increasing proportion of single people would impact on maize consumption as it is unlikely that single people would involve themselves in the time consuming activity of traditional meal preparation.

It is emphasized that in the context of the censuses and this study, a household of one person is still considered a household.

The data represented in Table 4.8 is for Gauteng

	Black African	Coloured	Asian	White	Unspecified	Total
Population						
1996	5,147,444	278,692	161,289	1,702,343	58,655	7,348,423
2001	6,522,792	337,974	218,015	1,758,396		8,837,177
Growth	21.09	17.54	26.02	3.19		16.85
Households						
1996	1,282,549	61,799	39,709	569,733	10,375	1,964,165
2001	1,945,427	81,153	54,318	570,346		2,651,244
Growth	34.07	23.85	26.90	0.11		25.92
People per Household						
1996	4.0	4.5	4.1	3.0	5.7	3.7
2001	3.4	4.2	4.0	3.1		3.3
Growth	-19.70	-8.28	-1.20	3.08		-12.24

Table 4.8: - Gauteng population group proportions – census 1996 and 2001 - persons per household (Source: - STATS SA ~ 2001 and own calculations)

Once again we consider, in particular, the black African population group of the province. The population increased by 21% during which time the number of households increased by 34%. This resulted in a decline in the members per household from 4 to 3.4. This would indicate an increasing proportion of single people resident in the province. This is supported by Table 2.7 in Chapter 2.3.3 where it is revealed that the age groups 15 to 29 increased their proportional share of the population from 30 to 31.4 %. The HSRC (2005) concluded that this was a direct result of migration of single people into the province looking for work.

Table 2.4 in Chapter 2 confirms the trend in that the number of single people living in Gauteng increased by 808 000 people over the period, whilst the number of people sharing a household increased by 505 000 over the same period.

4.6 The increasing role of women in the labour force

Table 4.8, extracted from the primary tables for Gauteng from the censuses of 1996 and 2001, reveal increasingly important role that black African women assume in the labour market. The “employed” number of black African women grew 17,8% (from 591,271 to 719,496) over the period as opposed to black African males which only grew 8.8% (1,057,397 to 1,159,241) over the same period.

Significantly, the proportion of black African women of the total black African labour force increased from 35.9% in 1996 to 38.3% in 2001 in the face of declining employment for the population group as a whole.

Black African - Employment Status 1996			
Percentage	Male	Female	Total
Employed	57.0	35.4	46.7
Unemployed	21.5	31.6	26.3
Not economically active	21.5	33.0	27.0
Total	100.0	100.0	100.0
Number			
Employed	1,057,397	591,271	1,648,668
Unemployed	398,782	528,584	927,366
Not economically active	399,025	551,588	950,613
Total	1,855,204	1,671,443	3,526,647
Black African - Employment Status 2001			
Percentage	Male	Female	Total
Employed	47	31.4	39.5
Unemployed	29.3	35.4	32.2
Not economically active	23.7	33.2	28.3
Total	100	100	100
Number			
Employed	1,159,241	719,496	1,878,737
Unemployed	722,080	810,943	1,533,023
Not economically active	583,357	762,938	1,346,294
Total	2,464,678	2,293,377	4,758,054

Table 4.9: - Labour market status – Gauteng black African population group – censuses 1996 and 2001 compared (Source: - STATS SA – 2001 and own calculations)

4.7 Conclusion

To conclude, the consequences of urbanisation considered most influential over eating habits were investigated using existing data, but represented in formats facilitating appropriate calculations.

The study found wage increases the black African population group had exceeded inflation, however increasing unemployment resulted in the population group becoming poorer in real terms. The white population group's dominance of the province's spending power increased substantially during the period under review.

Data facilitating the calculation of national per capita maize consumption was used and revealed a declining consumption in maize by the black African population group of 17% over a five year period.

Gauteng black African households increased by 34% but members of the households decreased by nearly 20%. This is attributed to the increase of young single people residing in the province.

Woman, as traditional meal preparers, found their role in the black African labour force increasing in importance, specifically from 35.9% to 38.3% of total black African's employed.

CHAPTER 5: - RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

The circumstances the maize milling industry finds itself in are complex. It is accepted that the strategic importance of the industry as a vital link in the country's food chain deems it necessary that uses of maize as well as prevailing business models are objectively and critically analysed in order to ensure the industry's long term viability.

It is a responsibility of this study to consider possible avenues of innovation, alternative business strategies and further research in order to find a resolution to the problems that have been highlighted in previous chapters.

5.2 Recommendations

The problem declining per capita maize consumption has not gone unnoticed in the maize industry and already considerable effort has been expended on the search for an answer.

Up until recently the thrust of effort has been expended on trying to make the product cheaper and of a better quality. It has become apparent that the conventional theorem of price elasticity of demand does not necessarily apply to maize consumption in the longer term. The study has seen that substantial fluctuations in the raw material price, translating into the retail price of meal, does not necessarily affect

demand. Substantially more expensive maize will definitely see a move to cheaper alternatives, whilst substantially cheaper maize does not necessarily result in a corresponding increase in maize demand.

Notwithstanding this observation, the maize industry remains a substantial link in the country's food chain and still provides the country's masses with nutrition and sustenance.

In the face of a prolonged and sustained urbanisation process, globally the most intense according to the United Nations, maize has seen its dominance as the country's staple food diminish in the face of more convenient foods.

Consumption of red and white meat is increasing as well as wheat based baked products.

The problem of declining maize consumption needs a fresh look at the uses for maize in the search for alternatives. This must include but not be confined to the food industry. The recommendations which follow discuss a number of the directions that can be possibly pursued.

5.2.1. Food uses for maize

Currently maize is used for breakfast cereals, brewing, snack foods, thickening agents, meal and animal feed.

5.2.1.1 Fast food and convenience food

The most dominant use which consumes the greatest capacity is meal for human use, which has been the topic for research for this study.

Currently maize meal does not lend itself to fast food processing in the same way as wheaten flour does.

It would be misguided to attempt to find a maize based hamburger bun, hot-dog roll or chicken breadding flour. Maize will not lend itself to the processes required for those products.

Maize meal's future will be found in products sold in the taxi ranks, train stations and pavements of urban commuters. It must lend itself to be prepared in situ and result in minimum waste and minimum energy consumption.

Milling companies should investigate supplying facilities for in situ preparation thereby locking in the demand for that company's product. This also lends itself to branding opportunities.

The dramatic increase in single people and decrease in the number of members per household cannot be ignored. The challenge would be to find a means to market convenient maize preparations for single people.

Recommendation: -

Milling companies can empower individuals by setting up portable facilities to allow the preparation of instant warm maize based meals, with perhaps a variety of sauces and condiments. These can be placed strategically in taxi ranks and train stations. This is an enormous branding opportunity and also facilitates product extensions, trials etc. Research will have to be done to find how to turn maize into a product that facilitates quick and cost effective preparation.

5.2.1.2 Maize oil for baking

A possible future use for maize is maize oil. Maize oil is currently a niche product used in some health shops and alternative food outlets. However according to Hugh's (2005) a New Zealand based authority on uses for plants, maize oil can be used as a substitute for olive oil and has been authorized as such in Australia.

In addition, the study reveals the likelihood that maize oil can be used as a substitute for fats used in the baking of bread, currently dominated by palm oil mostly obtained from Malaysia.

The extraction of oil from the maize milling process would be considered highly valuable to the larger milling groups in the country, all of whom mill wheat, predominantly for group bakeries, as well as milling maize. Premier Foods, the country's largest maize miller also

mills wheat in the Snowflake brand and provides flour for group bakeries which pack in the Blue Ribbon brand. The group bakeries use an estimated 75 tons of baking fat per month. If maize oil, as a by product of the groups maize milling activity could substitute this, the savings could potentially be substantial.

Recommendation: -

Milling companies can investigate the feasibility of extracting oil from the waste (germ and bran) that is a result of the conventional milling process. The resultant oil can then substitute conventional vegetable fat for bread baking, particularly in milling company's own bakery divisions.

5.2.1.3 Marketing the healthy aspects of maize

Milling companies should invest in campaigns that emphasize the healthy aspects of a staple grain diet. The Government has already legislated the mandatory dosing of maize meal with vitamin cocktails, but with limited success due to the unabated decline in consumption levels.

The well intentioned campaign to rectify the nutritional deficiencies of many of the country's poor is having an impact, but only with people who eat maize. Compounding this issue is the recent re-focus of milling

companies on urban areas in order to preserve margins. Food security and malnutrition issues are paradoxically greatest in rural areas.

It has been revealed that nutritional deficiencies increase in prevalence as the intake of animal products increases, such as in urban populations.

Recommendation: -

Publicize the negative aspects of fatty and sugary diets and offer alternatives in the form of maize based meals. These do not have to be conventional “pap” but can be the basis for a well balanced diet. The possibility of Department of Health and Heart Foundation involvement can be investigated.

5.2.1.4 The White population group

The white population group’s proportional share of Gauteng earnings has increased from 58% in 1996 to nearly 64% in 2001. This represents a considerable market that has been hitherto neglected. This is most likely for cultural reasons in that the industry is trapped in a mindset that maize is the staple food of the black African population group.

Recommendations: -

The prevailing perception of maize being a black African meal has to be dispensed with. Possibilities of adding value to maize based foods is to be investigated and again, the healthy aspects of a grain based diet have

to be properly and sensitively marketed. One possibility is that maize can be the base in many of the nutritional dry mixes found in many health shops.

The challenge for maize is twofold: -

- To find a way to allow easy, convenient and versatile uses for the product, and thereby,
- Altering the image of the foodstuff as being food of the poor, and in particular capturing the white market.

5.2.2 Non food uses for maize

Perhaps the greatest potential for maize to regain the value it used to contribute to the national economy lies in the non-food applications of maize products.

Already substantial research is being done to provide alternatives to the many risks associated with using fuel derived from non-renewable resources such as mineral oil.

5.2.2.1 Ethanol from maize

There are other sources of ethanol, such as sugar cane and sugar beet, but it is maize that provides the greatest yield per ton of feedstock.

Ethanol has many applications such as industrial solvents, pharmaceuticals, adhesives, inks etc. but it is as a gasoline substitute where its greatest potential lies. Ethanol can be used as a gasoline substitute in 2 ways: -

- An outright replacement in dedicated internal combustion engines.
- An effective octane booster and can be blended up to 30% in conventional gasoline without engine modifications.

Ethanol is promoted because it has a net energy balance, in other words the energy contained in a ton of ethanol is more than the energy required to produce it. Ethanol has less of an environmental impact than gasoline and is healthier.

5.2.3 Business Models

Sections 5.2.1 and 5.2.2 discuss possible food and non-food uses for maize.

A healthy and viable maize industry is a crucial link in the nation's food security chain. The vast majority of the country's population use maize for their daily sustenance and nutrition and, despite declining consumption trends, this is unlikely to change in the long term.

The industry is struggling with profitability issues out of their control and is re-aligning strategies to concentrate on urban areas where margins can be preserved to a degree.

This all but leaves the rural areas to informal and opportunistic millers whose long term sustainability and commitment to legislated vitamin fortification levels is questionable.

Despite the degree of urbanisation, the rural areas of the country are still where the majority of the country's population lives and this is the area where food security concerns are greatest.

An alternative business model for the industry which preserves the viability of the industry whilst distributing product to the people is outside of the scope of this study. It is however considered of such importance that the study feels the need to highlight the issue.

5.3 Limitations of the study

In analysing existing literature (secondary data) and comparing and reconstructing data sets (primary data) it became apparent that substantial limitations existed.

The challenge came where existing data from one authority is contradicted by another authority. Instances were also found where data

from one authority was not consistent when presented in different publications.

Contradictions were found primarily in data where the trends were more important than actual figures and fortunately in all cases authorities agreed on trends while differing on actual figures.

Examples can be found in the following sections *et al*: -

- Per capita maize consumption figures – a comparison between Bhata's conclusions in Figure 2.9 and the study's own conclusions in Table 4.6 reveals a difference of opinion. The declining trend is nevertheless agreed upon.
- Differences in opinion between various authorities regarding the life expectancy of the population resulting from the HIV/AIDS pandemic. Again, while infection rates and mortality rates are topics of disagreement between STATS SA, the HSRC and the ASSA, the authorities agree on the trends.
- The demand and consumption figures presented in SAGIS publications often contradict each other. This is most likely the result of arithmetical or typographical errors and once again, the trends represented are more important than the figures quoted.

Further difficulties were encountered with the time period chosen for review.

- The 1996 and 2001 censuses were compared to obtain population demographic and income distribution trends. The censuses, although flawed by STATS SA's own admission, are arguably the most definitive analysis of national and provincial population trends that exists. Where data was available by way of STATS SA's mid-year population estimate publications, attempts were made to extrapolate the trends to reflect a more recent pattern.
- Industry statistics covering the same period proved difficult to obtain and usually only covered the period 2000 to present, in particular publications of SAGIS regarding production and consumption.
- Buying habits of the population. Whether from "Spaza" shops or informal traders or through the more formal sector. Anecdotal evidence can conclude with confidence that although significant purchases are made through the informal channels, these channels in turn purchase their requirement through the formal channels or wholesales.
- The extent to which people from outside Gauteng do their shopping in Gauteng. This is difficult to determine with any degree of accuracy. It would however prove an obstacle to any future research requiring

data collection via wholesale and retail channels to determine sales patterns in Gauteng. As Hoogeveen and Ozler (2004) explain, approximately 60 percent of rural households reported purchasing grain products in nearby urban areas.

- Data held by the wholesales and retailers might not be Gauteng specific due to the regional structures of the chains themselves.
- In compiling population group spending power, the 1996 census published 121,000 economically active people with no defined income bracket. A sum of R5,000 per month was factored into the calculations in order to account for these people in the totals. Furthermore a total of 15,000 economically active people did not specify their population group. These earnings were accommodated by had to be classified as “unspecified” in the graphs.

5.4 Avenues of further and new research

The study has revealed that although considerable literature exists on the phenomena of urbanisation on altering eating habits, a number of area's of further research are recommended: -

5.4.1 Lottery and Cell phone spend

The extent to which cell phone and lottery spend impacts on eating habits of a population

Considerable anecdotal evidence exists of how the substantial increases in cell phone and lottery spend is impacting on a wide range of other consumer goods. The study could find very little research having been conducted into the phenomena.

Whilst the study concludes that urbanisation results in a population moving to alternative foods, money diverted to lotteries and cell phones must result in people with limited disposable incomes actually eating less. This must be a concern.

5.4.2 Urban fast food and convenience food marketing

The extent to which marketing campaigns for fast and convenience foods affects the urban poor and unemployed.

A number of authorities have dealt with the fact that an urban population, whether employed or not, will seek out convenience foods. The study has concluded that it is not an increase in disposable income that allows populations to migrate to alternative foods, but rather other issues such as time constraints etc.

Urban populations are increasingly made up of young single people who are the target for sophisticated marketing campaigns.

5.4.3 Real demand vs Effective demand

According to Sen (1982) markets in capitalist economies only register “effective demand”, or demand from those able to pay the going price for the commodity. In light of declining prices coupled with declining demand, a question must be asked, and is possibly ground for further research – “To what extent is the declining price of maize being outstripped by declining affordability of the product?”

The study has noted that the black African population in Gauteng is getting poorer and unemployment increasing. Whilst this may contradict to a degree the conclusion that despite declining income levels, people are adopting more convenient foods.

5.4.4 HIV/AIDS

The compounding nature of the HIV/AIDS pandemic requires constant monitoring and research. In the context of this study further research is essential on the anticipated effects of maize consumption.

5.4.5 Migration to alternative carbohydrates

Schmidhuber’s first step, or the “expansion effect” describes how a population at low income levels first undergoes change where they concentrate on achieving higher energy levels from additional calories

derived from cheaper foodstuffs of vegetal origin like pasta's, rice and potatoes.

However when Table 4.6 is considered, there appears to be very little difference of per household consumption of alternative carbohydrates between wage earners and the unemployed.

Whilst the data in its present form is too broad to enable a conclusion to be drawn, the principle of alternating between vegetable carbohydrates on the basis of affordability and prevailing price is worth further research.

5.5 Conclusions on research and new data

At the outset, this study's objective was to firstly understand the phenomenon of urbanisation in a global context and how it impacted on eating habits of a population. In doing so, a number of aspects of urbanisation were identified as being important in the consideration of eating habits. Secondly the study then analysed demographics of Gauteng in light of the identified aspects of urbanisation. The intention was to conclude with a reasonable level of confidence that circumstances prevailing in Gauteng mirrored those occurring in a global context and therefore urbanisation in Gauteng would have a similar impact on eating habits in Gauteng as was occurring in other rapidly urbanizing environments.

The circumstances prevailing in the black African population, as 94% of national consumers and 70% of provincial consumers of maize, are considered.

5.5.1 Per Capita income growth and spending power

The data and findings presented in Chapter 4.1 concluded that wage increments of black African income had exceeded inflation by at least 12 percent.

The fortunes of the population group as a whole however, declined in real terms by nearly 3% over the period under review. This is due primarily to increased rates of unemployment and impacts on the population's ability to feed itself.

This would increasingly limit the ability of the population group, by far the most dominant maize consumers, to exercise choice in the type of food purchased. This brings to mind Engel's law and Bennett's law.

It is not unreasonable to conclude that a population getting progressively poorer and suffering under increased unemployment levels will fall back on cheaper staple foods in preference to more expensive convenience foods.

This study however concludes that this assumption is not necessarily so and other aspects of urbanisation, themselves encouraging a migration away from staple foods, overrides this aspect.

The spending power of the white population group, as a proportion to the provinces population, increased from 58% in 1996 to 63.7% in 2001. This factor alone will dominate advertising budgets targeting the province of Gauteng and it can be safely concluded that the nature of marketing campaigns and advertising will be orientated toward a Western market.

To support the argument that a poorer population will not necessarily migrate back to basic food, Chapter 2.5.3.1 is referred to where consumption and pricing was discussed. A comparison of the pricing trends depicted in Figure 2.12 and the consumption trends depicted in Figure 2.13 revealed that, if anything, a slight decline in consumption (and presumably a migration to alternative carbohydrates like rice and potatoes) will be experienced in an environment of sharp increases in retail prices of maize. However in an environment of decreasing prices, there is no corresponding increase in consumption as would be expected according to the conventional theory of price elasticity of demand.

The advertising campaigns are sophisticated and persuasive and a number of authorities have commented on how they influence spending patterns on urban populations.

5.5.2 Per capita maize consumption

This aspect is central to the study but was the most difficult in determining with any degree of accuracy, primarily for two reasons: -

- Data from different authorities and even from the same authority but in different publications did not correlate.
- Data was reported on a national basis and short of sampling the Gauteng population over a period of time, already identified as a limitation, the conclusion had to be drawn that Gauteng consumption trends will mirror national consumption trends.

Table 4.5 draws national consumption statistics from SAGIS as well as milling extraction figures (output). Population figures are drawn from STATS SA and the resultant per capita consumption trend over the period under review is a simple arithmetic calculation which reveals a declining trend of 17% over the 5 years under review.

5.5.3 Eating habits of income earners verses the unemployed

This aspect was considered in light of the fact that most income earners tended to be urban residents as the urban areas are the providers of employment in the country.

Again the data reflects the circumstances on a national basis, but it can be safely concluded that, as stated, income earners are primarily urban residents.

Household consumption of a basket of foods was analysed and the study grouped the foods into categories to enable a comparison to be drawn between basic grains, convenience foods, alternative carbohydrates and meat.

Comparisons of household consumption of the various categories were drawn between groups of people based on degrees of income.

The findings corroborated anecdotal evidence of a migration to alternative foods with increasing levels of income. In addition both Engel's law and Bennett's law was confirmed.

Households containing wage earners tended to consume approximately 29 kilograms of grain each every month whilst the unemployed tended to consume over 50 kilograms per person.

The move to convenience foods is apparent in that wage earner households consumed an average of 51 loaves of bread a month compared to the 39 per month consumed by households consisting only of unemployed people.

5.5.4 Members per household

One of the findings of the literature survey was that Gauteng was becoming an increasingly attractive destination for young single people looking for work. The inference could then be drawn that these people, whether employed or not, and susceptible to the marketing campaigns for convenience food alluded to earlier, would not be inclined to involve themselves in time consuming meal preparation activities.

In order to support this assumption, the study attempted to quantify the extent of the increase of single people resident in the province. The censuses of 1996 and 2001 were drawn from and calculations concluded

that the number of black African households increased over the period and the members per household decreased over the period. The conclusion was that this was due to the increase in the number of single people.

This was corroborated by the number of young people increased in proportion over the period as well as the fact that the HSRC (2005) report on migration into Gauteng came to the same conclusion.

5.5.5 The increasing role of woman in the labour force

A popular conclusion regarding reasons for the decline in maize consumption prevailing in the industry is that women are becoming

increasingly active in the labour force. This study attempted to quantify this aspect by analysing data published from the censuses of 1996 and 2001.

Calculations detailed in Chapter 4.5 confirm this trend and indicate that the extent is that black African women have increased their presence in the work force from 35.9% in 1996 to 38.3% in 2001.

The reason for the importance of this aspect is that women are the traditional meal preparers of meals. Maize preparation requires considerable time and with the increasing presence of women in the work force, time constraints encourage seeking out alternative convenience foods.

This study discusses a number of the phenomena that results from urbanisation, which directly influence the food demand patterns of a population.

5.6 Conclusion

The nation is in a state of transition. The reasons are many and include economic growth, the dismantling of apartheid, the instability of the agricultural sector etc.

Suffice to say that the United Nations has identified Sub-Saharan Africa as the region where urbanisation is at its most intense. Gauteng, as the

economic powerhouse of the region is bearing the brunt of this process and is experiencing the consequences of a rapidly urbanizing population.

One of the casualties of this process is the milling industry. Previously born out of an environment of central control, the industry finds itself having to deal with both the increasing sophistication of the market as well as the phenomenon of urbanisation.

Whilst much of the data presented in this study and conclusions arrived at depend on reasonable judgement it can nevertheless be concluded that the process of urbanisation will cause and be responsible for declining consumption levels of maize in Gauteng.

Maize nevertheless remains an integral part of the nation's food chain and is central to food security in South Africa. The long term sustainability of the milling industry is therefore of national strategic importance, due mainly to the fact that despite declining per capita consumption levels, particularly in urban areas, a great portion of the nation's population still relies on maize for daily sustenance and nutrition.

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