

**DEVELOPMENT OF A
FOOD PRODUCT CONCEPT FORMULATION FRAMEWORK
FOR LOW-INCOME CONSUMERS
IN URBANISED INFORMAL SETTLEMENTS
IN GAUTENG SOUTH AFRICA**

by

Sara Susanna Duvenage

Thesis submitted in partial fulfilment of the requirements for the degree

PhD CONSUMER SCIENCE

in the Faculty of Natural and Agricultural Sciences

University of Pretoria

Pretoria

February 2010

Promoter: Prof HC Schönfeldt

Co-promoter: Dr R Kruger



DECLARATION OF ORIGINAL AUTHORSHIP

I declare that the thesis, which I hereby submit for the degree PhD Consumer Science at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

.....

SS Duvenage

.....

Date

ACKNOWLEDGEMENTS

Herewith sincere gratitude and appreciation is expressed towards the following individuals and institutions for valuable contributions made towards the successful completion of this study:

The National Research Foundation, for enabling this research project through the provision of a research grant.

The Vaal University of Technology, employer, for creating an enabling research environment (including library services) and providing financial support.

Collaborators from the food environment, including health professionals, academics and major food producers and retailers, for providing the “other side of the picture”. The significance of this study applies to you!

Ward councillors and respondents from the informal and the formal settlements, for kind collaboration and for revealing the “inside story”. May this study contribute to better understanding and addressing the harsh reality of their lives.

Prof. Hettie Schönfeldt, study promoter, for valued guidance and constructive criticism throughout the study. Your expertise and vision contributed to a broader picture and facilitated a deeper understanding. Thank you for being available at odd hours!

Dr Rozanne Kruger, co-promoter, for appreciated input ensuring a logic flow of detail, focus on meaning and precision of reporting.

Prof Dries de Wet and Prof Rolf Gaede, statistical advisors, for expert guidance, advice and support.

Ms Kuda Marumo, post-graduate student and research collaborator, for enthusiasm, dedication and belief in the project.

Colleagues, for continued support and interest.

Family members and friends, especially Henning and Nina Vorster and their children, for encouragement. Nina, your assistance with the intricacies of bibliographical writing style is highly appreciated.

The support structure without which the boat could not stay afloat: my husband, children (and grandchildren!), for loving and sustained encouragement and support, for being there when it matters and for taking loving care of the “necessary trouble”.



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

DEDICATION

For those who are in need...

To those who can make a difference...

In dedication to HIM who IS.

SUMMARY

DEVELOPMENT OF A FOOD PRODUCT CONCEPT FORMULATION FRAMEWORK FOR LOW-INCOME CONSUMERS IN URBANISED INFORMAL SETTLEMENTS IN GAUTENG SOUTH AFRICA

by

Sara Susanna Duvenage

Promoter: Prof HC Schönfeldt

Co-promoter: Dr R Kruger

Department: Consumer Science

Degree: PhD Consumer Science

A dearth of information was found to guide food product formulation for low-income consumers. The political change in South Africa and neighbouring countries and the accompanying influx to economic centres, resulted in the unprecedented growth of urbanised informal settlements. These communities, accommodating the poorest of the poor and experiencing a high prevalence of nutritional devastation, indicated a merited project opportunity. The purpose of the study was to develop a food product formulation framework for low-income consumers living in urbanised informal settlements in South Africa. The unique contribution of this approach is based on the depiction of the food product attribute (concept) needs perceived as most important by these respondents during purchasing choice of their staple food, maize meal.

The study comprised five sub-objectives, executed in three phases.

The concepts required by low-income consumers were identified, selected and organised through a baseline survey in an informal settlement (n = 60). Satiety value, affordability, packaging size, value for money and taste were identified, in sequence, as the most important design parameters for the framework. The food industry (n = 17) indicated affordability, nutrient content, taste and product quality as the food product attributes of most importance during food product development, indicating a discrepancy.

Phase 2 of this study consisted of two parallel approaches, comprising an extended survey to validate the suggested design parameters in the target market against an established product

maize meal) (quantitative approach) and the description of the identified concepts to reveal embedded elements to clarify terminology use (qualitative approach). Three informal (n = 401) and one formal (n = 101) settlement were involved.

All groups agreed regarding the need for satiety value, product acceptability, convenience and the influence of household factors. Consumers from the informal settlements identified satiety value and affordability as of highest importance, followed by taste. Appearance, product quality, texture, product safety/ shelf life, brand loyalty and nutrient content were indicated as less important, prioritising concepts linked to survival during severely constrained economic conditions. Consumers living in the urbanised formal settlement, identified taste as the key concept.

Focus group discussions revealed no differences in the meaning ascribed to terminology, although perceptions reflected the variance in income level. The identified concept elements revealed the interlinked nature of satiety value and affordability. Differences in the understanding of concepts between these consumers and literature, were revealed.

Concepts to consider when developing food products for low-income consumers were identified as satiety value, affordability, taste, product acceptability, convenience/ ease of preparation, household influence, appearance, value for money, product quality, packaging size, texture, product safety/ shelf life, brand loyalty and nutrient content, in the stated sequence. A framework was proposed. However, from a humanitarian point of view, nutrient content cannot be ignored by the food industry.

As the key to market success lies in the potential of a product to find solutions relating to its physical nature, as well as in the use and advantages of the product, the results of this research project have great application value.

TABLE OF CONTENTS

DECLARATION OF ORIGINAL AUTHORSHIP	ii
ACKNOWLEDGEMENTS	iii
DEDICATION	v
SUMMARY	vi
TABLE OF CONTENTS	viii
LIST OF FIGURES	xiii
LIST OF TABLES	xiv
LIST OF ANNEXURES	xv
LIST OF ABBREVIATIONS, ACRONYMS AND SYMBOLS	xvi
CHAPTER 1 SETTING OF THE PROBLEM AND JUSTIFICATION	1
1.1 Introduction	1
1.2 Setting of the problem	2
1.2.1 Urbanisation	2
1.2.2 Food expenditure within the duality of the South African market	4
1.2.3 Low income and food choice	7
1.3 Justification of the study	10
1.4 Structure of the thesis	12
1.5 Reference list	13
CHAPTER 2 LITERATURE CONTEXT	22
2.1 Introduction	22
2.2 Consumer food choice	22
2.3 Trends in quality perception	25
2.4 Consumer perception of food quality	27
2.5 Food product attributes of importance	28
2.6 Food choice and low-income	30
2.7 Food product development	31
2.8 Food product concept formulation	34
2.9 Reference list	36



CHAPTER 3	RESEARCH DESIGN AND METHODOLOGY	44
3.1	Introduction	44
3.2	Research aim	44
3.2.1	Sub-objectives of the study	44
3.3	Conceptual framework	45
3.4	Clarification of terminology	45
3.5	Research design	48
3.5.1	Mode of inquiry and type of research design	48
3.6	Operationalisation	48
3.6.1	Phase 1: Identification, selection and screening of concepts to formulate and develop food product design parameters.....	48
3.6.2	Phase 2: Evaluation of the food product design parameters against an established product and description of the identified concepts.....	50
3.6.3	Phase 3: Development of a food product concept formulation framework	51
3.7	Quality of measurement	51
3.7.1	Validity	51
3.7.1.1	External validity	51
3.7.1.2	Internal validity	53
3.7.2	Reliability	53
3.7.2.1	Procedures for precision of measurement	54
3.7.2.2	Procedures for accuracy of measurement	54
3.8	Study population	55
3.8.1	Low-income consumers	55
3.8.2	Experts in food (in)security	57
3.9	Ethics	57
3.9.1	Permission	57
3.9.2	Ethical considerations	58
3.10	Outcomes of the study	59
3.11	Reference list	60



CHAPTER 4 ATTRIBUTES OF IMPORTANCE IN STAPLE-TYPE FOOD PRODUCT DEVELOPMENT FOR LOW-INCOME URBANISED CONSUMERS IN SOUTH AFRICA	71
4.1 Abstract	71
4.2 Introduction	72
4.3 Methods	74
4.3.1 Study design	74
4.3.2 Study population	75
4.3.3 Methodology	75
4.3.4 Data analysis	76
4.4 Results and discussion	76
4.4.1 Research and food product development guidelines focussing on (very) low-income consumers	76
4.4.2 Food product range	77
4.4.3 Household and food intake characteristics of (very) low-income consumers	78
4.4.4 Food product attributes of importance in meeting the needs of (very) low-income consumers	79
4.5 Conclusions	85
4.6 Recommendations	87
4.7 Recognition	88
4.8 References	89
CHAPTER 5 FOOD PRODUCT ATTRIBUTES GUIDING PURCHASING CHOICE OF MAIZE MEAL BY LOW-INCOME SOUTH AFRICAN CONSUMERS: A QUANTITATIVE APPROACH	93
5.1 Abstract	93
5.2 (1) Setting and problem	94
5.3 (2) Methods	98
5.3.1 (2.1) Surveys	98
5.3.2 (2.2) Procedures	99
5.3.3 (2.3) Data analysis	99
5.4 (3) Results and discussion	100
5.4.1 (3.1) Demographic profile	100
5.4.2 (3.2) Meanings of the food product attribute terminology	103

5.4.3	(3.3) Rating of the importance of food product attributes in meeting the needs of (very) low-income consumers	105
5.5	(4) Conclusions	111
5.6	(5) Recognition	112
5.7	References	113

CHAPTER 6	FOOD PRODUCT ATTRIBUTES GUIDING PURCHASING CHOICE OF MAIZE MEAL BY LOW-INCOME SOUTH AFRICAN CONSUMERS: A QUALITATIVE APPROACH	120
6.1	Introduction	120
6.2	Methods	121
6.2.1	Focus group discussions	121
6.2.2	Data analysis	123
6.3	Results and discussion	125
6.3.1	Satiety value	125
6.3.2	Affordability/ price	127
6.3.3	Taste	129
6.3.4	Convenience/ ease of preparation	131
6.3.5	Household influence	133
6.3.6	Appearance/ colour	134
6.3.7	Packaging size	136
6.3.8	Texture	138
6.3.9	Product safety/ shelf life	140
6.3.10	Brand loyalty	142
6.3.11	Nutrient content	145
6.3.12	Combined concepts	146
6.3.12.1	Product acceptability	146
6.3.12.2	Value for money	147
6.3.12.3	Product quality	147
6.3.13	Linking between various concepts and concept elements	148
6.3.13.1	Satiety value and affordability	148
6.3.13.2	Taste	151
6.3.13.3	Core and augmented food product characteristics	153
6.4	Conclusions	153
6.5	Reference list	155



CHAPTER 7	INTEGRATION AND APPLICATION	160
7.1	Introduction	160
7.2	Phase 1: Formulation and development of design parameters	161
7.3	Phase 2: Evaluation of the developed design parameters against an established product	163
7.3.1	Test market evaluation	163
7.3.2	Description of terminology	165
7.4	Phase 3: Development of a food product concept formulation framework for low-income consumers in urbanised informal settlements in Gauteng South Africa	171
7.4.1	Comparison of ranked importance of food product attributes	171
7.4.2	Reality of the low-income consumers	173
7.4.3	Food product attributes perceived as quality indicators	174
7.5	Value of the study	177
7.6	Limitations of the study	179
7.7	Recommendations	179
7.8	Reference list	181

LIST OF FIGURES

CHAPTER 2

Figure 1	Factors determining consumers' food choice	24
Figure 2	Steps in new food product development	32

CHAPTER 3

Figure 1	Conceptual framework	46
Figure 2	Aerial photograph of the Boipatong informal settlement	56
Figure 3	Aerial photograph of the Eatonside informal settlement (Sebokeng Unit 6)...	56
Figure 4	Aerial photograph of the Alexandra informal settlement and the Tsutsumani formal settlement	57

CHAPTER 4

Figure 1	Priority guidelines applied by role players in the food industry during research and development of food products for (very) low-income consumers	77
Figure 2	Food product range for (very) low-income consumers	78
Figure 3	Food product attributes role players perceived as important for (very) low-income consumers	80

CHAPTER 5

Figure 1	Comparison of the importance of food product attributes to (very) low-income consumers	106
----------	--	-----

CHAPTER 7

Figure 1	Collage of the Boipatong informal settlement indicating the different types of housing	167
Figure 2	Collage of the Eatonside informal settlement indicating the informal housing conditions	168
Figure 3	Collage of the Alexandra informal settlement, showing the hosts for the focus group (left), the fieldworkers (right) (ms Kuda Marumo far right), housing conditions and spaza shops	169
Figure 4	Collage of the Tsutsumani formal settlement, showing the researcher, the co-researcher (ms Kuda Marumo), the community representative and the field workers	170

LIST OF TABLES

CHAPTER 4

Table 1	Food product attributes of importance in staple-type foods	81
Table 2	Comparison of ranked importance of staple-type food product attributes by (very) low-income consumers versus the food industry	83

CHAPTER 5

Table 1	Geographical description of the urbanised settlements	101
Table 2	Dwelling types predominant in the settlements	102
Table 3	Situation analysis for household income and education level	104
Table 4	Ranked importance of food product attributes by (very) low-income consumers	105
Table 5	Suggested comparisons between the ratings of the different respondent groups	107

CHAPTER 6

Table 1	Satiety value as concept	126
Table 2	Affordability/ price as concept	128
Table 3	Taste as concept	130
Table 4	Convenience/ ease of preparation	131
Table 5	Household influence as concept	133
Table 6	Appearance/ colour as concept	135
Table 7	Packaging size as concept	137
Table 8	Texture as concept	139
Table 9	Product safety/ shelf life as concept	141
Table 10	Brand loyalty as concept	143
Table 11	Nutrient content as concept	146
Table 12	Describing satiety value and affordability from revealed food product attribute links	149
Table 13	Describing taste from revealed food product attribute links	151

CHAPTER 7

Table 1	Comparison of the ranked importance for food product attributes according to the perceptions of low-income consumers and the food industry	172
Table 2	Food product concept formulation framework for starch-type staple foods for low-income consumers in urbanised informal settlements in Gauteng South Africa	175

LIST OF ANNEXURES

CHAPTER 3

Annexure 1	Desirable food product attributes for low-income consumers in urbanised informal settlements: questionnaire to experts	64
Annexure 2	Importance of food product attributes to consumers during purchasing choice of maize meal	66

CHAPTER 5

Annexure 1	Exploratory comparison of the importance of food product attributes to (very) low-income consumers with different expendable incomes.....	118
------------	---	-----

CHAPTER 7

Annexure 1	Exploratory comparison of the significance of difference between perceptions of the importance for food product attributes to low-income consumers with different expendable incomes ($p < 0.1$)	185
Annexure 2	Importance of the need for food product attributes as perceived by the low-income consumers from informal settlements during the test market evaluation (weighted) ($p < 0.1$)	186
Annexure 3	Importance of the need for food product attributes as perceived by the low-income consumers of slightly higher affluence during the test market evaluation (weighted)($p < 0.1$)	187
Annexure 4	Certification of editing for accuracy of language	188

LIST OF ABBREVIATIONS, ACRONYMS AND SYMBOLS

AI	Average Intake
BFAP	Bureau for Food and Agricultural Policy
CA	Consumers' Association
ed	Edition
Ed	Editor
Eds	Editors
e.g.	Exempli gratia (for example)
EUFIC	European Food Information Council
FAO	Food and Agriculture Organisation of the United Nations
FF	Farm Foundation
g	Gram
GAIN	Global Agriculture Information Network
IDA	International Development Association
JRF	Joseph Rowntree Foundation
kJ	KiloJoules
RDA	Recommended Daily Allowance
SU-LSM	Universal Living Standard Measure
MTech	Magister Technologiae (Master's degree in Technology)
n	Number
NFCS	National Food Consumption Survey
NFCS-FB-1	National Food Consumption Survey Fortification Baseline South Africa
PhD	Philosophiae Doctor (Doctor of Philosophy)
PIR	Poverty and Inequality Report
RSA	Republic of South Africa
SAARF	South African Advertising Research Foundation
SSA	Statistics South Africa
UNICEF	United Nations Children's Fund
URL	Universal Resource Locator
USAID	United States Agency for International Development
US\$	United States of America Dollar
vs.	Versus
WHO	World Health Organisation
WWW	World Wide Web
ZAR	South African Rand
≈	Almost equal to



&	Ampersand (and)
>	Greater than
\geq	Greater than or equal to
<	Less than
\leq	Less than or equal to
%	Percentage
§	Section

SETTING OF THE PROBLEM AND JUSTIFICATION

1.1 INTRODUCTION

“Stomach fillers” such as the starch staple-type foods, which include bread, rice and maize meal, comprise about half of the typical South African consumer’s grocery budget. This stands in contrast to an allocation of only 15 percent to similar expenditure by American and European consumers (Connellan as reported by Watson, 2008:2). The combined impact of 50 percent of South Africans existing on less than ZAR430 (US\$42)/ month (Fedusa as quoted by Carstens, 2008:6) and a 15,8 percent increase in food costs over the last year (Hermann, as quoted by Carstens, 2008:6), implies a severe threat to food security. For the purpose of comparison, an exchange rate for the South African Rand (ZAR) and the United States Dollar (US\$) of ZAR10.217 \approx US\$1, as on 8 December 2008, was applied throughout the text of this thesis.

Currently, various food products that proclaim characteristics and advantages aimed at specific consumers from the different income groups are readily available on the South African market. Low-income consumers are, however, demographically different and have different needs for goods and services (Alwitt & Donley, 1996:68). The challenge is, therefore, to skilfully integrate knowledge of consumer needs, as indicated by preferences for specific attributes during food choice, with the low-income consumers’ perception of reality (Conner & Armitage, 2002:2).

As yet, no clear guidelines have been formulated for the effective and cost efficient implementation of “consumer intelligence” during the early phases of the food product development process (Costa & Jongen, 2006:8-9), notwithstanding any links to the needs of a developing country. Of special importance to this study is an innovative strategy advocating that consumers’ current and future needs be considered in the development of new products, in order to add true value (Urban & Hauser, 1993:48).

Against this background of household food insecurity, the question was investigated whether the practical needs, including improved nutritive quality and affordability as applicable to low-income households, were met in a consumer-acceptable manner by the food products currently available on the South African market.

1.2 SETTING OF THE PROBLEM

Approximately 790 million people in developing countries are described as undernourished, with Sub-Saharan Africa highlighted as the region with the greatest hunger (<1260kJ/ day) (FAO, 2002:1), affecting 180 million people. The worldwide projection is that the total number of people living on less than a dollar a day will decline by 26 percent from 1999 to 2015. However, the situation in Sub-Saharan Africa, including South Africa, is expected to deteriorate, with an increase of 21,5 percent anticipated (Landman, 2003:1; Cronjé, 2004:15). Already poverty has deepened for the approximately 57 percent of people that were living in poverty in South Africa, with Gauteng, as a highly urbanised area with nine million inhabitants, worst affected (Jenkins, 1997:4; Schwabe, 2005:1, 2; Gauteng, 2008:1).

1.2.1 Urbanisation

A trend of increasing urbanisation is detected worldwide (Mitlin, 2005:3). Globally, urbanisation is expected to double the proportion of urban residents to the total population, reaching nearly four billion by 2020 and affecting mainly developing countries (Haddad, Ruel & Garrett, 1999:1; Regmi, 2001:iii; Regmi & Dyck, 2001:23). Owing to increased urbanisation, already more than 187 million people in Africa are living in slums (Vidal 2003:1). Currently, the proportion of South Africans living in towns and cities is approximately 57 percent, an average level of urbanisation for a third world country. However, the expectation is that approximately 80 percent of the population will be urbanised by 2026 (Pretoria News as quoted by Jenkins, 1997:4).

In poor countries, marginal groups consisting of underemployed or unemployed people with very low or irregular incomes often find habitation on the edges of larger cities (Den Hartog, Van Staveren & Brouwer, 1995:27; Hubbard & Onumah, 2001:433) or in inner cities. Rapid urbanisation generates many problems because of huge demands on land, water, housing, transport and employment (Collins, 2001:1). The proportion of the population not producing its own food in Sub-Saharan Africa is rising fast, posing severe challenges to food and nutrition security (Marter & Gordon, 1996:234; Garrett & Ruel, 1999:13; FAO, 2005:1) due to

insufficient energy consumption and a greater prevalence of vitamin deficiencies (Rao as quoted by DeRose, 1998:118-119).

In South Africa, a mass urbanisation growth rate of three to four percent in recent years has led to the formation of extensive instant residential areas. These squatter areas and informal settlements accommodate most of the estimated one million people urbanised every year in geographically vulnerable pockets of high population density and unemployment (Hubbard & Onumah, 2001:431-432; Van Wyk, Britz & Myburgh, 2002:45). This situation contributes to the geographical polarisation of income inequalities (Noble, Smith, Avenell, Smith & Sharland as quoted by Donkin, Dowler, Stevenson & Turner, 2000:31-32), translating into urban poor living in squatter shacks and experiencing some of the worst poverty levels (63 percent) (Higgs, 2007:1).

The National Food Consumption Survey Fortification Baseline South Africa 2005 (executive summary) (NFCS-FB-1) supports the reality of this situation by reporting a national household monthly income of ZAR1 to ZAR1000 (US\$0.1 to US\$98) for 55 percent of the population. The highest percentage of no income (6 percent) as well as an income of ZAR1 to ZAR500 for 35 percent has been indicated for urban informal households (n = 23 urban informal enumerator areas) (NFCS-FB-1, 2008:255). In comparison with agricultural areas, there is a weakening of supportive social ties in the urban setting, leading to an even more vulnerable situation (Den Hartog *et al.*, 1995:27).

Urban residents generally do not grow their own food and all food has to be bought (Den Hartog *et al.*, 1995:25; Regmi & Dyck, 2001:23; Kennedy, 2003:1), leading to an increase in the food demand of urban areas (Den Hartog *et al.*, 1995:23; Sayed, 2002:17). Due to poverty, this increased demand is mainly for starch staple-type foods, but also for other foods such as fruit, vegetables and meat (Den Hartog *et al.*, 1995:25). Accordingly, the planning for adequate food at affordable prices, especially for the food insecure, becomes a high priority on the food security agenda (Donkin *et al.*, 2000:31-32).

Although low-income urban consumers have limited food spending power, the accumulative effect of 40 percent of South African households (i.e., approximately 19 million people) cited as “poor” by the Poverty and Inequality Report (PIR) (PIR, 1998:5; Motloug & Mears, 2002:532) represents a recognised, although often problem-ridden, emerging market (Prahalad, 2004:2; Karnani, 2006:6).

1.2.2 Food expenditure within the duality of the South African market

South Africa has a two-tiered economy, of which one rivals developed countries and the other displays only the most basic infrastructure. A wide range of consumers, characterised by an uneven distribution of wealth and income, is served (Global Agriculture Information Network (GAIN), 2005:3, 4). A wealth measure segmentation tool, based on consumer living standards, was developed by the South African Advertising Research Foundation (SAARF) to profile the consumer market into ten relatively homogeneous groups. The consumers of least status are indicated within the first segment of the universal living standards measure (SU-LSM 1) and those of highest status within the SU-LSM 10 segment (SAARF, 2006).

The duality of the South African consumer market is mirrored by the difference in food consumption patterns of the middle- and high-income consumers (modern economy) and the low-income consumers (marginalised economy) (ACNielsen, 2005:1; Bureau for Food and Agricultural Policy (BFAP), 2007:52). The modern consumer group is comprised of both the emerging (SU-LSM 4 to 6) and the established (SU-LSM 7 to 10) consumer groups. The SU-LSM 4 to 6 group represents 39 percent of the country's households and 37 percent of the consumer spending, while the SU-LSM 7-10 group reflects 26 percent of the households but 41 percent of the spending. From these figures it is clear that 35 percent of the households in South Africa are reported as marginalised consumers (SU-LSM 1 to 3), contributing only 22 percent of the spending (ACNielsen, 2005:1).

The most recent figures report the mean income for marginalised consumers as ZAR756 (US\$74)/ household/ month, for modern emerging consumers as ZAR1976 (US\$193)/ household/ month, and for modern established consumers as ZAR13492 (US\$1321)/ household/ month (BFAP, 2008:53, 56). The implication is that 3,6 percent, 11,1 percent and 85,4 percent of the total household income in South Africa is distributed to the marginalised, emerging and established consumers respectively. Only 0,2 percent of the total household income is distributed to consumers in the SU-LSM 1 category, which comprises 5 percent of the total South African adult population. In real terms, these households receive a mean household income of ZAR360 (US\$35)/ month (BFAP, 2008:56). The two extremes of monthly grocery spending vary on average from ZAR323 (US\$32) for marginalised households to ZAR788 (US\$77) for established households (ACNielsen, 2005:2).

Income is indicated as an essential determinant of nutritional status and food availability in the United States of America (Consumers' Association (CA), 1997:1; Cade, Upmeier, Calvert & Greenwood, 1999:505; Donkin *et al.*, 2000:31). Food-secure households typically spend

more on food in real terms (money value) than do food-insecure households (Donkin *et al.*, 2000:31; Nord, Andrews & Carlson, 2007:24). The lower the income per capita, the higher the share of the average consumer budget allocated to necessities (Alwitt & Donley, 1996:72), and the greater the portion of the budget that is spent on staple-type starch food products such as cereals (Regmi, 2001:iii; ACNielsen, 2005:2).

The procurement of maize for consumption increases with decreasing household income and money spent on food, while the opposite is indicated for the relationship between wheat flour and bread (National Food Consumption Survey Fortification Baseline (NFCS-FB-1), 2008:258). A staple-based diet culminates in an increasingly less diverse diet (Golden, 2000:502; Farm Foundation (FF), 2006:1-2), indicative of a market more vulnerable to food price and income changes (Regmi, 2001:iii).

For the most marginalised consumers (SU-LSM 1), food cash expenditure, as share of total cash expenditure, amounts to 71 percent of their average monthly household income (or 80 percent of income decile 1), resulting in a very limited choice of basic food items (SAARF, 2006; BFAP, 2008:56-57; Kruger, Schönfeldt & Owen, 2008:4). This group allocates approximately 33 percent of the cash available for food to major grain products, including maize meal (22 percent), rice (23 percent), and bread (52 percent) (BFAP, 2007:47-48). Poor households with a household expenditure of less than ZAR800 (US\$78)/ month, comprise about half of the approximately 12 million households in South Africa (Oldewage-Theron, Dicks & Napier, 2006:796; Prahalad & Hart, 2006:2; Higgs, 2007:1; Marais, 2007:3;). This classifies a substantial section of the South African population as belonging to low-income households. On average, these households consist of three to four members (SSA, 2005b), translating into a total household availability of ZAR6.66 (US\$0.65) to ZAR8.89 (US\$0.87)/ person/ day to meet all needs. These amounts are substantially lower than the international poverty line indicator of US\$1/ day (ZAR10.22) (International Development Association (IDA14), 2004a:1; IDA14, 2004b:1).

According to the “South African food consumption studies undertaken amongst different population groups (1983-2002)” maize, samp/ mealie rice, white rice, peanut butter and dry beans were indicated as the five cereal grain and legume food products most often consumed in South Africa by adults (Nel & Steyn, 2002:136-142, 48-49; Polhill & Raven as quoted by International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), 2009:Introduction). The five foods most often consumed included maize, sugar, tea, bread and milk. A summary of the most recent information in this regard indicates that 90 percent of South African households procure maize meal for consumption while 80 percent procure

bread, of which 70 percent indicate brown bread as the product of choice. Unfortunately, updated details regarding the food products most frequently consumed are not yet available, as the full document is currently being completed (NFCS-FB-1, 2008:258).

As consumer spending on food in developing countries, including South Africa (BFAP, 2008:57), comprise as much as 60 to 80 percent of the total budget for many, it is expected that the continuing food price inflation will hit the poor hardest, as the share of food expenditure to total expenditure is much higher for them than for wealthier populations (FAO, 2008:2).

In 2003, one out of two children between the ages of one and nine years consumed less than two thirds of their energy needs, and a great number of children (70 percent) consumed a diet with poor micro- and macro-nutrient density, which did not meet the daily requirements for the age group and gender (South African Demographic and Health Survey (SADHS), 2003:24). Bearing this in mind, the results of the NFCS-FB-1 (2008:259) indicate no improvement in the situation reporting that one in two households (51,6 percent) experience hunger on national level. On the contrary. In spite of the implementation of the mandatory maize meal and wheat flour food fortification programme for nine nutrients including vitamin A, electrolytic iron and zinc oxide, among others (Republic of South Africa (RSA), 2003:3-5), in comparison with earlier national findings, increased compromised status is reported for vitamin A (67 percent of children and 25 percent of women), iron (14 percent of children and 20 percent of women), and zinc (45 percent of children) (NFCS-FB-1, 2008:261, 262, 264, 267). Based on these findings, it can be surmised that malnutrition is widespread and on the increase in South Africa, affecting children as well as adults.

The baseline survey conducted in an urbanised informal settlement reported an unemployment rate of 94 percent for respondents and 80 percent for partners (Oldewage-Theron, Dicks, Napier & Rutengwe, 2005a:22). The majority of households (59,5 percent) received a monthly income less than ZAR500 (US\$49)/ month, of which up to 71 percent was allocated to the purchasing of food, consisting mainly of maize meal (Amuli, 2006:56-57; Oldewage-Theron *et al.*, 2006:800). On average, the cooked maize porridge consumed by this population amounted to approximately 532 grams (g)/ day, representing 66 percent of the total energy intake/ day, and was consumed during two or three meals within a 24-hour period (Oldewage-Theron, Dicks, Napier & Rutengwe, 2005b:20, 22; Duvenage & Schönfeldt, 2007:692).

The market expenditure by these poor and very poor consumers amounts to ZAR129 billion (US\$12.6 billion)/ year, representing 15 percent of household expenditure in South Africa (Pralhad & Hart, 2006:1) – revealing a large and relatively unknown market. The needs of this predominantly black township market are served mainly through often thriving informal retail outlets, including tuck shops (small, food-selling retailers), shebeens (illicit bars or clubs where excisable alcoholic beverages are sold without a licence), taverns (places of business where people gather to drink alcoholic beverages and are likely to be served food), spazas (small home-based convenience stores operating in disadvantaged communities, and retailing small, everyday, basic goods such as bread), and street vendors (roadside hawkers exchanging merchandise for money). The household income of owners is supplemented through these endeavours, which, in addition, eliminate the need for customers to travel a great distance to obtain goods (Bear, Bradnum, Tladi & Pedro, 2005:7; Dictionary, 2009; The Donor Committee for Enterprise Development, 2003:1; Thefreedictionary, 2009).

The spazas, seen as a new form of township convenience retailing, specialise in staple-type foods such as maize meal, rice and cooking oils, and are becoming more important in the local retail market – capturing about 2.8 percent (ZAR 7.4 billion) (US\$0.7 billion) of the South African retail trade (GAIN, 2003:8; GAIN, 2005:4). Local spazas are patronised by surrounding communities to limit expense in travel and time as far as possible. Several major food-retailing companies are competing to establish outlets in or nearby these areas to capture this emerging market.

1.2.3 Low income and food choice

Within each of the broad food product categories, many substitutable products are available for purchase consideration in order to meet spending constraints (Leibtag & Kaufman, 2003:1). Retailers constantly bombard consumers with information on new food products available (Joseph Rowntree Foundation (JRF), 1994:2). In South Africa, one out of two households has both a radio and a television set in working order, with the radio being the most common means of receiving information (NFCS-FB-1, 2008:2550). In this setting, low-income consumers often do not have enough money to buy the foods they need or want on a regular basis (JRF, 1994:1), or are tempted by marketing to buy.

The model presented by Maslow on human motivation portrays human needs in the five hierarchical levels of physiological needs, and needs for safety and security, love and belonging, ego and esteem, and self-actualisation (Painter, 2007:15). Basic physiological and safety needs are indicated as the strongest motivators. Needs are met one level at a time,

and when a need is acceptably satisfied, human beings are motivated to meet the needs of the next highest level (Williams, 1982:83).

Based on this concept, Kinsey developed a consumer food-demand pyramid to describe a consumer choice process according to the hierarchy of consumers' food preferences (Hughes, 2002:10; Painter, 2007:15). At the lowest level, the quest to satisfy physiological needs to maintain life includes a struggle for sufficient kiloJoules, lower-priced foods and foods that are not spoiled (Hughes, 2002:10; Kinsey as quoted by FF, 2006:4). As the low-income consumers face monetary restrictions that reflect in food choice, they do not want price benefits (added value) built into the food products that they purchase (Alwitt & Donley, 1996:81; Hughes, 2002:11). The products purchased by these consumers display a mix of quality attributes reflecting both budget and non-price preferences (Hughes, 2002:3, 5). These parameters reflect in the choice of food products that are affordable, without unnecessary attributes that inflate the price, and meet preferences such as social acceptability.

As real disposable household income grows, the importance of ethical and quality criteria in food purchase decision-making increases (Hughes, 2002:3, 5, 7, 28). An increase in income is accompanied by an effort to satisfy higher order needs through food product choice (Painter, 2007:15). This implies that the choice of food serves more esoteric needs, such as social status and ultimately, at the apex of Maslow's triangle, self-development needs that translate at the highest level into the purchasing of organic foods to portray concern for the environment (Hughes, 2002:10-11). At this level, food quality includes non-price attributes of food products, such as ethical issues, source of origin, animal welfare and environmental friendliness.

Inequality in household income is therefore reflected in the range of food products available/not available for the income "haves" and "have nots" (Hughes, 2002:3). The techniques that low-income consumers use in order to save include the spending of money on basic needs rather than on luxuries, and the changing of shopping behaviours and financial management procedures (Alwitt & Donley, 1996:97). However, financial survival necessitates budget flexibility (Walker, Dobson, Middleton, Beardsworth & Keil, 1995:7), and for many low-income households food represents the only flexible item in the budget (CA, 1997:2; Dowler, 1997:2).

Although household income is carefully allocated to specific budget needs, food expenditure is reduced in case of other demands or contingencies in order to avoid or reduce indebtedness. Possible food-coping strategies that can be applied in cases of disrupted

provisioning include altering of the diet by opting for less preferred or cheaper food, food rationing by skipping meals, going without meals for a whole day, limiting portion sizes or feeding the working members at the expense of the non-working members. If available, food growing wild will be gathered to increase the amount available in the short term. Only when absolutely necessary or when conditions promise to become better in the foreseeable future will food be purchased on credit, or will food or money be borrowed, because this act is liable to cause problems at a later stage (JRF, 1994:1; Walker *et al.*, 1995:7; Maxwell, 1996:295-296; Maxwell, Watkins, Wheeler & Collins, 2003:5; Kruger *et al.*, 2008:4, 10-11). As a last resort, seed stock will be consumed, household members will be sent to beg for food or the household structure will be changed by sending the children to eat or stay with relatives or friends. The latter is implemented to decrease the number of people to be fed in the short term (Kruger *et al.*, 2008:4, 12).

On average, 83 percent of the marginalised consumers in SU-LSM 1 engage in bulk monthly shopping (BFAP, 2008:54). With a more restricted budget, however, food purchasing occurs more frequently, consumers buying only small quantities at a time to ensure that money is left over in the purse to meet unanticipated contingencies. Buying in bulk for cost efficiency is not an option (JRF, 1994:1), as any extra food is also at risk of being consumed too soon by household members. The applicability of these findings within the South African context is not clear. Purchasing frequency for maize meal as staple food was indicated as once a month (41 percent), and fortnightly (33 percent) by respondents of an informal settlement. The packaging size most purchased was 12.5kg (65 percent), and mostly from a local spaza shop (58 percent) (Amuli, 2006:60, 63).

On a severely restricted budget, shopping becomes a constrained chore without any fun (Walker *et al.*, 1995:7), allowing limited choice of shopping outlets and food items (JRF, 1994:3). With less money available, each of the food choices for purchasing is important, as no money is available for replacements or alternatives (Marumo, 2006:38). There is no possibility of experimental choices, as repurchasing cannot take place if the first option does not satisfy. The cost, time, inconvenience and unreliability of public transport further exacerbate the problems that low-income consumers face in having access to shops that offer the lowest prices (CA, 1997:12; Hersey, Anliker, Miller, Mullis, Daugherty, Das, Bray, Dennee, Sigman-Grant & Thomas, 2003:S16). Shops in the low-income communities often offer limited variety, with prices as much as 60 percent higher (CA, 1997:4). Because of the escalating constraints experienced by consumers at the lowest levels of income, it is difficult for them to afford a healthy diet within the normal range of food choice.

In South Africa, approximately 43 percent of the population suffers from food poverty (Rose & Charlton, 2002:383), portraying a reality where the amount of money available is not enough to purchase a basic nutritionally balanced diet (Messer, 1998:182). Most South Africans, adults and children, consume a monotonous starch staple-based diet containing a very limited variety of fruits and vegetables (NFCS, 1999:24). Urbanisation manifests in a stark reduction in food intake owing to decreased disposable income and limited opportunities for primary food production (World Health Organization (WHO), 2003:24), aggravating the already compromised nutrient intake. It follows, therefore, that the lower social classes, especially, experience a corresponding burden of ill health and disability (CA, 1997:2-3).

All family members experience the pressures of low incomes, but none as severely as the woman of the house, who usually carries the burden of day-to-day budgeting, including balancing the household's likes and dislikes against a limited budget (Walker *et al.*, 1995:7).

If a monthly income is received, purchasing by these households often takes place at the beginning of the month, with cash (or food, or both) running out towards the end of the month (Fisher, 1999:3; Kruger *et al.*, 2008:12). In an informal settlement where most of the households depend on casual work for household income, it was found that, within one week after receiving money, 42 percent of the households run out of money for purchasing more staple foods (Amuli, 2006:57).

The poor are cautious shoppers (Alwitt & Donley, 1996:60) and food buying habits are changed in an attempt to economise. In order to survive, supplies are rationed, a careful choice has to be made of where to shop, no temptation can be succumbed to, and shopping has to be done alone in order to restrict spending. If needed, the taste, cultural acceptability and health aspects of food are overridden by the cost of the food. "It comes as no surprise that they often ceased to derive pleasure from eating" (JRF, 1994:1, 3; CA, 1997:2).

1.3 JUSTIFICATION OF THE STUDY

Research focusing on the low purchasing power and specific living conditions of the majority of the South African population, and especially on the needs and characteristics of the low-income urbanised consumer market, is limited (Van Wyk *et al.*, 2002:43-44). Even though this market segment is expanding rapidly, limited information is available to describe the product characteristics important in meeting the needs of these consumers during purchasing choice.

In general, the success rate of (food) products that are well defined prior to the development phase is much higher. By better meeting the needs of specific target consumers, a (food) product that is perceived to be of higher relative quality can be delivered (Cooper, 1990:27).

Through the development of a food product concept formulation framework for low-income consumers, based on an understanding of the product characteristics perceived to be desirable to most of the target population, a set of new food product attributes can be identified and reported according to priority value. These design parameters can then be verified through test market evaluation of an established product and description of the derived concepts by different groups of low-income informal settlement dwellers with different levels of household income.

This process and model could guide food product developers in effective, proactive design choices in a time-efficient manner. A clear focus on the needs and preferences of the intended users would be maintained in a more attainable and sustainable manner (Rosenau, 2000:25; Moskowitz, Porretta & Silcher, 2005:392). Consequently, food product costs can be more effectively controlled, ease of product use can be improved and favourable word of mouth recommendations can be generated as a result of consumer satisfaction and acceptance (Rosenau, 2000:25).

In further application of this model, it would be possible to describe the food product concept prototype/s according to the levels of the set attributes, and consumer needs and preferences for product characteristics could be patterned for better understanding of consumer choice of specific food product attributes. It would therefore be possible to test commercial food products for consumer acceptance within this model. Food industries would be able to direct food product development with less risk of bias and with better focus on compatibility with consumer needs and preferences, improving product marketability through consumer satisfaction.

1.4 STRUCTURE OF THESIS

This thesis is presented in seven chapters. Two of these chapters (4 and 5) are reported in article format according to the guidelines prescribed by the respective journals. Based on this approach, each of the chapters in this document is presented as a unit, containing tables and graphs numbered for the specific chapter and an applicable reference list. This editorial format facilitates cross-referencing between chapters.

The study is presented in the following sequence of chapters:

- CHAPTER 1 Setting of the problem and justification.
- CHAPTER 2 Literature context.
- CHAPTER 3 Research design and methodology.
- CHAPTER 4 Attributes of importance in staple-type food product development for low-income urbanised consumers in South Africa (Article 1).
- CHAPTER 5 Food product attributes guiding purchasing choice of maize meal by low-income South African consumers: a quantitative approach (Article 2).
- CHAPTER 6 Food product attributes guiding purchasing choice of maize meal by low-income South African consumers: a qualitative approach.
- CHAPTER 7 Integration and application

1.5 REFERENCE LIST

ACNIELSEN. 2005. A country divided: consumer spending trends in a dual economy. *Food Review* (April):1-3. [WWWdocument – 17/05/2007].

URL http://www.foodreview.co.za/index.php?option=3&id=9&com_task=2&x=110

ALWITT, LF & DONLEY, TD. 1996. *The low-income consumer: adjusting the balance of exchange*. Thousand Oaks, CA. SAGE.

AMULI, JA. 2006. *Purchasing patterns of major plant staples in low-income households in the Vaal Triangle*. MTech (Food Service Management) dissertation. Vaal University of Technology.

BEAR, M, BRADNUM, P, TLADI, S & PEDRO, D. 2005. *Making retail markets work for the poor – why and how Triple Trust Organisation decided to intervene in the spaza market in South Africa*. The SEEP practitioner learning program in business development services market assessment. United States Agency International Development (USAID). Case study #1.

BFAP (Bureau for Food and Agricultural Policy). 2007. *The South African agricultural baseline: consumer trends and analysis*. [WWWdocument – 16/07/2007].

URL <http://www.bfap.co.za/reports/BFAP%20Baseline%20June%202007.pdf>

BFAP (Bureau for Food and Agricultural Policy). 2008. *The South African agricultural baseline: consumer trends and analysis*. [WWWdocument – 27/06/2008].

URL <http://www.bfab.co.za/reports/BFAP%20Baseline%20%20-Consumer%20Economics%20June%202008%20part%202.pdf>

CA (Consumers' Association). 1997. *The food divide – eating on a low income*. Policy paper (October):1-16.

CADE, J, UPMEIER, H, CALVERT, C & GREENWOOD, D. 1999. Cost of a healthy diet. *Public Health Nutrition* 2(4):505-512.

CARSTENS, S. 2008. Werkers gaan skuld aan net om te oorleef. *Sake-Rapport*, p. 6, 8 Junie.

- COLLINS, J. 2001. *Urbanisation*. [WWWdocument – 1710/2005].
URL <http://www.botany.uwe.ac.za/Envfacts/facts/urbanisation.htm>
- CONNER, M & ARMITAGE, CJ. 2002. *The social psychology of food*. Buckingham. Open University Press.
- COOPER, RG. 1990. New products: what distinguishes the winners? *Research Technology Management* 33(November/December):27-31.
- COSTA, AIA & JONGEN, WMF. 2006. *New insights into consumer-led food product development*. [WWWdocument – 26/03/2006].
URL http://www.sciencedirect.com/science?_ob=ArticleURL&_aset=V-WA-A-W-A-MsSAY
- CRONJE, F. 2004. So many questions. South African Survey: 2003-2004. South African Institute of Race Relations. *Sunday Times*, 9 January. [WWWdocument – 09/01/2005].
URL <http://sundaytimes.co.za>
- DEROSE, JA. 1998. Food poverty. In DEROSE, I, MESSER, E & MILLMANN, S. (Eds). 1998. *Who is hungry? And how do we know? Food shortage, poverty & deprivation*. Tokyo. United Nations University.
- DEN HARTOG, AP, VAN STAVEREN, WA & BROUWER, ID. 1995. *Manual for social surveys on food habits and consumption in developing countries*. Weikersheim. Margraf Verlag.
- DICTIONARY. 2009. Shebeen. [WWWdocument – 27/01/2009].
URL <http://dictionary.reference.com/browse/Shebeen>
- DICTIONARY. 2009. Tavern. [WWWdocument – 27/01/2009].
URL <http://dictionary.reference.com/search?q=tavern>
- DONKIN, AJM, DOWLER, EA, STEVENSON, SJ & TURNER. SA. 2000. *Public Health Nutrition* 3(1):31-38.
- DOWLER, E. 1997. *Food access – whose responsibility?* New Policy Institute. Briefing paper. [WWWdocument – 11/01/2008]. URL
<http://www.npi.org.uk/reports/food%20access.pdf>

DUVENAGE, SS & SCHÖNFELDT, HC. 2007. Impact of South African fortification legislation on product formulation for low-income households. *Journal of Food Composition and Analysis* 20(December):688-695.

FAO (Food and Agriculture Organisation of the United Nations). 2002. *Progress in reducing hunger has virtually halted*. Report. [WWWdocument – 12/02/2005].
URL <http://www.fao.org/English/newsroom/news/2002/9620-en.html>

FAO (Food and Agriculture Organisation of the United Nations). 2005. *Farming in urban areas can boost food security: green cities through agriculture*. FAONewsroom. 3 June. [WWWdocument – 23/01/2008].
URL <http://wwwfao.org/newsroom/en/news/2005/102877/indexs.html>

FAO (Food and Agriculture Organisation of the United Nations). 2008. *Poorest countries' cereal bill continues to soar, governments try to limit impact*. FAONewsroom. 11 April. [WWWdocument – 18/12/2008].
URL <http://www.fao.org/newsroom/en/news/2008/1000826/index.html>

FF (Farm Foundation). 2006. *Food marketing analysis: consumer demand issues*. [WWWdocument – 27/02/2007].
URL <http://www.farmfoundation.org/projects/documents/ConsumerDemands.pdf>

FISHER, A. 1999. Consumer preferences and farmers' markets. Community Security Coalition. *World Hunger Year*. [WWWdocument - 17/03/2007].
URL http://www.worldhungeryear.org/why_speaks/ws_load.asp?file=52&style=ws_table

GAIN (Global Agriculture Information Network). 2003. *Retail Food Sector Report 2003*. Republic of South Africa: retail food sector. GAIN Report Number SF3043. United States Department of Agriculture. Foreign Agricultural Service.

GAIN (Global Agriculture Information Network). 2005. *Retail Food Sector Report 2005*. Republic of South Africa: retail food sector. GAIN Report Number SF5040. United States Department of Agriculture. Foreign Agricultural Service.

GARRETT, JL & RUEL, MT. 1999. Food and nutrition in an urbanizing world. *Choices* 14(Fourth Quarter):12-18.

GAUTENG. 2008. South Africa Holiday: Gauteng. [WWWdocument – 17/12/2008].

URL http://www.southafricaholiday.org.uk/places/p_gauteng.htm

GOLDEN, MHN. 2000. Famine relief. In GARROW, JS, JAMES, WPT & RALPH, A. (Eds). *Human nutrition and dietetics*. London. Churchill Livingstone.

HADDAD, L, RUEL, MT & GARRETT, JL. 1999. Are urban poverty and undernutrition growing: some newly assembled evidence. International Food Policy Research Institute. Discussion paper 63. *World Development* 27(11):1891-1904.

HERSEY, J, ANLIKER, J, MILLER, C, MULLIS, RM, DAUGHERTY, S, DAS, S, BRAY, CR, DENNEE, P, SIGMAN-GRANT, M & THOMAS, HO. 2003. Food shopping practices are associated with dietary quality in low-income households. *Journal of Nutrition Education* 33(Supplement 1):S16-S25.

HIGGS, N. 2007. *The state of South Africans as we start 2007*. TNS Research Surveys. [WWWdocument – 12/09/2007]. URL <mhtml:file:///F:\The%state%20of%20South%20Africans%20as%20we%20start%202007.mht>

HUBBARD, M & ONUMAH, G. 2001. Improving urban food supply and distribution in developing countries: the role of city authorities. *Habitat International* 25(3):431-446.

HUGHES, D. 2002. *Consumer interests and the reform of the CAP: a review of relevant documentation and research*. Briefing points on consumer interests and reform of the CAP. [WWWdocument – 27/08/2006]. URL http://ec.europa.eu/consumers/reports/rep02_en.pdf

INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS (ICRISAT). 1900. Groundnut taxonomy. [WWWdocument - 09/12/2009]. URL <http://www.icrisat.org/GroundNut/Taxonomy/gnutint.htm>

IDA14 (International Development Association). 2004a. *Proportion of the population below US\$1/day poverty line*. Global data monitoring information system. The World Bank Group. [WWWdocument - 08/11/2007]. URL http://ddp-ext.worldbank.org/ext/GMIS/gdmis.do?siteId=1&contentId=Content_2&menuId=LNAV01HOME2

IDA14 (International Development Association). 2004b. *Sub-Saharan Africa*. Global data monitoring information system. The World Bank Group. [WWWdocument - 08/11/2007].

URL <http://ddp-ext.worldbank.org/ext/GMIS/gdmis.do?siteId=1&menuId=LNAV01REG6>

JENKINS, JW. 1997. Urbanisation and security in South Africa: the continuation of history. *African Security Review* 6(6):1-12. [WWWdocument - 05/11/2008].

URL <http://www.iss.co.za/Pubs/ASR/6No6/Jenkins.html>

JRF (Joseph Rowntree Foundation). 1994. *Eating on a low income*. Social Policy Research 66. [WWWdocument - 19/02/2008].

URL <http://www.jrf.org.uk/knowledge/findings/socialpolicy/SP66.asp>

KARNANI, A.G. 2006. *Fortune at the bottom of the pyramid: a mirage*. Ross School of Business. Paper no.1035. [WWWdocument - 06/02/2008].

URL http://papers.ssrn.com/sol3/papers.cfm?abstract_id=914518

KENNEDY, G. 2003. Food security in the context of urban sub-Saharan Africa. *FoodAfrica*. Internet Forum 31 March – 11 April. Internet paper for food security theme. [WWWdocument – 19/01/2009].

URL <http://www.foodafrica.nri.org/urbanisation/urbspapers/GinaKennedyFoodsecurity.pdf>

KRUGER, R, SCHÖNFELDT, HC & OWEN, JH. 2008. Food-coping strategy index applied to a community of farm-worker households in South Africa. *Food and Nutrition Bulletin* 29(1):3-14.

LANDMAN, JP. 2003. *Socio-economic delivery: surprising poverty trends*. [WWWdocument – 22/01/2005].

URL http://jplanman.nedsecure.co.za/files/show.asp?id=22279&cat=socio-economic_del

LEIBTAG, ES & KAUFMAN, PR. 2003. *Exploring food purchase behaviour of low-income households: how do they economize*. Current issues in economics of food markets. United States Department of Agriculture. Economic Research Service. Agriculture Information Bulletin No 747-07. Washington DC.

MARAIS, J. 2007. Voorstelle om armes te help 'erge teleurstelling'. *Rapport*, p. 3, 24 Junie.

MARTER, A & GORDON, A. 1996. Emerging issues confronting the renewable natural resources sector in Sub-Saharan Africa. *Food Policy* 21(2):229-241.

MARUMO, K. 2006. *Perceived needs of low-income urbanised consumers for food product attributes that guide purchase choice*. BTech (Food & Beverage Management) research project report. Vaal University of Technology.

MAXWELL, DG. 1996. Measuring food insecurity: the frequency and severity of “coping strategies”. *Food Policy* 21(3):291-303.

MAXWELL, D, WATKINS, B, WHEELER, R & COLLINS, G. 2003. The coping strategies index: a tool for rapidly measuring food security and the impact of food aid programs in humanitarian emergencies. Field methods manual. CARE and WFP. Nairobi. Presented at the FAO International Workshop on “Food Security in Complex Emergencies: building frameworks to address longer-term programming challenges”. Tivoli, 23-25 September.

MESSER, E. 1998. Conclusions. In DEROSE, I, MESSER, E & MILLMANN, S. (Eds). 1998. *Who is hungry? And how do we know? Food shortage, poverty & deprivation*. Tokyo. United Nations University.

MITLIN, D. 2005. Understanding chronic poverty in urban areas. *International Planning Studies* 10(1):3-19, February.

MOSKOWITZ, HR, PORRETTA, S & SILCHER, M. 2005. *Concept research in food product design and development*. Victoria, Australia. Blackwell Professional.

MOTLOUNG, BM & MEARS, R. 2002. Combating poverty in South Africa. *Development Southern Africa* 19(4):531-543.

NFCS (National Food Consumption Survey). 1999. Children aged 1 – 9 years in South Africa. NFCS group. [WWWdocument - 22/08/2008].

URL <http://www.sahealthinfo.org/nutrition/foodconsumption.htm>

NFCS-FB-1 (National Food Consumption Survey Fortification Baseline South Africa 2005: executive summary). 2008. *South African Journal of Clinical Nutrition* 21(3):245-300, Supplement 2.

NEL, JH & STEYN, M. 2002. *Report on South African food consumption studies undertaken amongst different population groups (1983-2000): average intakes of foods most commonly consumed by adults*. Pretoria. Directorate: Food Control, Department of Health.

NORD, M, ANDREWS, M & CARLSON, S. 2007. *Household food security in the United States, 2006*. United States Department of Agriculture. Economic Research Service. Economic Research Report No. ERR-49. [WWWdocument – 20/11/2007].
URL <http://www.ers.usda.gov/Publications/ERR49/>

OLDEWAGE-THERON, WH, DICKS, EG & NAPIER, CE. 2006. Poverty, household food insecurity and nutrition: coping strategies in an informal settlement in the Vaal Triangle, South Africa. *Public Health* 120:795-804.

OLDEWAGE-THERON, WH, DICKS, EG, NAPIER, CE & RUTENGWE, R. 2005a. A community-based integrated nutrition research programme to alleviate poverty: baseline survey. *Public Health* 119:312-320.

OLDEWAGE-THERON, WH, DICKS, EG, NAPIER, CE & RUTENGWE, R. 2005b. Situation analysis of an informal settlement in the Vaal Triangle. *Development Southern Africa* 22(1):13-26.

PAINTER, K. 2007. *An analysis of food-chain demand for differentiated farm commodities: implications for the farm sector*. Report to Ag of the Middle. Center for Sustaining Agriculture & Natural Resources. Washington State University.

PIR (Poverty and Inequality Report). 1998. *Poverty and inequality in South Africa*. Report prepared for the Office of the Executive Deputy President and the Interministerial Committee for Poverty and Inequality. Pretoria. Government Printer.

PRAHALAD, CK. 2004. *The fortune at the bottom of the pyramid: eradicating poverty through profits*. Wharton School Publishing.

PRAHALAD, CK & HART, S. 2006. Making a market among the poor. *Food & Beverage Reporter* (August). [WWWdocument - 17/09/2007].
URL <http://www.developotechnology.com/web/content/blogcategory/18.31>

REGMI, A. 2001. *Changing structure of global food consumption and trade*. United States Department of Agriculture. Economic Research Service. Agriculture and Trade Report WRS-01-1.

REGMI, A & DYCK, J. 2001. Cross-country analysis of food consumption patterns. In Regmi, A. (Ed). *Changing structure of global food consumption and trade*. United States Department of Agriculture. Economic Research Service. Agriculture and Trade Report WRS-01-1.

ROSE, D & CHARLTON, KE. 2002. Prevalence of household food poverty in South Africa: results from a large nationally representative survey. *Public Health Nutrition* 5(3):383-389.

ROSENAU, MD (jr). 2000. *Successful product development: speeding from opportunity to profit*. New York. Wiley.

RSA (Republic of South Africa). 2003. Department of Health, Government notice. No. R2003. Regulations relating to the fortification of certain foodstuffs. Section 15(1) of the Foodstuffs, Cosmetics and Disinfectants Act, No. 54 of 1972. [WWWdocument – 25/02/2005].
URL <http://www.doh.gov.za/search/default.aspS>.

SAARF (South African Advertising Research Foundation). 2006. *Segmentation handbook – based on AMPS 2005 and AMPS 2006*. Johannesburg. South African Advertising Research Foundation.

SADHS (South African Demographic and Health Survey). 2003. Department of Health. [WWWdocument – 22/08/2008]. URL <http://www.doh.gov.za/facts/index.html>

SAYED, N. 2002. Food security: identifying the vulnerable and selecting appropriate interventions. In *Empowering nutrition: broadening our horizons*. Current information on the national and household food security situation in South Africa: master class presented at the 7th biennial congress of the Association for Dietetics in South Africa and the 19th biennial congress for the Nutrition Society of South Africa held in Potchefstroom on 9 November 2002.

SCHWABE, C. 2005. *Fact sheet: poverty in South Africa*. Human Sciences Research Council. Southern African Regional Poverty Network. [WWWdocument – 22/01/2005].
URL <http://www.sarpn.org.za/documents/d0000990/index.php>

SSA (Statistics South Africa). 2005a. *Calculating the undercounting Census '96*. Appendix E: Enumerator area type definitions. [WWWdocument - 25/03/2008]. URL http://www.statssa.gov.za/census01/census96/HTML/Metadata/Docs/Undercnt?appendices/appendix_e.htm

SSA (Statistics South Africa). 2005b. *Census Survey 2001*. [WWWdocument - 25/03/2008]. URL <http://www.statssa.gov.za>

THE DONOR COMMITTEE FOR ENTERPRISE DEVELOPMENT. 2003. Assessing the spaza shop market in South Africa – Triple Trust Organization 2003. [WWWdocument – 27/01/2009]. URL <http://www.value-chains.org/dyn/bds/docs/detail/244/1>

THEFREEDICTIONARY. 2009. Vendor. [WWWdocument – 27/01/2009]. URL <http://www.thefreedictionary.com/vendor>

URBAN, GL & HAUSER, JR. 1993. *Design and marketing new products*. 2nd ed. Englewood Cliffs, NJ. Prentice-Hall.

VAN WYK, J, BRITZ, TJ. & MYBURG, AS. 2002. Arguments supporting kefir marketing to the low-income urban African population in South Africa. *Agrekon* 41(1):43-61, March.

VIDAL, J. 2003. Forced to slum it. *The Guardian*, 10 October. [WWWdocument-20/12/04]. URL <http://www.guardian.co.za.uk/globalisation/story/0,7369,1059982,00.html>

WALKER, R, DOBSON, B, MIDDLETON, S, BEARDSWORTH, A & KEIL, T. 1995. Managing to eat on a low income. *Journal of Nutrition & Food Science* 3:5-10.

WATSON, L. 2008. Verbruikers vul nou hul inkopiemandjies anders. *Sake-Rapport*, p. 2, 25 Mei.

WILLIAMS, TG. 1982. *Consumer behaviour: fundamentals & strategies*. St Paul, MN. West.

WHO (World Health Organisation). 2003. Diet, nutrition and the prevention of chronic disease. Report of a joint WHO/FAO Expert Consultation. WHO Technical Report Series 916.

2.1 INTRODUCTION

Food choice and needs are specific to the realities of a target population. To support the consumer-based approach in this study, consumer behaviour as related to food choice, food quality trends and perceptions, food product attributes of importance, and low-income, will be reviewed. Lastly, the initial stages of the food product development process and food concept formulation will be addressed.

2.2 CONSUMER FOOD CHOICE

Food choice is a complex issue and varies according to life stage and the importance attached to a particular attribute by the specific consumer/ population group. The influence of many factors and food-related behaviours (Kim & Hunter, 1993:131; Kraus, 1995:72; Bogue, Delahunty, Henry & Murray, 1999:301) reflects in aspects such as the sensory properties and health/ nutritional value of food, as well as food price/ value for money (Conner & Armitage, 2002:8, 27-28). In general, the major determinants of food choice include:

- Biological determinants such as hunger and satiety, palatability and sensory aspects
- Economic determinants such as cost, income and availability
- Physical determinants such as access, education and knowledge, skills (e.g., cooking) and time
- Social determinants such as social class, culture, social context (including family, peers), social setting and meal patterns
- Psychological determinants such as mood, stress and guilt
- Attitudes, beliefs and knowledge about food (EUFIC, 2005:1-3).

In Figure 1, the interrelatedness of the factors determining consumers' food choice is reported. Consumer behaviour is becoming increasingly less predictable and consumer decisions to purchase products are largely based on personal preferences (Imram, 1999:224-225).

Decision-making during food choice is perceived as complex and highly diverse (Torjusen, Lieblein, Wandel & Francis, 2001:208). In any purchasing situation, a unique combination of environment information is integrated with personal needs, motives, perceptions and attitudes. Learning from past experiences and individual factors which guide the (food) choice outcome of the individual consumers are also imbedded (Assael, 1992:95). Decision-making during the food choice process is not guided exclusively by conscious reflection: it can also be automatic, habitual and subconscious (Furst, Connors, Bisogni, Sobal & Falk, 1996:247).

Consumers appraise food products for product qualities, features and functionality prior to purchase, at the point of purchase and during preparation and consumption. Product features, therefore, need to link to product experience and behaviour by acknowledging consumer emotions. The holistic approach in food product development, as reported by the "consumer behaviour ladder", links consumer concerns, expectations and appraisals to emotions. Product trials as well as product repurchasing actions are driven by emotions and rational thoughts as influenced by sensory cues (Lundahl, 2006:29). The setting of each (food) purchase is thus of importance.

The concerns of consumers are represented by the basic needs they strive to fulfil by achievement of basic goals, maintenance of standards and adherence to attitudes and beliefs held. The expectations of consumers refer to the experiences they believe will result from product use (functional, hedonic or self-social identity fulfilment) (Lundahl, 2006:28-29). Expectations and concerns influence the appraisal of products by consumers. Rational thought and memories – such as satisfaction (functional benefit), and enjoyment (hedonic expectation and experience) come into play (Lundahl, 2006:29). Consumers, therefore, selectively use food product information during the purchasing evaluation process to meet needs in relation to specific beliefs and predispositions. Accordingly, the acceptance or rejection of a food product will be determined by the compatibility of food product attributes with consumer needs (Earle, Earle & Anderson, 2001:201; Sheth & Mittal, 2004:3, 4).

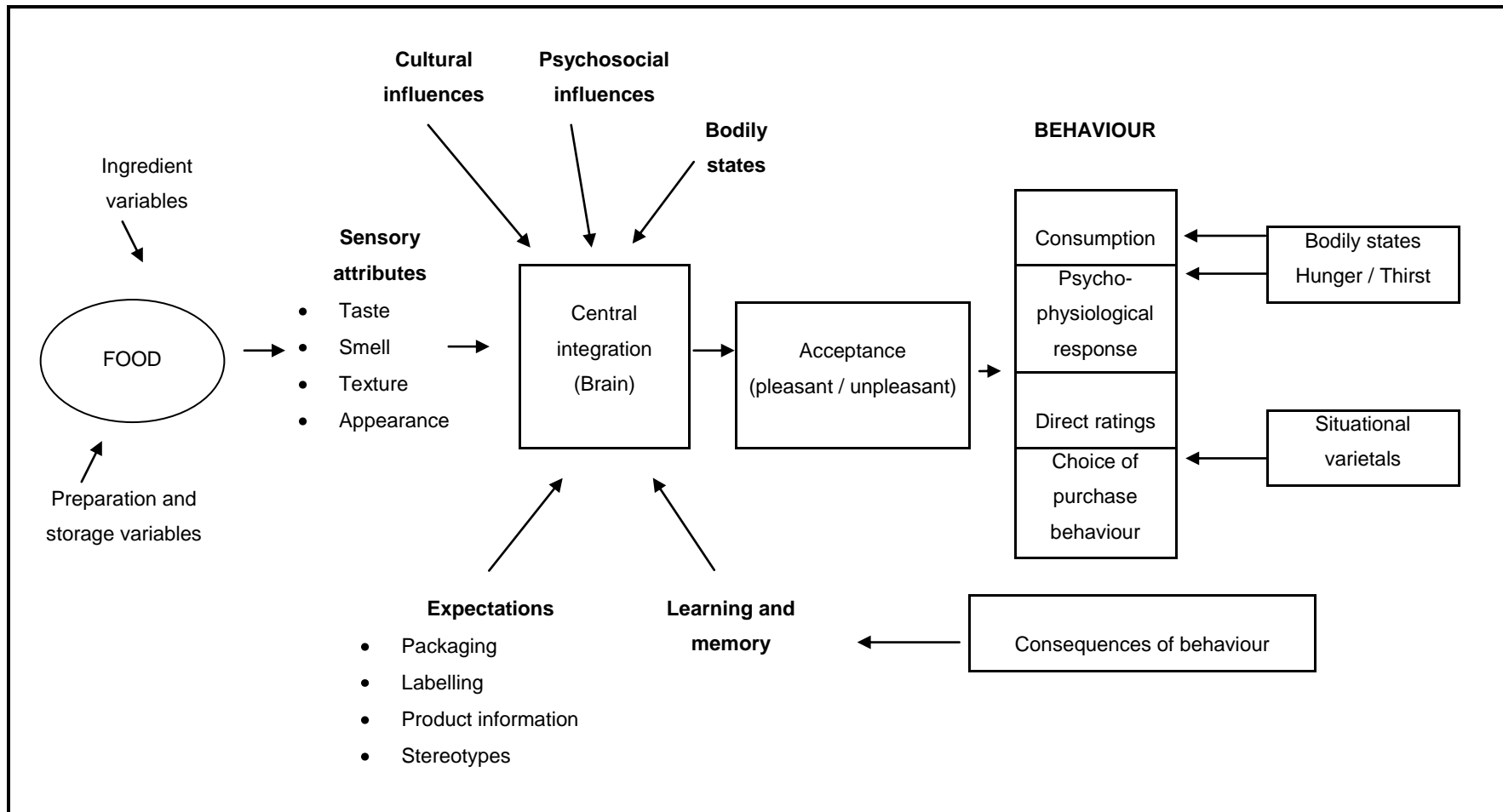


Figure 1: Factors determining consumers' food choice (Imram, 1999:227 as modified from Cardello)

The position that such a value assumes in the mind of a consumer is indicative of consumer acceptance, and determines the competitive position of the specific quality attributes within the market (Young, 1999:81; Bogue *et al.*, 1999:302). Producers become “creators of value” (Veblen, 1988:129; Blaich & Blaich, 1993:ix, 24-25; Brunsø, Fjord & Grunert, 2002:6-7).

From this information an understanding is derived of what consumers perceive to be important, and decisions can then be made about the way these attributes can be created within a product/range (Young, 1999:81). Successful (food) products accordingly communicate significant value in the key categories that are of importance to the target consumer and setting (Cagan & Vogel, 2002:5-7, 14; Sheth & Mittal, 2004:19). In application, the core principle in product development indicates that a product should reflect the consumers’ desires and tastes – making it essential to understand and learn from the consumer in order to develop insight into the factors that consumers consider when forming their decisions to buy a product.

2.3 TRENDS IN QUALITY PERCEPTION

Developed countries are typified by higher incomes and food spending, including more diversified and quality products in the diet. Greater discretion is applied in spending, especially on preferred foods (Farm Foundation (FF), 2006:2, 3). This shift in purchasing decision includes perceptions on quality, variety, convenience, specific characteristics of the product, or the manner in which the food was produced and processed, awarding increasing importance to ethical and quality criteria (Hughes, 2002:7). Additional preferences beyond the basic nutritional needs can therefore be considered, such as improved taste, variety, convenience and effect on health and lifestyle. Individual food consumption decisions and choices portray eating as a moral act (Andrews as quoted by Ikerd, 2005:1). The higher the income of the consumer, the smaller the impact of price and income on food demand, and the more important the influence of preferences (Von Alvensleben, 1997:209).

The quality perception of consumers in Western industrialised countries is reported by the four dimensions of taste and appearance, health, convenience, and process (for example, environmental friendliness) (Brunsø *et al.*, 2002:12). These findings are supported by the South African Bureau for Food and Agricultural Policy (BFAP) (BFAP, 2007:50-51) in describing “redefining quality” as the modern-day trend by which consumers seek high quality eating

experiences. The six main global consumer food trends were listed as follows: an increasing demand from consumers for convenient, healthy, attractive food, food variety, ethical/environmental eating, and value-for-money. All of these seem to confirm the expectations that consumer demand will be steered by the combination of convenience, health and pleasure, as the three major food choice trends that shape the food industry (Gray, Armstrong & Farley, 2003:214).

Urbanisation has played a significant role in changing global food consumption patterns. In developing countries, urbanisation is associated with increased per capita income, culminating in higher disposable income and changed food consumption patterns characterised by increased demand for meat, horticultural, and processed products (Regmi, 2001:iii). The changed lifestyles and consumption patterns do not necessarily indicate improved nutritional patterns (Regmi & Dyck, 2001:24-25), although the micronutrient intake generally increases, as does the incidence of overweight and obesity (Donnelley, 2007:9). The increased demand for consumers' time, in combination with higher food availability due to higher purchasing power, leads to a demand for food products with increased characteristics. Food product quality and convenience, product safety and health are prioritised. Food safety, taste, freshness, and overall quality are also important attributes guiding consumer preference for organic products (Regmi, 2001:iii-iv).

Within the South African context, the food purchasing and consumption behaviour of the modern income consumers (both emerging and established consumers) are indicative of increasingly complex food requirements, habitually portraying global food consumption trends. The positioning of the quality strategies of most supermarket chains was reported as being in line with these consumer trends, with focus on quality and price (BFAP, 2007:54).

The consumer trends reported for the emerging and established consumer groups are often of no or low relevance to the low-income marginalised consumers; an example is convenience, which was indicated as top priority for the former but of low priority for the latter (BFAP, 2007:52). The main concern of low-income consumers in South Africa is the provisioning of basic food security through the availability of an adequate quantity (satiety value) of affordable food to satisfy nutritional requirements (BFAP, 2007:52). However, it is not known whether this statement is true for the low-income consumers in urbanised informal settlements.

2.4 CONSUMER PERCEPTION OF FOOD QUALITY

Consumers are “rational utility maximisers” who will choose a product that provides the utmost utility to them when faced with a set of available alternatives. A food product is perceived as embodying accumulated benefits, with tangible and intangible attributes relating to the consumers’ needs, wants and behaviour (Ness & Gerhardy, 1994:29; Earle *et al.*, 2001:3).

A food product consists of a combination of attributes (Green & Srinivasan, 1987:119), comprising the characteristics that consumers infer from a product. Consumer quality perception is based on specific characteristics in a product and available alternatives (Oude Ophuis & Van Trijp, 1995:179). This influences the utility the specific consumer experience during purchase choice (Kaul & Rao, 1995:293-294).

Quality expectations are based on product quality cues and quality attributes. Product quality cues consist of concrete product characteristics that the consumer infers from the product; these could be of an intrinsic nature (physical characteristics, e.g., the appearance of fresh fruit) or extrinsic nature (all other characteristics, such as price or brand) (Oude Ophuis & Van Trijp, 1995:178; Van Kleef, Van Trijp & Luning, 2005:186; Brunsø *et al.*, 2002:7;). Quality cues represent concrete product characteristics, which can be inferred without prior consumption or usage by consumers (Oude Ophuis & Van Trijp, 1995:179).

Quality attributes refer to benefits gained through product experience acquired from actual consumption and usage of the product. Quality attributes are indicated either as experience attributes, such as the taste of a product or its stability at room temperature, or as credence attributes, such as desirable product benefits like nutritional value or health (Oude Ophuis & Van Trijp, 1995:178, 180).

After purchasing, consumers experience the quality of food within a variety of settings, as influenced by many individual factors, including culture. The relationship between quality expectations and the quality experienced is believed to determine consumer satisfaction. This determines the probability of repeated purchasing (Young, 1999:79; Henard & Szymanski, 2001:374; Oliver as quoted by Grunert, 2002:276). Quality attribute perceptions therefore constitute the basis for overall quality judgements (Steenkamp as quoted by Oude Ophuis & Van Trijp, 1995:178-179).

The importance consumers assign to different food product attributes differs (Malaviya & Sivakumar, 1998:97). The “voice of the consumer” is indicated by a hierarchical set of “customer needs” where each need, or set of needs, is depicted by a priority value, which indicates its importance to the specific consumer (Hart, 2004:224). These parameters then become key criteria in providing a quality product (Hart, 2004:224). The consumer choice process is accordingly described in terms of (food) product attributes (Kaul & Rao, 1995:296). It follows that the key attributes of importance to a target population should be linked to desirable benefits and pleasant consequences of consuming the product (Van Kleef *et al.*, 2005:186).

Perceived (food) quality can therefore be defined as “the customer’s perception of the overall quality or superiority of a product or service with respect to its intended purpose, relative to alternatives” (Aaker as quoted by Oude Ophuis & Van Trijp, 1995:178). Although delivering of quality is only partly under the control of the producer, product characteristics usually have an influence on both expected and experienced quality and can be influenced by the producer (Grunert, 2002:267-277). Thus, quality assists in satisfying purchase values (Brunsø *et al.*, 2002:6, 9).

However, consumers tend to rely on simple indicators (such as brand name, retailer reputation) rather than closely specified attributes of food product quality (Caswell, 2000:5).

Therefore, to engage consumers fully in purchase, the specific attributes provided by foods produced for the low-income consumers in South Africa must add to the value of the product and offer a point of difference from the competition. This can be achieved by a thorough understanding of what the most needed/ preferred food product attributes (e.g., price, convenience, quality) mean to the target consumer (Groves, 2003:17). Knowledge in this regard will provide a key to success.

2.5 FOOD PRODUCT ATTRIBUTES OF IMPORTANCE

Sensory perceptions, monetary considerations, convenience, health and nutrition, managing relationships (considering the preferences and needs of others) and quality are important considerations in value negotiations when making food choices (Furst *et al.*, 1996:251, 257-260). These findings were indicated for a study population including men and women of different

ages, household situations and varying eating patterns (Furst *et al.*, 1996:249) as is the case in the general food environment and not specifically for low-income households.

A study by Shepherd (1999:810) indicated the major determinant of food choice as the flavour or taste of the food, followed by the occasional importance of physiological factors such as tolerance and satiety. Beliefs about the healthiness of the food were indicated as of much less importance and factors such as price and convenience were indicated as having little or no effect on consumption.

In a meta-search of previous literature, price (affordability) was indicated as an important but not major attribute that influences consumer food choice (Iop, 2006:897). When price was investigated as an independent variable in perceived quality, a significant price effect was observed because of the association between price and quality by the consumer (Walley, Parsons & Bland, 1999:156,158).

Taste is often indicated as the most important consumer food demand, followed by nutrition and then price as determinants in food choice (Cheese Reporter as quoted by Bogue *et al.*, 1999:313). Further consumer concerns are related to the production method, nutritional information and origin of food products (Iop, 2006:898). Ethical, environmental, social and health concerns (Torjusen *et al.*, 2001:207), as well as factors relating to nutritious, healthy and convenient foods, were also cited as important (Sloan, 2003:26-31).

The Institute of European Food Studies reported quality as the main criterion for food selection in all member states (n=14 500). Taste and price were alternatively indicated as either the second or the third most important criteria. The importance allocated to health differed, but approximately a third of the respondent countries perceived health as one of the three most important criteria. Family constraints and preferences followed closely in fifth place for most countries. Other criteria such as presentation/ packaging, ethnic background, availability of food and use of additives, were perceived as being of less importance (EUFIC, 1998:1).

The characteristics of low cost products include food shelf life under natural climatic conditions, inexpensive packaging, provision of essential nutritional elements, and complementation to the traditional diet (Bachman, 1986:247). There is, however, no basis for assuming that this general trend will be applicable to low-income households in urbanised informal settlements.

Consumer purchasing decisions are based on the following product attributes:

- Cost: is it affordable?
- Availability: is it available where and when it is wanted?
- Packaging: does it look attractive?
- Performance: does it directly satisfy the consumer's most important needs?
- Ease of use: is it easy to use and operate?
- Assurances: does it have a reputation for durability, reliability and support?
- Life cycle cost: will it cost too much to maintain?
- Social standards: what do others think of it? (Magrab, 1997:89, 91).

2.6 FOOD CHOICE AND LOW-INCOME

Low-income individuals and families usually have a fixed fortnightly budget that must meet all expenses. Consumer food habits and knowledge of food product preparation have been indicated as barriers to food product consumption, reflecting the influence of the convenience culture on societal changes. Consumers with lower income levels, from necessity, are the least likely to eat out (Fisher, 1999:2).

Food-buying habits are also changed in an attempt to economise. In this situation, food choice reflects a complex relationship between economic circumstances (poor levels of disposable income), limited access to a wide variety of reasonably priced foods and cultural norms and expectations (Anderson & Morris, 2002:12-15). The cost of food takes precedence over issues of taste, cultural acceptability and healthy eating (Joseph Rowntree Foundation (JRF), 1994:2).

Consumers in townships often demonstrate contradictory demands and characteristics. Leading brand names are often the main items supplied by spazas and other informal shops, owing to strong brand loyalty demonstrated by these customers. Less expensive items and/ or single service package sizes that are ambient-stable and do not require refrigeration, have been indicated as essential attributes for successful food products in this market (Global Agriculture Information Network (GAIN), 2005:4).

These consumers generally face higher purchase prices and therefore purchase more discounted products, favour generic low-quality products over brand, pursue volume discounts, or settle for less expensive products (Leibtag & Kaufman, 2003:1).

If the struggle is to provide enough food for the family, nutrition is an especially challenging issue (JRF, 1994:2). This situation is aggravated by a scarcity of shops in the low-income areas, sometimes resulting in “food deserts”, limited selection or poor food quality. The unhealthiest food choices are often the cheapest and most heavily marketed (JRF, 1994:2). With the heavy impact of HIV/AIDS on these poor households, healthy food products are needed, but out of reach, unless such products can be developed as viable substitutes for basic staples (GAIN, 2005:5). Both Lang and Reiner (2002:4) and Hughes (2002:15) plead for an integrated approach to health as the key to the future of food, mentioning nutrition, food safety and sustainable food supply as elements of such an approach.

2.7 FOOD PRODUCT DEVELOPMENT

Innovation in addressing unconscious consumer needs is a major component in the process of successful (food) product development (Grunert, Harmsen & Göransson, 1997:69). It follows that the delivery of unique benefits to targeted consumers supports the building of a strong consumer relationship (Earle *et al.*, 2001:17).

The greatest differences between successful and unsuccessful products are found within the first few steps of the product development process (Cooper, 1990:29). The process of food product development usually consists of four main steps (see Figure 2 of this chapter):

- (1) Product strategy development to identify the project and product area;
- (2) Product design and process development to create the product and process;
- (3) Product commercialisation to design marketing, production and quality assurance; and
- (4) Product launch and evaluation to organise production, launch and post launch (Earle & Earle, 1999:7; Earle *et al.*, 2001:99; Fuller, 2005:28; Van Kleef *et al.*, 2005:182).

Further subdivisions are added as needed (Saguy & Moskowitz, 1999:70). For the purpose of this study, specific processes in steps one and two were of importance.

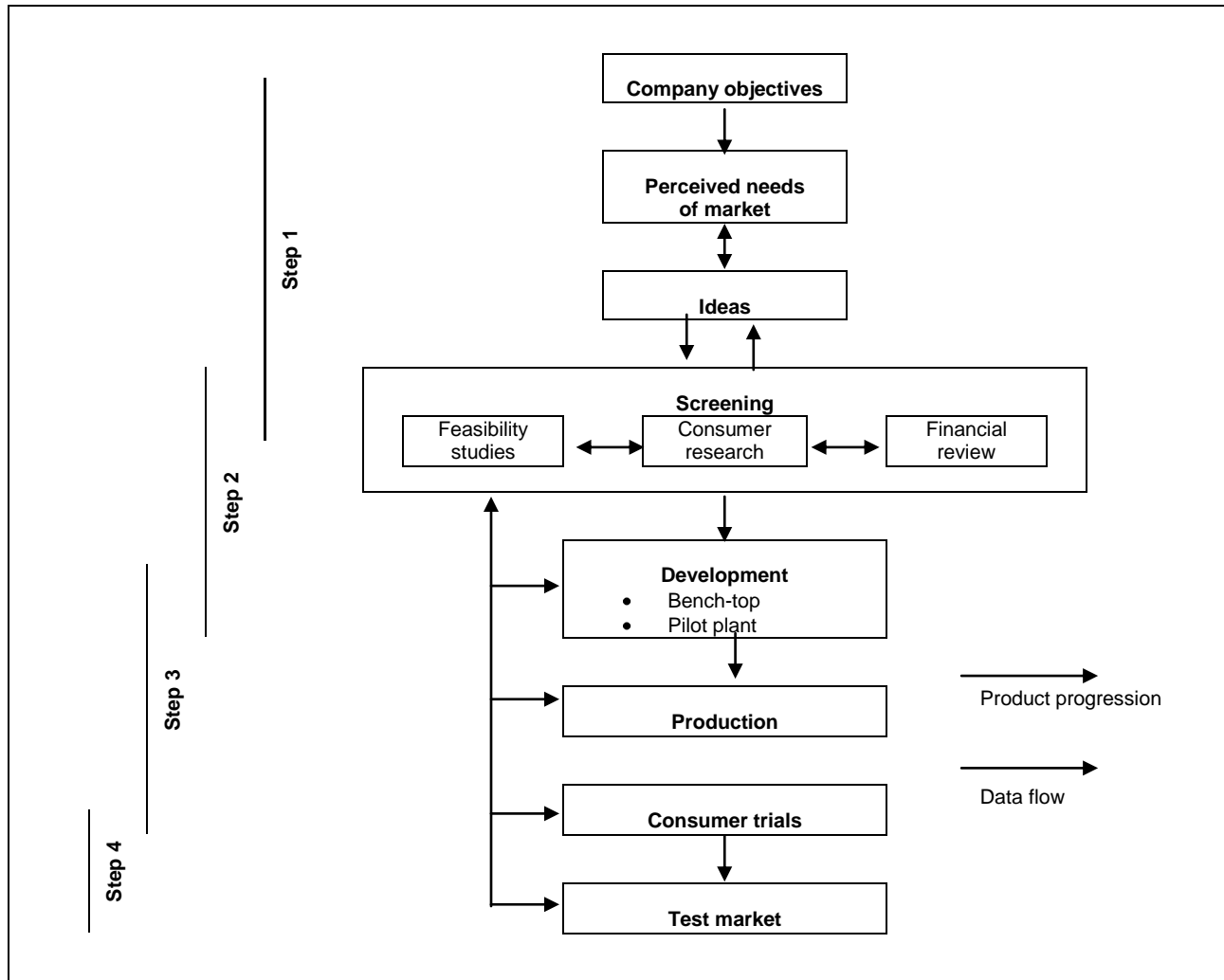


Figure 2: Steps in new food product development (Fuller, 2005:28)

Step 1 addresses product strategy development and incorporates knowledgeable, creative and systematic idea generation and screening in a controlled manner. Being of strategic value, product ideas are developed systematically to satisfy the aim of a project, following a constant cycling of idea generation and screening throughout the project (Earle & Earle, 1999:42). For the purpose of this study product idea generation and screening to guide food product concept identification were included (Earle & Earle, 1999:9).

The identification of a food product idea is initiated from a qualitative approach and followed through into a more specific quantitative evaluation or sifting procedure (Phase 1 of this study) (Earle & Earle, 1999:41-42).

The process of project strategy formulation derived the product concept and product design specifications as outcomes. Based on information derived from predicted category users regarding food product attributes and benefits of importance to them when purchasing food, product concept criteria were formulated to stipulate the uniqueness of the product for satisfying the needs of the predicted category users (Blaich & Blaich, 1993:ix, 24-25; Bell & Rolls, 2001:36; Earle *et al.*, 2001:101-102; Van Kleef *et al.*, 2005:181). Other specific requirements, such as the enhancement of health, environmental effects, regulatory compliance and trade barriers, also come into play at this stage (Graf & Saguy, 1999:60-62; Earle *et al.*, 2001:101-2). Imbedded aspects such as food safety and quality, affordability and sufficiency of intake at individual level, the provision of essential nutritional elements and the complementation of the traditional diet (if applicable), were also kept in mind (Bachman, 1986:247; Uauy-Dagach & Hertrampf, 2001:637; Webb & Rogers, 2003:5).

Step 2 addresses the product design and process development procedures, including product design for prototype formulation (Earle & Earle, 1999:6). Product design is perceived as the central, creative part of product development, integrating the different influencing factors in an approach that employs creativity, research and testing to deliver prototype product formulation (Earle *et al.*, 2001:22). The attributes of low-cost products further include manufacturing with relatively simple equipment, good shelf life under natural climatic conditions and inexpensive packaging (Bachman, 1987:247).

Controllable factors in product success include closeness to the consumer during product development, with product design focused on consumer needs, wants and values. The food product in development should be superior to the products of competitors, with different, unique benefits (MacFie & Thomson, 1994:3-4; Grunert *et al.*, 1997:31; Earle *et al.*, 2001:19), in order to provide a competitive edge (Blaich & Blaich, 1993:23-24). Forethought and planning can also control food product costs, improve ease of product use and generate favourable word-of-mouth recommendations, leading to increased product use (Fuller, 1994:42; Rosenau 2000:4, 11).

2.8 FOOD PRODUCT CONCEPT FORMULATION

A product concept describes the tactile combinations of the primary product attributes (either intrinsic or extrinsic) and consumer benefits of products (e.g., affordability, stability at room temperature and ease of preparation). These food product attributes are measurable, manipulable and can be operationally controlled by the developer. The product concept represents the idea of a product or service, contributes to an understanding of what the consumer needs, and describes the advantages of the product to the consumer. It is designed to test whether the idea is acceptable and provides a reason to buy, combined with a broad understanding of the technology required (Moskowitz, Reisner, Krieger & Oksendal, 2004:4, 9; Moskowitz, Porretta & Silcher, 2005:3-7; Van Kleef *et al.*, 2005:186). For the purpose of this study, the respective food product attributes are reported as concepts, imbedded in a framework describing the combination of the primary product attributes, as guided by consumer benefits perceived as needed by the target population.

A food product concept formulation framework that considers product attributes related to the consumer needs of the specific target population, as linked to consumer preferences and consumption patterns, will contribute significantly to the development of suitable food products. If this information is incorporated during the early phases of food product design and development, the food industry could be more assured of building/ maintaining competitive advantage in the marketplace (Costa & Jongen, 2006:4).

The maintenance and enhancement of profit levels necessitates the repositioning or redesigning of existing products and the introduction of new products (Kaul & Rao, 1995:293-294) while focussing on the ultimate consumer (Earle *et al.*, 2001:19). Consumer perception of a (food) product, especially available alternatives of various attributes, is of primary concern to developers during the redesign of existing products (evolutionary products) or the design of new products (revolutionary products) (Kaul & Rao, 1995:293-294). The “voice of the consumer” reporting the specific needs and preferences of the target population needs to be heard effectively (Griffin & Hauser, 2004:227; Hart, 2004:221). The link between preferred food product attributes, as based on decision-making, and consumer needs preceding consumer action, poses a challenge to, and an opportunity for, food producers. This integrated process linking perceived quality judgements to physical product characteristics, provides a point of departure

for food product design and development (Oude Ophuis & Van Trijp, 1995:180; Sheth & Mittal, 2004:4; Verdu, Megias, Vázquez-Araujo, Pèrez-López & Carbonell-Barrachina, 2007:2).

The market at the bottom of the SA pyramid (the very poor/ marginalised consumers) (SU-LSM levels 1 to 3) is extensive (27,6 percent) (South African Advertising Foundation (SAARF), 2006; BFAB, 2008:54; Marais, 2007:3), and stimulates a growing level of competitiveness between food-producing industries.

Players in the industry should take note that the established and emerging, as well as the marginalised consumer, despite their extreme differences, are looking for the best possible product, the most enjoyable shopping experience and increased value for money within their contrasting situations (ACNielsen, 2005:2). This situation links to diverse shopping habits and requirements, creating a challenge to provide products and store offerings that best meet the needs of all the consumers in South Africa, but specifically the low-income consumers (ACNielsen, 2005:2).

2.9 REFERENCE LIST

ACNIELSEN. 2005. A country divided: consumer spending trends in a dual economy. *Food Review* (April). [WWWdocument – 17/05/2007].

URL http://www.foodreview.co.za/index.php?option=3&id=9&com_task=2&x=110

ANDERSON, AS & MORRIS, SE. 2002. Changing fortunes: changing food choice. *Nutrition and Food Science* 30(1):12-15.

ASSAEL, H. 1992. *Consumer behaviour & marketing action*. 4th ed. Boston, MA. PWS-Kent.

BACHMAN, MR. 1986. Milk – the vital force: specific aspects of milk processing in developing countries. In Proceeding of the XX11 International Dairy Congress, The Hague, Netherlands:243-250. Zürich. Reidel.

BELL, EA & ROLLS, BJ. 2001. Regulation of energy intake: factors contributing to obesity. In BOWMAN, BA & RUSSELL, RM. (Eds). *Present knowledge in nutrition*. 8th ed. Washington DC. ILSI.

BFAP (Bureau for Food and Agricultural Policy). 2007. *South African agricultural baseline: consumer trends and analysis*. [WWWdocument – 16/07/2007].

URL <http://www.bfap.co.za/reports/BFAP%20Baseline%20June%202007.pdf>

BFAP (Bureau for Food and Agricultural Policy). 2008. *The South African agricultural baseline: consumer trends and analysis*. [WWWdocument – 27/06/2008].

URL <http://www.bfab.co.za/reports/BFAP%20Baseline%20%20-Consumer%20Economics%20June%202008%20part%202.pdf>

BLAICH, R & BLAICH, J. 1993. *Product design and corporate strategy: managing the connection for competitive advantage*. New York. McGraw-Hill.

BOGUE, JC, DELAHUNTY, CM, HENRY, MK & MURRAY, JM. 1999. Market oriented methodologies to optimise consumer acceptability of cheddar-type cheeses. *British Food Journal* 101(4): 301-316.

BRUNSNØ, K, FJORD, TA & GRUNERT, KG. 2002. *Consumers' food choice and quality perception*. The Aarhus School of Business. Working paper 77. [WWWdocument - 27/08/2006]. URL <http://130.226.203.239/pub/mapp/wp/wp77.pdf>

CAGAN, J & VOGEL, CM. 2002. *Creating breakthrough products: innovation from product planning to program approval*. Upper Saddle River, NJ. Prentice Hall.

CASSWELL, AJ. 2000. Analyzing quality and quality assurance (including labelling) for GMOs. *The Journal of Agriotechnology Management & Economics* 3(4):Article 8.

CONNER, M & ARMITAGE, CJ. 2002. *The social psychology of food*. Buckingham. Open University Press.

COOPER, RG. 1990. New products: what distinguishes the winners? *Research Technology Management*, 33(November/December):27-31.

COSTA, AIA & JONGEN, WMF. 2006. *New insights into consumer-led food product development*. [WWWdocument – 26/03/2006]. URL http://www.sciencedirect.com/science?_ob=ArticleURL&_aset=V-WA-A-W-A-MsSAY

DONNELLEY, RR. 2007. *Food, nutrition, physical activity and the prevention of cancer: a global perspective*. World Cancer Research Fund/ American Institute for Cancer Research. United States of America.

EARLE, M & EARLE, R. 1999. *Creating new foods: the product developer's guide*. Oxford. Chandos.

EARLE, M, EARLE, R & ANDERSON, A. 2001. *Food product development*. Cambridge. Woodmead.

EUFIC (European Food Information Council). 1998. *Why we eat what we eat*. Food Today 06/1998. [WWWdocument – 17/04/2008]. URL <http://www.eufic.org/article/en/health-lifestyle/food-choice/artid/why-eat-what-we-eat-food>

EUFIC (European Food Information Council). 2005. *The determinants of food choice*. EUFIC REVIEW 04/2005.

FF (Farm Foundation). 2006. *Consumer demand issues*. Food Marketing Analysis. [WWWdocument – 27/02/2007].
URL <http://www.farmfoundation.org/projects/documents/ConsumerDemands.pdf>

FISHER, A. 1999. Consumer preferences and farmers' markets. Community Security Coalition. *World Hunger Year*. [WWWdocument - 17/03/2007].
URL http://www.worldhungeryear.org/why_speaks/ws_load.asp?file=52&style=ws_table

FULLER, GW. 1994. *New food product development: from concept to marketplace*. Boca Raton. CRC.

FULLER, GW. 2005. *New food product development: from concept to marketplace*. 2nd ed. Boca Raton. CRC.

FURST, T, CONNORS, M, BISOGNI, CA, SOBAL, J & FALK, LW. 1996. Food choice: a conceptual model of the process. *Appetite* 26:247-266.

GAIN (Global Agriculture Information Network). 2005. *Retail Food Sector Report 2005*. Republic of South Africa: retail food sector. United States Department of Agriculture. Foreign Agricultural Service. GAIN Report Number SF5040.

GRAF, E. & SAGUY, IS. 1999. R & D process. In GRAF, E & SAGUY, IS. (Eds). *Food product development: from concept to the marketplace*. Gaithersburg, MD. Aspen.

GRAY, J, ARMSTRONG, G & FARLEY, H. 2003. Opportunities and constraints in the functional food market. *Nutrition and Food Science* 33(5):213-218.

GREEN, PE & SRINIVASAN, V. 1987. Conjoint analysis in consumer research: issues and outlook. *Journal of Consumer Research* 5:103-123.

GRIFFIN, A & HAUSER, JR. 2004. The voice of the customer. In HART, S. (Ed). *New product development: a reader*. Eastbourne. Thompson.

GROVES, A. 2003. *Consumer watch*. IDG Consumer Tracker. Institute of Grocery Distribution. London.

GRUNERT, KG. 2002. Current issues in the understanding of consumer food choice. *Trends in Food Science & Technology* 13:275-285.

GRUNERT, KG, HARMSEN, H & GÖRANSSON, G. 1997. Thosrup cheese: in love with cheese. In TRAILL, B & GRUNERT, KG. (Eds). *Product and process innovation in the food industry*. London. Blackie Academic & Professional.

HART, S. 2004. *New product development: a reader*. Eastbourne. Thompson.

HENARD, DH & SZYMANSKI, DM. 2001. Why some new products are more successful than others. *Journal of Marketing Research* 38(August):362-375.

HUGHES, D. 2002. *Consumer interests and the reform of the CAP: a review of relevant documentation and research*. Briefing points on consumer interests and reform of the CAP. [WWWdocument – 27/08/2006]. URL http://ec.europa.eu/consumers/reports/rep02_en.pdf

IKERD, J. 2005. *The new food culture: good news for small farms*. Presentation at the Small Farm Today Conference and Trade Show, Clark, MO. [WWWdocument - 27/02/2007]. URL <http://www.smallfarmtoday.com>

IMRAM, N. 1999. The role of visual cues in consumer perception and acceptance of a food product. *Nutrition & Food Science* 99(5):224-230.

IOP, SCF, TEIXEIRA, E & DELIZA, R. 2006. Consumer research: extrinsic variables in food studies. *British Food Journal* 108(11):894-903.

JRF (Joseph Rowntree Foundation). 1994. *Eating on a low income*. Social Policy Research 66. [WWWdocument - 19/02/2008].

URL <http://www.jrf.org.uk/knowledge/findings/socialpolicy/SP66.asp>

KAUL, A & RAO, VR. 1995. Research for product positioning and design decisions: an integrative review. *International Journal of Research and Marketing* 12:293-320.

KIM, M-S & HUNTER, JE. 1993. Attitude-behaviour relations: a meta-analysis of attitudinal relevance and topic. *Journal of Communication* 43:101-142.

KRAUS, SJ. 1995. Attitudes and the prediction of behaviour: a meta-analysis of the empirical literature. *Personality and Social Psychology Bulletin* 21:58-75.

LANG, T & RAYNER, M. 2002. *Why health is the key to the future of food and farming*. United Kingdom Health Development Agency. Submission to the UK Policy Commission on the future of farming food (The "Curry" Report).

LEIBTAG, ES & KAUFMAN, PR. 2003. *Exploring food purchase behaviour of low-income households: how do they economize?* Current issues in economics of food markets. Agriculture Information Bulletin No 747-07. United States Department of Agriculture. Economic Research Service. Washington DC.

LUNDAHL, D. 2006. A holistic approach to product development. *Food Technology* 11:28-33. [WWWdocument – 15/11/2007]. URL members.ift.org/NR/rdonlyres/C8F83520-A885-47D8-A115-5804E892A35/0/1106Holistic.pdf

MACFIE, HJH & THOMSON, DMH. 1994. *Measurement of food preferences*. London. Blackie Academic and Professional.

MAGRAB, EB. 1997. *Integrated product and process design and development: the product realization process*. Boca Raton, FL. CRC.

MALAVIYA, P & SIVAKUMAR, K. 1998. The moderating effect of product category knowledge and attribute importance on the attraction effect. *Marketing Letters* 9(1):93-106.

MARAIS, J. 2007. Voorstelle om armes te help 'erge teleurstelling'. *Rapport*, 24 Junie.

MOSKOWITZ, HR, PORRETTA, S & SILCHER, M. 2005. *Concept research in food product design and development*. Victoria, Australia. Blackwell Professional.

MOSKOWITZ, HR, REISNER, M, KRIEGER, B & OKSENDAL, K. 2004. *Steps towards a consumer-driven concept innovation machine for 'ordinary' product categories in their later lifecycle stages*. [WWW document – 19/06/2005].

URL http://www.innovaidonline.net/html/modules.php?name=New_Book

NESS, MR & GERHARDY, H. 1994. Consumer preferences for quality and freshness attributes of eggs. *British Food Journal* 96(3):26-34.

OUDE OPHUIS, PAM & VAN TRIJP, HCM. 1995. Perceived quality: a market driven and consumer oriented approach. *Food Quality and Preference* 3(6):177-183.

REGMI, A. 2001. *Changing structure of global food consumption and trade*. Agriculture and Trade Report WRS-01-1. United States Department of Agriculture. Economic Research Service.

REGMI, A & DYCK, J. 2001. Cross-country analysis of food consumption patterns. In Regmi, A. (Ed). *Changing structure of global food consumption and trade*. United States Department of Agriculture. Economic Research Service. Agriculture and Trade Report WRS-01-1.

ROSENAU, MD (jr). 2000. *Successful product development: speeding from opportunity to profit*. New York. Wiley.

SAARF (South African Advertising Research Foundation). 2006. *Segmentation handbook – based on AMPS 2005 and AMPS 2006*. Johannesburg. South African Advertising Research Foundation.

SAGUY, S & MOSKOWITZ, R. 1999. Integrating the consumer into new product development. *Food Technology* 53(8):68-73, August.

SHEPHERD, R. 1999. Social determinants of food choice. *Proceedings of the Nutrition Society* 58:807-812.

SHETH, J.N. & MITTAL, B. 2004. *Consumer behaviour: a managerial perspective*. 2nd ed. Singapore. Thomson South-Western.

SLOAN, AE. 2003. What consumers want – and don't want – on food and beverage labels. *Food Technology* 57(11):26-36.

TORJUSEN, H, LIEBLEIN, G, WANDEL, M & FRANCIS, CA. 2001. Food system orientation and quality perception among consumers and producers of organic food in Hedmark County Norway. *Food Quality and Preference* 12:207-216.

UAUY-DAGACH, R & HERTRAMPF, E. 2001. Food-based dietary recommendations: possibilities and limitations. In BOWMAN, BA & RUSSELL, RM. (Eds). *Present knowledge in nutrition*. 8th ed. Washington DC. ILSI.

VAN KLEEF, E, VAN TRIJP, HCM & LUNING, P. 2005. Consumer research in the early stages of new product development: a critical review of methods and techniques. *Journal of Food Quality and Preference* 16(4):369-382.

VEBLEN, TC. 1988. Food system trends and business strategy. *Food Technology* 42(1):126-130.

VERDÚ, A, MEGIAS, M, VÁZCUES-ARAUJO, L, PÉREZ-LÓPEZ, AJ & CARBONELL-BARRACHINA, AA. 2007. Differences in Jijona turrón concepts between consumers and manufacturers. *Journal of the Science of Food and Agriculture* 87(11):2106-2111.

VON ALVENSLEBEN, R. 2002. Consumer behaviour. In PADBERG, DI, RITSON, C & ALBISU, LM. (Eds). *Agro-food marketing*. Wallingford. CAB.

WALLEY, K, PARSONS, S & BLAND, M. 1999. Quality assurance and the consumer: a conjoint study. *British Food Journal* 101(2):148-161.

WEBB, P & ROGERS, B. 2003. *Addressing the "In" in food insecurity*. USAID Office of Food for Africa. Occasional paper no. 1.

YOUNG, JA. 1999. Marketing the intrinsic quality of the product. In *Global quality assessment in Mediterranean aquaculture*. Proceedings of the workshop of the CIHEAM networks on technology of aquaculture in the Mediterranean (TECAM) and socio-economic and legal aspects of aquaculture in the Mediterranean (SELAM). Barcelona, Spain, 29 November.

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The key objects of investigation in this study are the concepts (food product attributes) of importance in meeting the needs of low-income consumers in urbanised informal settlements during food purchasing choice for maize meal, the starch staple-type food mostly consumed.

3.2 RESEARCH AIM

The aim of this study was to develop a food product concept formulation framework for low-income consumers in urbanised informal settlements in Gauteng, South Africa.

3.2.1 Sub-objectives of the study

The sub-objectives of this study, as outlined by the following five steps, were to:

- Identify concepts (food product attributes) of importance in food products purchased by low-income consumers;
- Select, organise (screen), and identify concepts applicable to low-income consumers;
- Formulate and develop design parameters for food product purchase by low-income consumers;
- Verify the design parameters through a test market evaluation of an established product and the description of the identified concepts;
- Formulate the process and modelling of a food product concept framework for the development of food products for low-income consumers.

3.3 CONCEPTUAL FRAMEWORK

Kindly refer to Figure 1 of this chapter for a graphic display of the conceptual framework.

3.4 CLARIFICATION OF TERMINOLOGY

In order to specify clearly the operational context of relevant terms (Babbie & Mouton, 2002:111), the concepts fundamental to this study are defined as follows:

- Need/s of the market

A need is an unsatisfactory condition experienced by the individual consumer that leads to an action that will make the condition better (Sheth & Mittal, 2004:17, G-1). This action relates to the achievement of specific goals through purchase behaviour as directed by consumer decision-making (Assael, 1992:719).

- Needs of the consumers

The basic goals and standards that consumers strive to fulfil, including adherence to attitudes and beliefs held, are imbedded in the basic needs they strive to meet. These expectations refer to the fulfilment of functional needs (satisfaction), hedonic needs (enjoyment) or need for self-social identity through product use (Lundahl, 2006:28-29). The acceptance or rejection of a food product will therefore be determined by the compatibility of food product attributes and consumer needs (Earle, Earle & Anderson, 2001:201; Sheth & Mittal, 2004:3, 4).

- Product characteristics

Product characteristics identifying the product to the company, the market and the consumer and are identified by consumers and designers in the creation of the product concept (Earl *et al.*, 2001:104). Multiple product characteristics can contribute to the description of a single product attribute (Van Kleef, Van Trijp & Luning, 2005:187).

- Food product concept formulation framework

For the purpose of this study, the food product concept formulation framework reports the tactical combination of the primary food product attributes (concepts) perceived as needed by the target population. By understanding these needs, and the product attributes and

3.3. Conceptual framework for the study (Adapted from Fuller, 2005:28; Conner & Armitage, 2002:6)

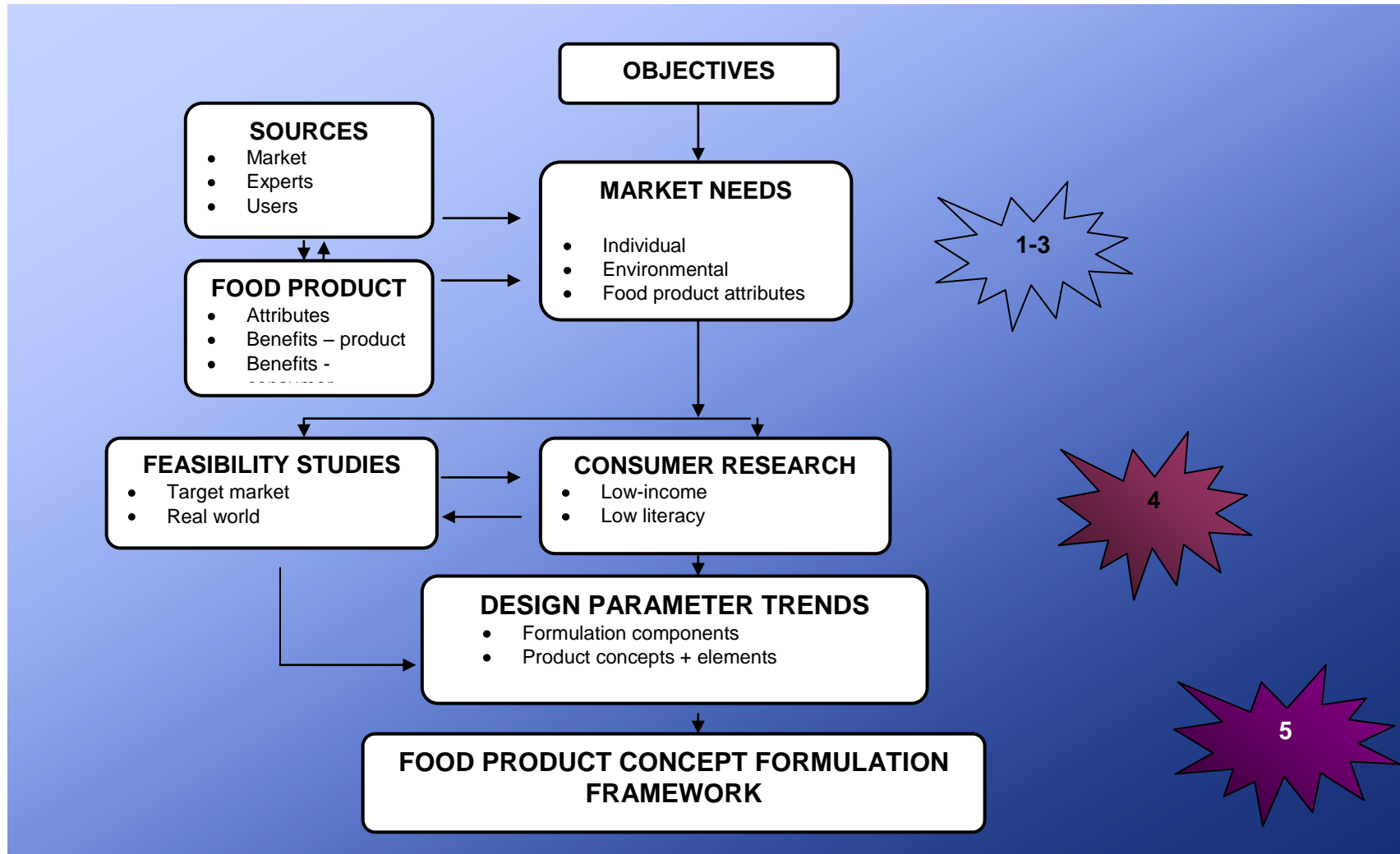


Figure 1: Conceptual framework

characteristics (concept elements) that the low-income consumers use to infer the presence of desired consequences, relevant advantages can be built into the product during formulation to provide a reason to buy (Moskowitz, Porretta & Silcher, 2005:3-7; Van Kleef *et al.*, 2005:187, 198). This approach contributes to an understanding of what the low-income consumers want in order to meet their perceived needs.

- Food product concepts (food product attributes)

Food product concepts represent the basic building blocks utilised during the formulation of a food product. For the purpose of this study, the product concepts are represented by food product attributes that can be operationally controlled by the developer (Moskowitz, Reisner, Krieger & Oksendal, 2004:4, 9), and can be further described through food product concept elements. Food product attributes (concepts) refer to the intrinsic or extrinsic characteristics that the consumer infers from the product (Van Kleef *et al.*, 2005:186), and are therefore tangible properties that are measurable, manipulable and physically under the control of technical product developers (Myers & Shocker as quoted by Van Kleef *et al.*, 2005:186).

- Food product concept elements

Food product concept elements indicate and describe the dimensions that define low-income consumers' perceptions (Kaul & Rao, 1995:296) of the food product attributes (concepts), for the purpose of this study. The food product concept elements (product characteristics) therefore act as descriptors for the respective food product concepts (Van Kleef *et al.*, 2005:187) and may include product benefits and consumer benefits.

- Product benefits

Product benefits report the product characteristics (food product concept elements) important to the target consumer and were identified in consumer discussion groups. Product benefits include four main areas – basic product benefits, package benefits, use benefits and psychological benefits – and need to be integrated into the final consumer preference (Earle, Earle & Anderson, 2001:104-105). Product benefits describe the pleasant consequences of consuming a product and indicate what the product does for the consumer (Van Kleef *et al.*, 2005:186).

- Consumer benefits

Consumer benefits are defined as a food product attribute expressed in terms of what the consumer gets from the product rather than its physical characteristics or features. Benefits can be linked to specific product characteristics (concept elements) but not necessarily (Van Kleef *et al.*, 2005:198).

3.5 RESEARCH DESIGN

3.5.1 Mode of inquiry and type of research design

In this study, the assumptions about the world followed a constructivist orientation, recognising multiple realities giving different views of the same situation. The purpose was to understand the situation from the perspective of the different respondents, and therefore flexible research methods and processes were utilised to incorporate emerging factors (McMillan & Schumacher, 2001: 37).

Following an empirical mixed-method strategy, both quantitative and qualitative (quant-qual) modes of inquiry were incorporated (Creswell, 2003:213). A quantitative, non-experimental mode of inquiry, with a comparative research design, was applied. Data were presented as numbers through which statistical results were derived to describe the phenomena. The role of the researcher was mainly a detached one, as instruments were used to report data (McMillan & Schumacher, 2001: 52; Babbie & Mouton, 2002:76, 78).

This approach was further supported by the contribution made by a collaborative qualitative study that developed narrative descriptions of the phenomena (concepts) identified by the initial quantitative survey (McMillan & Schumacher, 2001: 52). The aim was to provide richness to the context of the research through the inclusion of a phenomenological approach.

3.6 OPERATIONALISATION

The five steps comprising the sub-objectives of the study were incorporated into a three-phased approach:

3.6.1 Phase 1: Identification, selection and screening of concepts to formulate and develop food product design parameters

In order to understand the situation, two baseline surveys were conducted in different settings:

In a baseline investigation (Step 1), role players in the food environment in South Africa (including academics, health professionals, food producers and retailers) familiar with the deprived circumstances and low literacy level of the population at risk were sourced for information. Inquiries included the priority guidelines applied during research and development

of food products for the low-income consumers, food products produced for/ retailed to these consumers and the food product attributes perceived as important by them. See Annexure 1 at the end of this chapter for a copy of this questionnaire.

In a further quest to obtain a view of the need perceived for specific food product attributes in foodstuffs, according to the low-income consumers, a review of available literature was conducted to identify the food product attributes applied/ assessed during food product development for various consumer groups. A questionnaire was compiled accordingly, including 19 food product attributes. Both intrinsic and extrinsic food product attributes were reported (Cagan & Vogel, 2002:8; Moskowitz *et al.*, 2005:517; Van Kleef *et al.*, 2005:185).

As knowledge regarding a particular product category is required (Kaul & Rao, 1995:293), maize meal was selected for this purpose because it is the core starch staple-type food mostly consumed by all households in South Africa (Nel & Steyn, 2002:137; Bureau for Food and Agricultural Policy (BFAP), 2008:59;) and specifically by low-income consumers in an informal settlement in the Gauteng region (Oldewage-Theron, Dicks, Napier & Rutengwe, 2005a:20). Structured one-to-one interviews were conducted with 60 habitual low-income category users in the Eatonside urbanised informal settlement to determine the perceived importance of the identified food product attributes in meeting their needs.

This section of the study was conducted in collaboration of three BTech Food & Beverage Management students who reported their respective results for different geographical sections of the informal settlement in separate research project reports under mentorship of the researcher. These reports were presented as part of the requirements for BTech student grants sponsored by the National Research Foundation (Viljoen, 2006; Makgoa, 2006; Marumo, 2006). The data sets generated were then integrated and reported for the purpose of this study. In order to select and organise the identified concepts (Step 2), ranking was applied according to the need implied for the respective food product attributes, to determine the sequential order.

The results of both the baseline surveys were correlated (Step 3) to indicate the discrepancies between the food product attributes provided to and the needs perceived for food product attributes by the target population according to the food industry, and the needs the low-income consumers perceived for the food product attributes. A detailed description of the procedures and results of the project is presented in Chapter 4 of this thesis.

3.6.2 Phase 2: Evaluation of the food product design parameters against an established product and description of the identified concepts

During this phase, the concepts (food product attributes) reported for the food product design parameters were tested against an established food product utilised by low-income households. A sequential explanatory design, consisting of a dominant quantitative survey supplemented by a supportive qualitative procedure, was applied (Creswell, 2003:213).

The questionnaire used for gathering data from the habitual category users during the baseline study was condensed to include the 14 concepts (food product attributes) indicated as being of most importance during Phase 1 (see Annexure 2 at the end of this chapter for a copy of this questionnaire). In order to provide validation to the study, the respondent base was expanded to include informal settlements in the proximity of a town, a city and a metropolis covered by a broader geographical area. Further validation was obtained by inclusion of an adjacent urbanised, but not informal, metropolitan settlement, for the purpose of comparison.

Based on the prepared frequency table, results were ranked and compared between the informal and formal urbanised settlements respectively. Line graphs were also developed to facilitate the comparison of the importance of the different food product attributes (concepts) between the respondent groups (Berk & Cary, 2000:123-138). The comparison of relevant findings between groups was tested to derive a set of concepts (food product attributes) as design parameters for the development of the food product concept formulation framework.

To enable further description and clarification of the meaning of the identified food product attributes (concepts) as perceived by the low-income consumers, focus groups were conducted within each of these urbanised communities (Babbie & Mouton, 2002:123; Cooper & Schindler, 2003:231-2). The discussions were then transcribed, capturing the essence of what was recorded as textual data.

In order to focus the analysis, the food product attributes (concepts) constituting the food product design parameters (derived during Phase 1) were applied as preset categories to organise the textual data accordingly for each of the respondent groups (top-down analysis). During this process the possibility of additional recurring issues were kept in mind to allow for the identification of emergent concept categories (Babbie & Mouton, 2002:492; Taylor-Powell & Renner, 2003:3). Following, descriptive themes (concept elements) were identified within each of the concepts, as applicable for the respective respondent groups, to create subcategories to

allow a greater degree of discrimination. This format made it possible to identify patterns and relationships within and between categories (Taylor-Powell & Renner, 2003:4-5; Corbin & Strauss, 2008:45, 57). The derived descriptions were then compared between the different respondent groups to identify similarities and differences. These findings were applied to screen the data obtained from the quantitative questionnaire survey (first part of Phase 2) to ensure consistency in the meaning of terminology among all the participating groups (internal validity). A detailed description of the procedures and results of this phase of the study is presented as Chapter 5 and Chapter 6 of this thesis.

3.6.3 Phase 3: Development of a food product concept formulation framework

The results generated in the prior phases were integrated to deliver a comparative set of concepts (food product attributes) that was applied to derive the food product concept formulation framework in accordance with the needs of the specific target population.

3.7 QUALITY OF MEASUREMENT

Since the relationship people have with food is complex, meaningful research in this regard requires at least a multi-method and interdisciplinary approach, using tools and techniques specifically tailored for food-related research, and taking contextual factors into account (Jaeger, 2006:137). This study made use of both qualitative and quantitative methods, as well as respondents representing different viewpoints, in a quest to remain as closely as possible in touch with the needs of the low-income consumer as predicted category users, in order to obtain the most useful understanding of the studied concepts.

3.7.1 Validity

3.7.1.1 External validity

The purpose of the developed concept framework is to guide food product developers with less risk of bias and with an improved focus on compatibility with target consumer needs and preferences in the food product development process. In order to support accurate prediction of consumer preference and choice, external validity was indicated as a high priority (Garber, Hyatt & Starr, 2003:3).

External validity refers to the ability to generalise research findings to settings and populations beyond the scope or control of one particular study (Cooper & Schindler, 2003:231, 231; Bless, Higson-Smith & Kagee, 2007:93). Two factors need to be considered to enhance external validity. It is important firstly, that the study population should be representative of the population in question, and secondly, that the study should simulate reality as closely as possible (Bless *et al.*, 2007:93). However, validity cannot easily be addressed in consumer research as there are no external criteria by which to assess it.

Consumer behaviour is complex, reflecting various influences: economic, psychological (motives, attitudes, perceptions, learning), sociological (consumer socialisation, reference groups), anthropological (culture, tradition), geographical (regional factors), and nutritional and medical (nutritional needs, physiological regulation, sensory factors, etc.) (Von Alvensleben, 2002:209). The food product concept prototype derived from the baseline study was therefore tested in three different urbanised informal settlements and in one formal settlement in the broader geographical area, involving at least 100 low-income consumers in each settlement (n=502). The aim was to confirm that target consumers would most probably perform in a manner predicted by the research findings.

Validity may relate to the performance of the test stimulus in a new study or the performance of the product or concept in the marketplace (Moskowitz, Beckley, Mascuch & Keeling, 2002:4; Garber *et al.*, 2003:3). The latter approach was applied in this study to confirm the derived concept elements constituting the product concept prototype. In so doing, the applicability of a concept of the first world was tested within the context of the third world (De Wet, 2008).

The following procedures were applied to ensure external validity:

- Low-income consumers were screened for inclusion as respondents in the study, based on being habitants of the specific urbanised informal settlements, habitually consuming maize meal as staple food (at least twice/ day), and being the food purchasers of the household;
- To enhance the content and construct validity of the study, the starting questionnaire used for the pilot study was compiled so as to include all the various components (food product attributes) of the variable in question, as based on an extensive literature search in order to ensure linking to the theoretical components (Bless *et al.*, 2007:157; 159);
- To strengthen content validity even further, operational definitions were developed for the different concepts (food product attributes) through focus group discussions conducted in each of the different urbanised informal and formal settlements (Bless *et al.*, 2007:157). This information was then applied during the screening of data to ensure consistency in

meaning of terminology for the different groups. The object was first to understand the concepts (and elements) being tested, and then to apply this understanding;

- Similarity of consumer questionnaire format and terminology was maintained throughout the data-gathering process for the different consumer groups;
- The study was extended to include three informal urbanised and one formal urbanised settlement in three different settings (near a town, a city and a metropolis) in order to simulate reality;
- Results were compared with outcomes from similar studies in the field, including, as far as possible, consumers with average as well as low-income (Bless *et al.*, 2007:94).

3.7.1.2 Internal validity

As related to internal validity, the term validity refers to “the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration” (Babbie & Mouton, 2002:122). In social research, internal and external validity tend to be inversely related, given that studies that take place in a specific social context can have high internal validity and low external validity owing to lack of control of real-world interfering variables or remoteness from the reality of everyday life (Bless *et al.*, 2007:93). In order to facilitate internal validity of this study, the following procedures were applied:

- Low-income consumers were screened for inclusion as respondents in the study based on being habitants of the specific urbanised informal settlements, habitually consuming maize meal as staple food (at least twice/ day), and being the food purchasers of the household
- Fieldworkers were trained with specific focus on techniques of gathering data without leading or influencing respondents
- The same questionnaires were used for all respondents, implying standardised question format, content and sequence conditioning
- Each respondent evaluated the same set of concept elements
- Owing to the high possibility of lack of literacy by the respondents, and possible related error, data were captured on the questionnaires by the fieldworkers, based on respondent feedback.

3.7.2 Reliability

Reliability relates to the precision and accuracy of a measurement procedure and depends on consistency (Babbie & Mouton, 2002:119-122; Cooper & Schindler, 2003:231, 236); it is perceived as very important to the successful outcome of a research project. Specific attention was given to the following aspects (Babbie & Mouton, 2002:122):

3.7.2.1 Procedures for precision of measurement

- Large base sizes of respondents cancel out the noise due to variability of individuals through averaging. Large base sizes of respondents relate to small standard errors, with the implication that very similar means are observed on subsequent replications (Moskowitz *et al.*, 2005:163). In application, 60 and 32 respondents respectively were included for the baseline and food environment study as part of Phase 1, and at least 110 respondents for each of the geographical areas included in phase two of this study (n=502). The purpose was to achieve the benefit of cancelled variability through averaging;
- A systematic random sampling procedure was followed by selecting every fourth household in the urbanised informal settlements for inclusion in the study population. To insure against any possible human bias in using this method, the first element will be selected at random (Babbie & Mouton, 2002:190);
- The control of test conditions also reduces noise. Any type of control that is maintained from replication to replication reduces the noise in the system and leads to more reliable data (Moskowitz *et al.*, 2005:163). For the purpose of this study, the same questionnaire was presented as far as possible by the same group of fieldworkers trained for data capturing in a specific phase of the study (Krueger, 1994:199-204). An attempt was made to maintain the tightest control by matching the respondents over the different phases of the study through screening (Moskowitz *et al.*, 2005:163);
- Standardised interpretation against existing norms to guide decision-making was problematic because of the very limited information available on similar emerging markets.

3.7.2.2 Procedures for accuracy of measurement

- The use of the rating scale to generate data requires no interpretation and is, therefore, more reliable (Bless *et al.*, 2007:161). An importance rating scale (a six-point hedonic rating, from “don’t know” to “extremely important”) to report the need for each concept (food product attribute) included as perceived by each respondent, was used for consumers. By using fewer categories, the accuracy of the scale was enhanced;
- The target study population (consumers) consisted of predicted category users satisfying the criterion of belonging to low-income households (SU-LSM 1);
- Clarity and specificity of concepts was established to support communication in focus group discussions;
- Prevention of researcher bias in data interpretation was achieved through selective observation and subjective interpretation;
- Captured data were screened to identify errors and inconsistencies;
- Reliability was applied as a criterion for the admissibility of any secondary data for this study e.g. data obtained from the initial baseline study (Oldewage-Theron *et al.*, 2005a).

3.8 STUDY POPULATION

3.8.1 Low-income consumers

Globally, and in South Africa in particular, some of the worst poverty levels have been identified amongst urban squatter shacks (United Nations Children's Fund (UNICEF), 1998:4; Higgs, 2007:1). From the urban-formal, urban-informal, rural-formal and tribal enumerator areas included in the National Food Consumption Survey Fortification Baseline South Africa 2005 (executive summary) (NFCS-FB-1) (NFCS-FB-1, 2008:254, 260), households at risk of hunger or experiencing hunger, with the lowest monthly income and spending the lowest amount of money weekly on food, tended to belong to the informal dwelling type. The mothers of these households also had a lower standard of education.

Marginalised consumers, being the main purchasers of food in their particular households, and living in identified urbanised informal settlements meeting the criteria for the SU-LSM 1 level for average household monthly income level (\leq R1003) (US\$98) (Statistics South Africa (SSA), 2005a; South African Advertising Research Foundation (SAARF), 2006; BFAP, 2007:47), and consuming maize meal as staple-type starch food at least twice/ day, were included as respondents for this study. These representatives of the predicted category users and consumers at risk were screened to meet the specific criteria before recruitment.

The communities of Eatonside, Boipatong and Central Alexandra were included in this study on the basis of meeting the criterion of being urbanised informal settlements, and representing the geographical setting near a town (Boipatong in the proximity of Vanderbijlpark), a city (Eatonside in the proximity of Vereeniging), and a metropolis (Central Alexandra in the proximity of Johannesburg). One formal urbanised and metropolitan settlement, Tsutsumani, was also included in the study (SSA, 2005b; Oldewage-Theron, Dicks, Napier & Rutengwe, 2005b:22-24).

For aerial photographs of the collaborating settlements, see Figures 2, 3 and 4 of this chapter as reported by Statistics South Africa (SSA, 2006). The results of the more recent census survey were not available at the time. Official permission was obtained for inclusion of these images in this report. It needs to be noted that the Eatonside informal settlement forms part of the greater Sebokeng Unit 6. Where no statistical data were available for Eatonside specifically, the overriding data available for the greater area, incorporating the particulars for Eatonside, have been utilised (see also Chapter 5). The study populations included for each of the phases of this study are described in Chapters 4 and 5 of this document.



Figure 2: Aerial photograph of the Boipatong informal settlement (SSA, 2006)



Figure 3: Aerial photograph of the Eatonside informal settlement (Sebokeng Unit 6) (SSA, 2006)



Figure 4: Aerial photograph of the Alexandra informal settlement and the Tsutsumani formal settlement (SSA, 2006)

3.8.2 Experts in food (in)security

South African food (in)security experts equipped with in-depth knowledge and experience relating to food insecurity in low-income households, were approached to contribute insight from academic, health, and industry perspectives. Respondents were selected, based on availability and probability, to assist in the identification of food product characteristics (potential concept elements) of importance in food products purchased by low-income households (Moskowitz *et al.*, 2005; Babbie & Mouton, 2002:175). The specific procedure is described in Chapter 4 of this document.

3.9 ETHICS

3.9.1 Permission

A collaboration agreement was established in 2002 between the Department of Hospitality and Tourism at the Vaal University of Technology, the Sedibeng Local Council and the Eatonside informal settlement, as indicated by the project strategy of the NRF approved research niche

area “Addressing household food insecurity in an urban area” under leadership of Prof WH Oldewage-Theron. In Phase 1 of the study, in order to reconfirm continued collaboration, a meeting was arranged between the researcher and Mr P Zondo (Community Leader of Eatonside), Mrs M Mokoro (a Ward Committee Member), and Mr W Dlamini (Community Development Worker allocated by the Provincial Office).

As the study expanded (Phase 2) to include the Boipatong and Alexandra urbanised informal settlements and the Tsutsumani formal settlement, the respective councillors and community leaders were approached to obtain permission and confirm collaboration before commencement of the research initiative.

3.9.2 Ethical considerations

It is important that ethical considerations should govern the activities associated with any research project. For the purpose of this study, the following aspects were considered (including the Nuremberg Code of 1947):

- The maintaining of scientific objectivity was a priority of this study, guiding the presentation of findings;
- Clearance for the project was obtained from the ethical research committee of the University of Pretoria, implying adherence to the institutional guidelines for research on human beings;
- As every person is entitled to the right of privacy and dignity of treatment, all data were treated with confidentiality, providing anonymity to personal and sensitive information. Dissemination of derived findings, as reported in articles based on this study and in presentations, will take place in a responsible and professional manner;
- Consenting informed caregivers participated on a voluntary basis and could withdraw from the study at any stage;
- Due acknowledgement to all assistance, collaboration and sources of information was given to all parties involved in this study where and when applicable, including sources of financial support.

3.10 OUTCOMES OF THE STUDY

The outcomes envisaged from this study include:

- A food product concept framework for low-income consumers in urbanised informal settlements as imbedded in the consumer preferences and consumption patterns and portrayed in consumer acts of the target population
- Collaboration with the role players in the food environment involved with food product development for low-income consumers
- Contribution to the development of suitable food products, meeting the needs of the target population
- Publication of at least two scientific articles in academic journals.

3.11 REFERENCE LIST

ASSAEL, H. 1992. *Consumer behaviour & marketing action*. 4th ed. Boston, MA. PWS-Kent.

BABBIE, E & MOUTON, J. 2002. *The practice of social research*. South African ed. Cape Town. Oxford University Press.

BLESS, C, HIGSON-SMITH, C & KAGEE, A. 2007. *Fundamentals of social research methods: an African perspective*. 4th ed. Cape Town. Paarl Press.

BFAP (Bureau for Food and Agricultural Policy). 2007. *South African agricultural baseline: consumer trends and analysis*. [WWWdocument – 16/07/2007].

URL <http://www.bfap.co.za/reports/BFAP%20Baseline%20June%202007.pdf>

BFAP (Bureau for Food and Agricultural Policy). 2008. *The South African agricultural baseline: consumer trends and analysis*. [WWWdocument – 27/06/2008].

URL <http://www.bfab.co.za/reports/BFAP%20Baseline%20%20-Consumer%20Economics%20June%202008%20part%202.pdf>

CAGAN, J & VOGEL, CM. 2002. *Creating breakthrough products: innovation from product planning to program approval*. Upper Saddle River, NJ. Prentice Hall.

COOPER, R & SCHINDLER, PS. 2003. *Business research methods*. 8th ed. New York. McGraw Hill.

CORBIN, J & STRAUSS, A. 2008. *Basics of qualitative research*. 3rd ed. Los Angeles. SAGE.

CRESWELL, JW. 2003. *Qualitative, quantitative, and mixed methods approaches*. 2nd ed. Thousand Oaks, CA. SAGE.

DE WET, A. 2008. Personal discussion with Prof de Wet on the role of statistics in determining trends. Vanderbijlpark. 17 June.

EARLE, M, EARLE, R & ANDERSON, A. 2001. *Food product development*. Cambridge. Woodmead.

GARBER, LL, HYATT, EM & STARR, RG. 2003. Measuring consumer response to food products. *Journal of Food Quality and Preference* 14(1):3-15, January.

HIGGS, N. 2007. *The state of South Africans as we start 2007*. TNS Research Surveys. [WWWdocument – 12/09/2007].

URL [html:file:///F:/The%state%20of%20South%20Africans%20as%20we%20start%202007.mht](http://file:///F:/The%state%20of%20South%20Africans%20as%20we%20start%202007.mht)

JAEGER, SR. 2006. Non-sensory factors in sensory science research. *Food Quality and Preference* 17(1-2):132-144.

KAUL, A & RAO, VR. 1995. Research for product positioning and design decisions: an integrative review. *International Journal of Research and Marketing* 12:293-320.

KRUEGER, RA. 1994. A practical guide for applied research. 2nd ed. London. SAGE.

LUNDAHL, D. 2006. A holistic approach to product development. *Food Technology* 11:28-33. [WWWdocument – 15/11/2007].

URL members.ift.org/NR/rdonlyres/C8F83520-A885-47D8-A115-5804E892A35/0/1106Holistic.pdf

MAKGOA, K. 2006. Perceived needs of low-income household consumers for food product attributes that guide purchase choice. BTech research project report. Vaal University of Technology.

MARUMO, K. 2006. Perceived needs of low-income household consumers for food product benefits that guide purchase choice. BTech research project report. Vaal University of Technology.

MCMILLAN, JH & SCHUMACHER, S. 2001. *Research in education*. New York. Longman.

MOSKOWITZ, HR, BECKLEY, J, MASCUCH, T & KEELING, C. 2002. Establishing data validity in conjoint: Experience with Internet-based 'mega-studies'. *Journal of Online Research*. [WWW document – 19/08/2006].

MOSKOWITZ, HR, PORRETTA, S & SILCHER, M. 2005. *Concept research in food product design and development*. Victoria, Australia. Blackwell Professional. [WWWdocument – 19/06/2005]. URL http://www.innovaidonline.net/html/modules.php?name=New_Book

MOSKOWITZ, HR, REISNER, M, KRIEGER, B & OKSENDAL, K. 2004. *Steps towards a consumer-driven concept innovation machine for 'ordinary' product categories in their later lifecycle stages*. [WWW document – 19/06/05].

URL http://www.innovaidonline.net/html/modules.php?name=Paper_Innovation

NFCS-FB-1 (National Food Consumption Survey Fortification Baseline South Africa 2005: executive summary). 2008. *South African Journal of Clinical Nutrition* 21(3):245-300, Supplement 2.

NEL, JH & STEYN, M. 2002. *Report on South African food consumption studies undertaken amongst different population groups (1983-2000): average intakes of foods most commonly consumed by adults*. Pretoria. Directorate: Food Control, Department of Health.

OLDEWAGE-THERON, WH, DICKS, EG, NAPIER, CE & RUTENGWE, R. 2005a. A community-based integrated nutrition research programme to alleviate poverty: baseline survey. *Public Health* 119:312-320.

OLDEWAGE-THERON, WH, DICKS, EG, NAPIER, CE & RUTENGWE, R. 2005b. Situation analysis of an informal settlement in the Vaal Triangle. *Development South Africa* 22(1):13-26, March.

SAARF (South African Advertising Research Foundation). 2006. *Segmentation handbook – based on AMPS 2005 and AMPS 2006*. Johannesburg. South African Advertising Research Foundation.

SHETH, JN & MITTAL, B. 2004. *Consumer behaviour: a managerial perspective*. 2nd ed. Singapore. Thomson South-Western.

SSA (Statistics South Africa). 2005a. Calculating the undercount in Census '96. Appendix E: Enumerator area type definitions. [WWWdocument – 07/07/2005]

URL http://www.statssa.gov.za/census01/census96/HTML/Metadata/Docs/Undercnt?appendices/appendix_e.htm.

SSA (Statistics South Africa). 2005b. Census survey 2001. [WWWdocument – 25/03/2008].

URL <http://www.statssa.gov.za>

SSA (Statistics South Africa). 2006. Image: Spot5_Gauteng_2006. Statistics South Africa. Geography Division.

STEENKAMP, J-BEM. 1987. Conjoint measurement in ham quality evaluation. *Journal of Agricultural Economics* 38:473-480.

TAYLOR-POWELL, E & RENNER, M. 2003. *Analyzing qualitative data*. Programme development & evaluation No. G3658-12. University of Wisconsin-Extension. Madison, WI. Cooperative Extension Publishing Operations. [WWWdocument-20/03/2008].
URL <http://www1.uwex.edu/ces/pubs>

UNICEF (United Nations Children's Fund). 1998. *The state of the world's children*. New York. UNICEF.

VAN KLEEF, E, VAN TRIJP, HCM & LUNING, P. 2005. Consumer research in the early stages of new product development: a critical review of methods and techniques. *Journal of Food Quality and Preference* 16(4):369-382.

VILJOEN, AL. 2006. Perceived needs of low-income household consumers for food product attributes during purchase choice. BTech research project report. Vaal University of Technology.

VON ALVENSLEBEN, R. 2002. Consumer behaviour. In PADBERG, DI, RITSON, C & ALBISU, LM. (Eds). *Agro-food marketing*. Wallingford. CAB.

ANNEXURE 1



**DESIRABLE FOOD PRODUCT ATTRIBUTES
FOR LOW-INCOME HOUSEHOLDS IN URBANISED INFORMAL SETTLEMENTS
Questionnaire to experts**

Please note that confidentiality and discretion are applicable to all personal and sensitive information and that individual respondent information will not be identifiable from any reports.

Section 1: Respondent demographics

1 Please complete / correct the following personal information

Surname:				
Initials:				
Preferred name:				
Title:				
Company employed at:				
Work / contact number:				
Fax number:				
e-mail address:				
Postal address:				
Area of specialisation:	Health	Industry	Academic	Other
Please specify:				
Experience in the field:	Years:			
Experience with low income households: How long have you been involved? Please specify nature of involvement				

- 2 Please answer the following questions according to your own experience in the field:
- 2.1 What is your company's research and development policy for the development / formulation of food products for low-income households?
- 2.2 Product development / New Product Development for low-income households:



2.2.1 Product range?

2.2.2 Food product attributes your company sees as important / gives attention to?

2.3 Food product attributes needed by low-income households?

2.4 Characteristics of food intake by low-income households?

2.5 Other characteristics of low-income households?

2.6 Consumer benefits low-income consumers expect from the food products they purchase?

***** Thank you for your time and effort *****

ANNEXURE 2

QUESTIONNAIRE

**IMPORTANCE OF STAPLE FOOD PRODUCT ATTRIBUTES TO CONSUMERS IN
URBANISED INFORMAL SETTLEMENTS**

Name of settlement:

**CONFIDENTIALITY CLAUSE
TO WHOM IT MAY CONCERN**

All data gathered from you as the respondent during this study will be treated with respect and confidentiality. Anonymity will be maintained regarding personal and sensitive information.

Yours Faithfully

.....

Kuda Marumo

MTech student Vaal University of Technology

Household number.....

Section A

OBSERVE: Household appears to be very low-income? YES..... NO.....

Is maize meal your habitual staple food? YES..... NO.....

1. When were you born? Year: Month: Day:.....

2. How old are you?.....Years

3. How many are you in the household?.....

4. What is your household language?.....

5. Your role in the family?

Mother	1	
Grandmother	2	
Caregiver	3	
Other, specify.....	4	

6. How many times do you eat maize meal per day?

1	2	3	4
---	---	---	---

Section B

Please mark the face which best describes the importance of the indicated food product attribute to you when purchasing maize meal?

1. Satiety value/ Koora e e bakwang ke hojewa ha phofo/ Ukusutha okwenziwa yimpuphu

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

2. Affordability/ Bokgoni ba ho reka/ Ukukhona ko kuthenga

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

3. Packaging size/ Boholo ba pakana ya phofo/ Ubukhulu besaka lwe mpuphu

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

4. Value for money/ Kgotsofalo ya boleng jwa chelete/ Izinga le mali

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

5. Taste/ Tatso/ Ukunambitheka

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

6. Acceptability/ Kamohelo/ Ukwamukela

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

7. Appearance(colour)/ Tebello ya mmala/ Ukubukeka kombala

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

8. Product quality/ Boleng ba phofo (pakana) Izinga eliphezulu

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

9. Convenience (ease of preparation) / Bobebe ba ho phehwa ha phofo/ Ubulula ko kupheka

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

10. Consumer Nutrient requirement / Phepo e nepahetseng ho bareking/ Ukudla kahle kwabathengi

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

11. Texture/ Bobebe jwa phofo/ oboshelelezi be mpuphu

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

12. product safety (Shelf life)/ phofo e bolokehileng/ ukukhusileka kwe mpuphu

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1

13. Brand name loyalty (Satisfaction)/ Tshepahalo ha phofo ho bareking/ ukuthembeka kwe mpuphu

Extremely important	Very important	Fairly important	Slightly important	Not important	Don't Know
6	5	4	3	2	1



Section C

14. How important is composite family structure (Boholo ba lelwapa) when purchasing maize meal?

.....
.....
.....

15. What do you perceive as value for money when purchasing maize meal? Phoho ya boleng ba chelete ya gago ke e jwang fa oe reka?

.....
.....
.....







16. What do you perceive as product quality when purchasing maize meal? Phoho e boleng ke e jwang fa o reka phoho?

.....
.....
.....

17 How much is your monthly income for the household?.....

Thank you for sharing your perceptions and other pertinent information with us. Your collaboration is appreciated.

IMPORTANCE OF STAPLE FOOD PRODUCT ATTRIBUTES

Extremely important	Very important	Fairly important	Slightly important	Not Important	Don't know
					
<p>Bohlokwa haholo haholo</p>	<p>Bohlokwa haholo</p>	<p>Bohlokwa</p>	<p>Bohlokwanyana</p>	<p>Hae bohlokwa</p>	<p>Hake tsebe</p>
<p>6</p>	<p>5</p>	<p>4</p>	<p>3</p>	<p>2</p>	<p>1</p>

ATTRIBUTES OF IMPORTANCE IN STAPLE-TYPE FOOD PRODUCT DEVELOPMENT FOR LOW-INCOME URBANISED CONSUMERS IN SOUTH AFRICA

Sara S Duvenage^{1,2}, Hettie C Schönfeldt³ and Rozanne Kruger^{1,4}

¹Department Consumer Science, University of Pretoria, South Africa

²Department Hospitality & Tourism, Vaal University of Technology, South Africa

³School of Agricultural and Food Sciences, University of Pretoria, South Africa

⁴Massey University – Albany Campus, Auckland, New Zealand

In this chapter the editorial guidelines as prescribed by the Food and Nutrition Bulletin, as the journal of publication, was applied.

ABSTRACT

Consumers perceive food product quality as a combination of attributes and accumulated benefits. Quality cues can be recorded through the priority value that a target population within a specific reality attaches to identified food product attributes. As consumers are natural satisfaction maximisers, desirable product attributes become buying goals. Successful (food) products communicate significant value in these key categories. The focus of this study was to ascertain whether the food product attributes prioritised by the South African food industry meet the needs of (very) low-income consumers during purchasing choice for their staple food, maize meal.

A total of 32 experts with experience in food product development and familiar with consumers living in deprived circumstances and with low levels of literacy, were identified from the South African food environment. Structured interviews were conducted. Sixty very low-income consumers from an urbanised informal settlement were approached to establish the level of importance they perceived for different food product attributes. A six-point hedonic rating scale was utilised. Quantitative analysis procedures, including ranking and correlation, were applied.

Affordability, consumer nutrient requirements, taste and product quality were indicated as the four food product attributes of most importance in staple-type food products currently provided to (very) low-income consumers. The target population indicated satiety value, affordability, packaging size, value for money and taste as the most important attributes. These findings suggest that a discrepancy exists between the food product attributes provided to and needed by (very) low-income consumers. The outcomes of this study will contribute to the establishment of a guideline to develop food products for higher satisfaction by (very) low-income consumers.

Key words

Food quality, food product attributes, low-income consumers, food choice trends

INTRODUCTION

Poor households with an expenditure of less than ZAR800 (US\$115) [1] per month, comprise about half of the 10 to 11 million households in South Africa (SA) [2]. Thus a substantial section of the SA population can be classified as (very) low-income households. On average, these households consist of five members [3, 4], translating into a total household availability of ZAR5.33 (US\$0.77)/person/day to meet all needs. This amount is substantially lower than the international poverty line indicator of US\$1/day (ZAR6.96) [5, 6]. The market expenditure by the poor and very poor households in SA amounts to ZAR129 billion/year (US\$18.5 billion/year), representing 15% of total household expenditure in South Africa – revealing a large and relatively unknown market [2].

The South African Advertising Research Foundation (SAARF) devised a wealth measure segmentation tool to profile the South African consumer market. Ten relatively homogeneous groups were identified based on consumer living standards from least status (SU-LSM 1) to highest status (SU-LSM 10) (SAARF 2006) [7]. For the most marginalised consumers (SU-LSM 1), the food cash expenditure, as share of total cash expenditure, amounts to 70.8% of their average monthly household income. The small amount of income available to spend on food results in a very limited choice of basic food items [7, 8, 4]. Each of the food-purchasing choices of the (very) low socio-economic consumers thus becomes extremely important as no money is available for replacement or alternatives [9].

The target (very low socio-economic) group spends 32.8% of their total cash expenditure on grains, 21.9% of which is allocated to maize meal, 22.8% to rice and 52% to bread [10]. In an urbanised informal settlement, it was found that the majority of households (59.5%) had a monthly income of less than ZAR500/month (< US\$71.83/month). Of this amount, up to 71% was allocated to the purchasing of food, which consisted mainly of maize meal [3]. The maize porridge consumption by this population amounts to approximately 532 grams (g)/day (345 g stiff maize porridge + 124 g soft maize porridge + 63 g crumbly maize porridge), eaten over two or three meals, and representing 66% of their total energy intake per day [11, 12]. These findings are in line with the South African food consumption studies undertaken amongst different population groups (1983-2002) that listed maize (78% of group: 848 g/person/day), white rice (13.5%), dry beans (11.7%), samp/mealie rice (7%), and peanut butter (6%) as the five most often consumed cereal grain and legume staple food products by all households in South Africa [13].

Food quality, as perceived by the end-user consumer, is subjective and can vary between users of the same product [14]. Consumers form quality expectations based on quality cues [15] that can be influenced by factors other than the product characteristics itself, such as the purchase situation and price [14], attitudes, beliefs, expectations, concerns and fulfilment of self-social identity [16]. The position that such a value assumes in the mind of a consumer determines the competitive position of these quality attributes within the market [17]. Successful (food) products communicate significant value in the key categories that are of importance to the target consumer and setting [18, 19].

The voice of the consumer is indicated by a hierarchical set of customer needs where each need is depicted by a priority value. These parameters then become key criteria in providing a quality product [20]. Consumers perceive a food product as accumulated benefits, with tangible and intangible attributes relating to their needs, wants and behaviour [21, 22]. A food product therefore consists of a combination of attributes [23], which can be reported as intrinsic (physical characteristics of the product, for example taste as inferred from the colour of food) and extrinsic quality cues (all other characteristics, such as price or brand) that the consumer infers from the product [24, 14]. The senses can perceive these quality cues prior to consumption [25].

After purchasing, consumers are further exposed to the quality of the experience attributes of the food (for example taste, convenience) within varied settings, as influenced by many factors in consumers' specific reality, including culture. Credence quality attributes relate to long-term benefits not experienced directly, such as health and environmental friendliness [25]. The

relationship between the quality expectation (cues) and the quality experienced is believed to determine consumer satisfaction based on product benefits obtained. It therefore influences the probability of repeated purchasing [15, 17, 25, 26, 27].

The discrepancy between the purchasing patterns of middle- (SU-LSM 4-6) and high-income (SU-LSM 7-10) consumers (modern economy) against low-income consumers (SU-LSM 1-3) (marginalised economy), reflects the duality of the South African economic market. The modern economy (65% of households) constitutes 78% of consumer spending, while the marginalised consumers (35% of households) contribute only 22% of the spending [10].

The food purchasing and consumption behaviour of the modern economy sector is indicative of increasingly complex food requirements, habitually portraying global food consumption trends. In contradiction, the main concern of the marginalised economy sector in South Africa is indicated as the provisioning of basic food security through the availability of an adequate quantity of affordable food to satisfy nutritional requirements [10].

The challenge and opportunity is therefore to skilfully integrate knowledge on consumer needs, as portrayed by food needs/preferences for specific product attributes [27], with food product design and development for low-income consumers [28, 29].

The purpose of the study on which this article is reporting, was to identify the importance of food product attributes to (very) low-income consumers according to their preferences and consumption patterns for maize meal. The findings were correlated with the food product attributes prioritised by the South African food industry for food product formulation at this stage. The outcome will contribute to the development of new food products that will be more compatible to the needs of low-income communities, improving marketability through consumer satisfaction.

METHODS

Study design

An empirical and exploratory approach was followed, recognising different realities to understand the perspectives of the role players in the food environment and the (very) low-income group regarding food product attributes of importance in food product development for the target consumers [30].

Study population

The study population consisted of two different groups:

- Sixty female household caregivers of no prescribed age and living in informal dwellings in an informal settlement within the boundaries of a local municipality [31, 32] within the Johannesburg – Vaal Area in South Africa. The respondents were identified through planned random sampling using a town map of the settlement and were screened according to household income (\leq ZAR1003/ month) (SU-LSM 1) [10], consumption patterns of maize meal (at least twice/ day) and being the main purchasers of food in their particular households. The informal settlement was identified as representative of such areas in terms of size and geographical positioning, and poverty, malnutrition and chronic food insecurity were indicated as major problems [4]. Permission to conduct the interviews was granted by the community leader, maintaining confidentiality of respondents' individual as well as locality information.
- A convenience sample of 32 experts familiar with consumers living in deprived circumstances and with a low literacy level and/or with food product development experience have been recruited from the role players in the food environment in South Africa. Firstly, academics involved in food product development for the target group at risk were identified at all major tertiary academic institutions in the country. Secondly, health professionals at various levels of involvement with food product development for (very) low-income households, including the Department of Health and private practitioners, were sourced. Thirdly, the major as well as other nationally established food producers and retailers (referred to as *food industry* in the rest of the text), were identified for inclusion in the study [33, 34, 35]. Companies focussing on the smaller up-market segment were excluded.

Methodology

- A study was conducted within the target community to test the perceived needs of low-income households for food product attributes (and imbedded benefits) that guide purchasing choice for maize meal. The questionnaire was tested and adjusted prior to implementation. The level of importance perceived for the different food product attributes were reported on a six-point hedonic rating scale (*don't know, not important, slightly important, fairly important, very important, and extremely important*) [36].
- A holistic approach was followed in the compilation of a questionnaire to source information from the role players in the food environment in South Africa. Issues that were addressed included approaches in the research and development of policies of companies in food product development for (very) low-income households, the food product range for this specific target market, and the identification of specific food product attributes perceived by the role players to be desirable in foodstuffs purchased by (very) low-income households. The characteristics of

(very) low-income households, as well as the food product attribute needs of these households were also addressed. Further attention was given to the perception of the food environment regarding the benefits (very) low-income consumers expect from the food products they purchase. Structured one-to-one telephonic interviews of between 20 to 30 minutes on average, utilising the questionnaire to guide the discussion, were conducted with the role players. In a few cases, the respondents preferred personal interviews or requested to receive the questionnaire in electronic format to be completed in their own time.

Data analysis

Quantitative analysis procedures, including ranking, were applied to identify the food product attributes of importance to most of the role players in the food environment (including academics, health professionals and food product developers and retailers), and the target population. The findings were then screened to indicate the attributes of most importance for each and then correlated to indicate discrepancies between what is provided to and what is needed by the (very) low-income households. As different data-gathering tools were used for the food environment and (very) low-income households, no formal statistical comparisons could be drawn between data sets.

RESULTS AND DISCUSSION

Research and food product development guidelines focussing on (very) low-income consumers

A summary of the research and development priority guidelines of the participating role players in the food environment is reported in Figure 1. Only a few companies focussed specifically on the needs of (very) low-income consumers but no policies have been formalised.

Figure 1 indicated the main focus of the research and development priority guidelines by the health professionals as addressing mal/nutrition (73%) and target group specificity (64%). The academics placed a high priority on consumer acceptance and needs (88%), followed by a research-based approach (75%) and addressing mal/nutrition (75%) – presenting the most balanced overall approach of all role players in the food environment. The food industry indicated the affordability of products as most important (71%) in their priority guidelines, followed by the much lower importance attached to mal/nutrition and consumer acceptance and needs (41% respectively), with very little attention to staple food type products (6%).

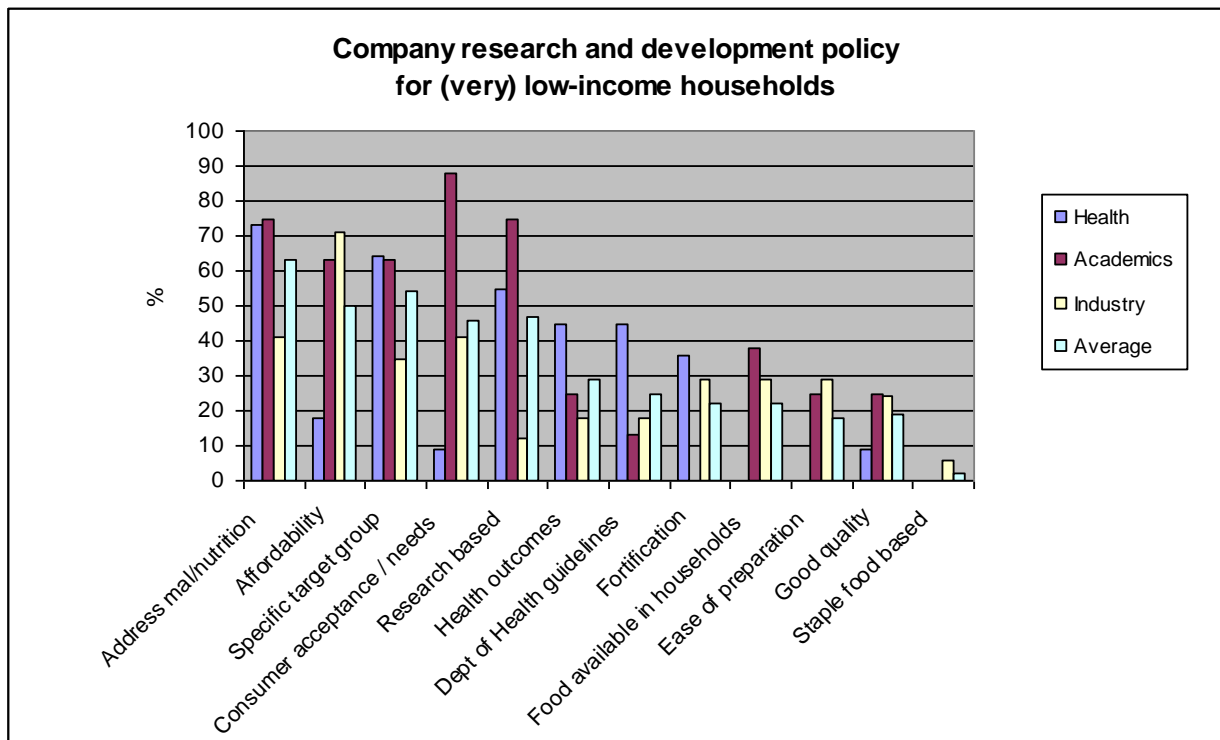


FIGURE 1. Priority guidelines applied by role players in the food industry during research and development of food products for (very) low-income consumers (n=32)

On average, the role players indicated addressing mal/nutrition (63%) as the most important food product development guideline, followed by target group specificity (54%), and affordability of food products (50%). Due to the differences in the priorities reported for the respective perspectives, the calculated average values are not necessarily truly representative of the food products found on the retail shelves, and were therefore not further included for discussion purposes.

Food product range

From the range of food products offered by the food environment for (very) low-income consumers (Figure 2), the role players indicated staple-type food products as the main focus (57%), with biscuits and snacks and fortified/enriched products (36% respectively) of lesser importance to the health professionals. Fortification entails the addition of nutrients above the original levels of the product and can provide a higher content of the nutrient than before processing. This process standardise variable nutrient concentrations. An example is the addition of zinc oxide to all maize meal and bread flour milled in South Africa. During enrichment nutrients are added in amounts to restore losses due to processing, resulting in an approximate natural content, e.g. addition of vitamin C to orange juice [37, 38]. The academics

indicated no other commodities of importance. The food industry indicated a much lower but more evenly distributed focus on the runner-up commodities, namely spray-dried foods (29%) (liquid or slurry, e.g. milk or vegetables, is dehydrated to produce a dry powder [39]; fortified/enriched foods, drinks and flavourants (24% respectively) (natural or artificial substances added to alter flavour and smell [40]; biscuits and snack foods and meals (12% respectively). Soy products were indicated as a separate category (27%), but were also indicated as an ingredient of several of the other food product ranges, and results were therefore not clearly distinguishable. By implication it can also be assumed that the differences between the values of the individual food product ranges are indicative of the commercial importance of each range.

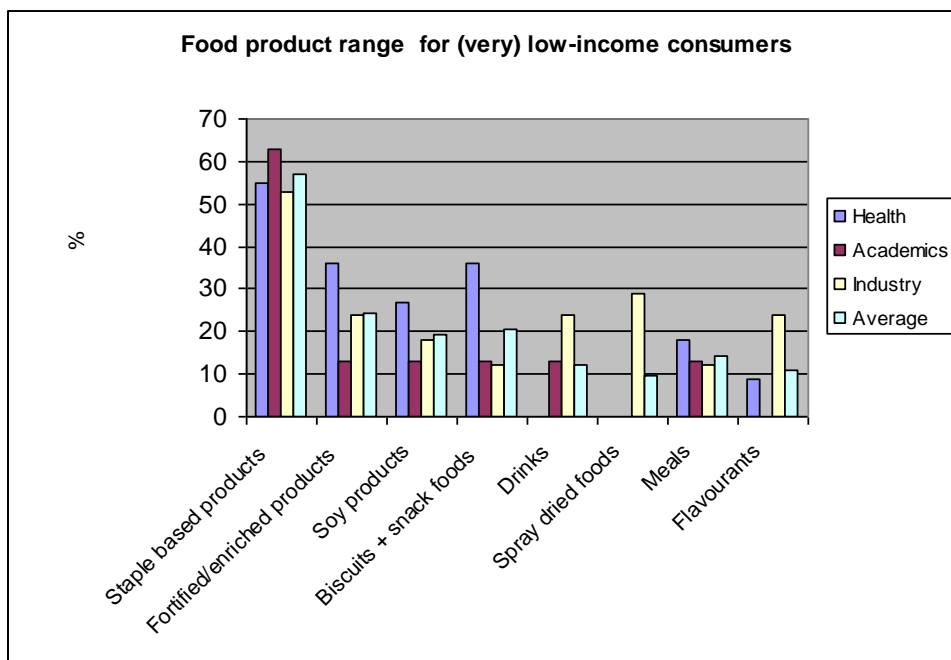


FIGURE 2. Food product range for (very) low-income consumers

According to the results reported in Figure 2, staple-type food products represent the most important range for food product development for (very) low-income households, as reported by all role players. The focus will therefore be solely on staple foods in order to derive the food product attributes of importance in food product development to most of the individual role players.

Household and food intake characteristics of (very) low-income consumers

Of further importance are the perceptions of the role players in the food environment about the characteristics of (very) low-income consumers. No clear characteristics were reported, on

average, by the role players. The academics indicated low household income, household influence and focus on quality and food product choice that is determined by the money available (38% respectively) as important. The health professionals only indicated the composite nature of the household composition as noticeable (38%), while the food industry noted the aspirational and quality mindedness (24% respectively) as important. Of importance is the fact that the most successful food industries in South Africa indicated substantial knowledge and understanding in this regard, as reported at a later stage in this article.

The very low percentages reported on average possibly indicate a lack of certainty or focus by most of the role players in the food environment regarding the characteristics of (very) low-income households.

Food product attributes of importance in meeting the needs of (very) low-income consumers

Due to the overlap in the food product attributes indicated by the food environment as important for and the consumer benefits expected by (very) low-income consumers from the food products they purchase, a combined summary has been prepared to report the staple-type food product attributes important for the target population (Figure 3). Certain of the food product attributes reported in this section may fit better as consumer benefits expected by the targeted consumers.

The food industry indicated nutrient requirements (65%) and satiety value (65%) of food products purchased as the food product attributes most needed, followed by meeting of consumer aspirations through benchmarking, affordability and taste (59% respectively), as well as product safety/shelf life (47%). This viewpoint was strongly advocated by the marketing sections of the most successful food industries in South Africa.

On average between the groups, the meeting of consumer aspirations through benchmarking (73%) was followed closely by consumer nutrient requirements (70%), and then product affordability (67%) and taste (56%). Satiety value was reported at a surprisingly low value (40%). Interestingly, the attributes highlighted here correspond closely with the determinants as reported for a single food choice event [41], listing sensory perceptions, monetary considerations, convenience, health and nutrition, managing relationships (making food choices in situations where the preferences and needs of others need to be considered) and quality as important considerations in value negotiations when making food choices. These findings were indicated for a study population including men and women of different ages, household situations and varying eating patterns [37] as is the case in the general food environment and

not for (very) low-income households specifically. The question can however be asked whether these food product attributes are of importance to the role players during food product development, and whether the food product attributes provided by available staple foods meet the needs of the population at risk.

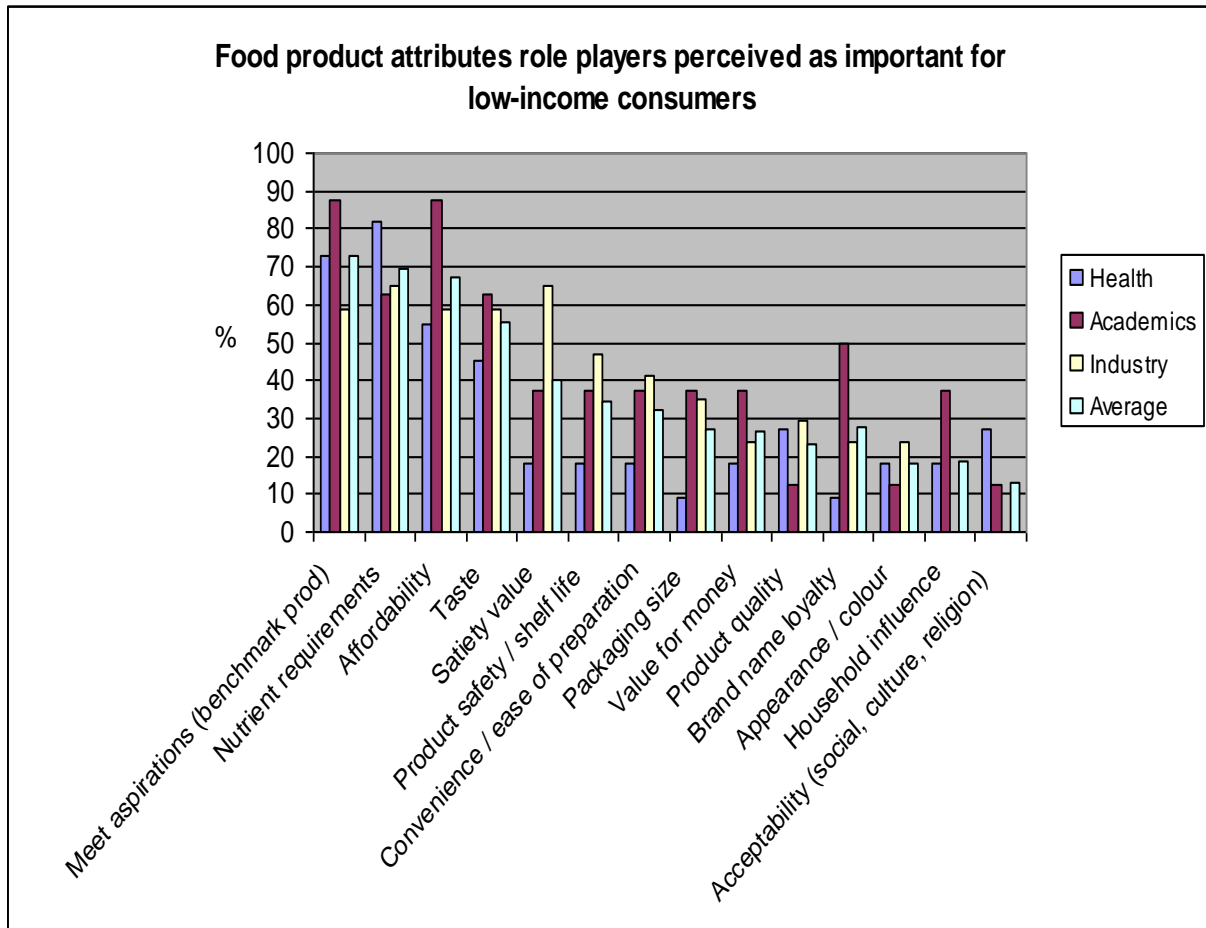


FIGURE 3. Food product attributes role players perceived as important for (very) low-income consumers

The importance allocated by the role players in the food environment and the (very) low-income consumers regarding food product attributes of importance, is displayed in Table 1. The data for the six-point rating scale was combined and reported in three different categories as indicated in the table.

The picture emerging from the average results indicates taste (66%), nutrient requirements (62%), price (53%) and to a lesser degree texture (40%) as the food product attributes of

importance in food product development to most of the role players in the food environment. The high priority indicated for food product price (82%) by the food industry is validated by the findings in Figure 1 indicating affordability (71%) as the main focus in the research and development policies of the major food industries. Validation is indicated in a similar manner for nutrient requirements (73%) as the main concern for the health sector.

Table 1. Food product attributes of importance in staple-type foods

SA FOOD ENVIRONMENT					(VERY) LOW-INCOME CONSUMERS		
Food product attributes important in food product development (%)					Food product attributes important in purchasing (%) ¹		
FOOD PRODUCT ATTRIBUTES	Health (n=11)	Academics (n=8)	Industry (n=17)	Average	Don't know + not important	Slightly + fairly important	Very + extremely important
Consumer nutrient requirements	73	50	65	62	4	23	74
Affordability	27	50	82	53	0	8	96
Taste	64	75	59	66	2	13	85
Satiety value					0	2	98
Product safety/shelf life	36	13	35	28	8	26	66
Convenience/ease of preparation	18	13	24	18	0	23	77
Packaging size					2	8	91
Value for money					4	8	89
Product quality	18	13	47	26			78
Brand name loyalty/satisfaction					21	32	47
Appearance/colour	36	38	24	32	6	15	79
Composite family structure							
Acceptability					8	11	81
Texture	45	50	24	40	11	19	70

¹ Used for ranking purposes only

For the individual role players it can be noted that nutrient content (73%) and taste (64%) were indicated as the most important food product attributes to the health professionals; for the academics taste (75%) and nutrient content, affordability and texture (50% respectively) were indicated; while the food industry reported affordability (82%), nutrient content (65%) and taste (59%) as most important.

The importance indicated for taste in food product development is not surprising as previous studies reported taste and flavour of food as the major determinants of food consumption [38]. It is of special interest that the importance of price (affordability) for (very) low-income consumers, as reported by the food industry during the current study, opposes findings previously reported [42].

Product safety/shelf life, product quality/reliability and convenience (13% respectively) are perceived by most academics as being of low importance. These attributes were viewed as of much higher importance by the food industry (35%, 47% and 24% respectively). All role players reported food product convenience as the food product attribute of lowest priority for the (very) low-income consumers, correlating with the findings by previous researchers [42].

In overview, the difference in importance allocated to the individual food product attributes (as reported by ranking position) by the (very) low-income consumers during the purchasing of staple food (maize meal) and the importance allocated by the food industry to these food product attributes during food product development for these consumers, are clear from Table 2.

When placing the results reported in Table 2 in context with the rest of the results, various aspects are illuminated:

- Satiation value was ranked as the most important food product attribute by the (very) low-income consumers, and the food industry also recognised it as one of the most important food product attributes (first together with consumer nutrient requirements) for the target population (65%) (Figure 3). However, this food product attribute was not mentioned as of any importance in food product development (Table 1).
- Affordability was indicated as the second most important food product attribute by the target population and as the most important in actual food product development by the food industry (82%) (Table 2). This food product attribute was indicated as the second most important (59%), similar to taste, when developing food products for (very) low-income consumers (Figure 3).

TABLE 2. Comparison of ranked importance of staple-type food product attributes by (very) low-income consumers versus the food industry

Food product attributes	Score for the importance of staple-type food product attributes	
	During purchasing choice by (very) low-income consumers ¹	Applied by food industry in providing foods to (very) low-income consumers ¹
Satiety value	1	Not important at all
Affordability	2	1
Packaging size	3	Not important at all
Value for money	4	Not important at all
Taste	5	3
Acceptability	6	Not important at all
Appearance/colour	7	Not important at all
Product quality	8	4
Convenience/ease of preparation	9	Not important at all
Consumer nutrient requirements	10	2
Texture	11	Not important at all
Product safety/shelf life	12	Not important at all
Brand name loyalty/satisfaction	13	Not important at all
Composite family structure	Not important at all	Not important at all

○ Packaging size was reported by the target population as the third most important food product attribute, but not noted at all as of importance in food product development by the food industry at this stage (Table 2) for (very) low-income consumers (Figure 3). However, it should be noted that most staple foods (major food consumed by (very) low-income consumers [8]) are readily available in various packaging sizes in retail outlets (for example maize meal are mostly available in 1, 2.5, 5, 10, 12.5, 25, 50 and 90 kg units [3]).

- Value for money was ranked as the fourth most important food product attribute by the target population (Table 2), but warranted no importance to the food environment for food product development (Table 1) or was of little importance when conducting food product development for (very) low-income consumers (Figure 3).
- Interestingly, taste was only ranked as the fifth most important food product attribute by the target population (Table 2), compared to the food industry who perceived this food product attribute as third in ranking order (Table 1). The food industry reported a consistent value ($\leq 10\%$) for the importance of taste in current food product development (59%) and for the population at risk (59%) (Figure 3).
- Food product acceptability was ranked as sixth in importance by the target population (Table 2) but received no recognition according to any of the role players (Table 1). The question can however be asked whether this food product attribute can be allocated to the range of maize meal product choices readily available in retail outlets.
- Food product appearance/colour was ranked seventh by the target population (Table 2) but received no ranking of importance in food product development for the target population by any of the role players (Table 1) (Figure 3).
- Product quality was only ranked as eighth in importance by the target population (Table 2), but was indicated fourth in importance by the industry, although at a low 47% (Table 1).
- Convenience/ease of preparation, ranked ninth in importance by the target population (Table 2), was not ranked by industry as being an important food product attribute in food product development (Table 2), and accordingly was only allocated a low importance value for (very) low-income consumers (Figure 3).
- Consumer nutrient requirements were ranked only as the tenth most important food product attribute by the (very) low-income consumers (Table 2). This was in stark contrast with the food industry that awarded the second highest priority to this food product attribute in both food product development (65%) (Table 2) and in importance to (very) low-income consumers (65%) (Figure 3).
- The target population ranked texture in the eleventh position of importance (Table 2). This food product attribute was not ranked in a position of importance for food product development (Table 1) or for the (very) low-income consumers (Figure 3).
- Product safety/shelf life was awarded the twelfth position of importance by the target population (Table 2) but was ranked as fifth in importance for (very) low-income consumers by the food industry (Figure 3). Interestingly, no notable ranking was obtained for this food product attribute in food product development (35%) (Table 2), indicating a discrepancy between what was indicated by industry as important for (very) low-income consumers and what is currently provided by food products in the market (Table 1).

- Brand name loyalty/satisfaction was ranked as the least important food product attribute by the (very) low-income consumers (Table 2) and did not receive any notable ranking by the food industry either (Table 1 and Figure 3).
- The aspect of benchmarking or meeting of consumer aspirations was not indicated as of any importance by the target population, but was perceived of equal value to taste by the industry in meeting the needs of (very) low-income households.

CONCLUSIONS

The development of staple-type foods was only mentioned in the research and development policies of 6% of the food industries, although such products were reported as the main focus in the product range provided by the food industry (53%) for food product development for (very) low-income consumers (Figure 2). The discrepancy indicated by this void needs serious consideration. As the food consumption of the (very) low-income consumers consists mainly of starch type staples (e.g. stiff maize meal porridge, bread) [4], the importance indicated for the staple type food product range is welcomed. This approach is further confirmed by findings that the lower the income per capita the greater the portion of the budget spent on staple starch products [43, 44]. According to the food industry, the most important food product attributes for (very) low-income consumers include satiety value (65%) and meeting of nutrient requirements (65%), followed by affordability (59%), taste (59%), meeting of aspirations (59%) and shelf life (47%).

This scenario provides a closer match to the needs indicated by the (very) low-income consumers themselves than the food product attributes actually indicated as important in food product development for these consumers by the food industry. A more collaborated effort between food product development, marketing and management sections within food industries can possibly contribute to a better provisioning of staple food product attributes as important for, and needed by, the (very) low-income consumers.

The lower priority awarded by (very) low-income consumers to food product acceptability (sixth) is a possible indication that survival needs were overriding cultural, ethical and religious parameters, as imbedded in the achieving of basic goals, maintenance of standards, and adherence to attitudes and beliefs in the lives of these consumers [16]. This observation is supported by the words “eat what could be provided to you or find a manner that will make it possible for you to eat this food” [9].

The reality of the (very) low-income consumer within the South African context, indicated by the focus on the provisioning of satiety value, lower-priced foods (affordability, smaller packaging size and value for money), and very low importance to food product safety/shelf life (twelfth) and brand name loyalty/satisfaction (thirteenth) (Table 2), is suggestive of survival needs to maintain life. This links to the consumer food-demand pyramid [45, 46] and the holistic approach portrayed by the consumer behaviour ladder [16]. Only thereafter were the hedonic aspects (taste and appearance/colour) indicated as of importance. From this evidence it could be speculated that economic pressures, as priority in survival strategies, might have replaced the central dimension of the human enjoyment factor in food product attribute choice for (very) low-income consumers.

Relatedly the health-related long-term attributes (consumer nutrient requirements and product safety/shelf life) came into play for these consumers. Whether this was due to ignorance that can be ascribed to a very low literacy level or the very restricted availability of money [47] that makes it difficult to satisfy the need for nutritional requirements [10], or other reasons, has not been investigated. It seems that the critical level has been reached for household income beyond which the necessity for nutrient intake (and food product safety) just fades away under the pressure to survive.

From the results it is clear that the food industry ranked the food product attributes that are currently provided in commercial staple-type food products to the (very) low-income consumers quite differently than the target population did for the food product attributes important to them. In sequence of most importance, the four food product attributes indicated by the food industry were affordability, consumer nutrient requirements, taste and product quality (Table 1, 2). It is of interest that the target population reported satiety value, affordability, packaging size, value for money and only then taste as the five food product attributes of most importance to them (Table 2). These results are confirmed by the findings [48] indicating that the cost of food takes precedence over issues of taste, cultural acceptability and healthy eating for these consumers.

The quality perception of consumers in Western industrialised countries is represented by the four dimensions of taste and appearance, health, convenience, and process (for example environmental friendliness) [14, 45]. These findings are supported by the South African Bureau for Food and Agricultural Policy [10] in describing “redefining quality” as the modern-day trend by which “consumers seek high quality eating experiences through the fulfilment of needs encompassed in the trends”. The main global consumer food trends referred to include the increasing demand of consumers for convenience food, healthy food, attractive food and food variety, ethical/environmental eating, and value and simplicity. All of these seem to confirm the

expectations that consumer demand will be steered by the combination of convenience, health and pleasure as the three major food choice trends that will shape the food industry [49]. The positioning of the quality strategies of most South African supermarket chains was reported as being in line with these consumer trends, with a focus on quality and price [10].

Observations in food markets confirmed the difference in food consumption patterns by low-income and the middle- and high-income consumers [10], portraying the duality of the South African consumer market. However, the consumer trends reported for medium- and high-income consumers are often of low or no relevance to (very) low-income consumers, as confirmed by this study.

It is clear that the needs for food product attributes expressed by the (very) low-income consumers cannot be accommodated within the quality perception of either the modern-day trends (increasing demand of consumers for convenience food, healthy food, attractive food and food variety, ethical/environmental eating, and value and simplicity) or the food product attributes indicated by the general expectations of consumer demand (convenience, health and pleasure) [46]. This is illustrated by the indication of satiety value, affordability, (smaller) packaging size and value for money as the main concerns of (very) low-income consumers in an effort to provide basic food security through the availability of an adequate quantity (satiety value) of affordable food. No apparent urgency to satisfy nutritional requirements [10] was indicated.

RECOMMENDATIONS

The high priority the food industry placed on the nutrient requirements for these consumers that face potential nutritional risk, are commendable and should be addressed in food product development together with the stated priorities of the target population [50, 51].

The SU-LSM 1 level does not seem to be descriptive of the whole spectrum of (very) low-income consumers any more. It seems that a distinctive category consisting of extremely low-income consumers with specific food product attribute needs is emerging at the lower end of this category, necessitating specific attention to food product attributes, including nutritional requirements, in food product development by the food industry.

This study confirmed the need to formulate a product concept to guide staple-type food product development to best meet the food product attribute needs for (very) low-income urbanised consumers in a consumer-acceptable manner.

RECOGNITION

The financial assistance of the National Research Foundation (NRF) and the Central Research Committee of the Vaal University of Technology in South Africa towards this research is hereby acknowledged, as well as the contributions made by the respondents. Opinions expressed and conclusions arrived at are those of the authors and are not necessarily to be attributed to the sponsors.

REFERENCES

1. FXConverter Results – Currency Converter for 164 Currencies.
1 South African Rand (ZAR) = 0.14365 US Dollar (US\$).
2. Prahalad CK, Hart S. Making a market among the poor. *Food & Beverage Reporter* 2006;August:1-2.
3. Amuli DJ. Purchasing patterns of major plant staples in low-income households in the Vaal Triangle. MTech dissertation. Vaal University of Technology, 2006.
4. Oldewage-Theron WH, Dicks EG, Napier CE. Poverty, household food insecurity and nutrition: coping strategies in an informal settlement in the Vaal Triangle, South Africa. *Public Health* 2006;120:795-804.
5. IDA14. Global data monitoring information system. Proportion of the population below US\$1/day poverty line. The World Bank Group, 2004.
6. IDA14. Global data monitoring information system. Sub-Saharan Africa. The World Bank Group, 2004.
7. South African Advertising Research Foundation. Segmentation handbook – based on AMPS 2005 and AMPS 2006. Johannesburg: South African Advertising Research Foundation, March 2006.
8. Golden MHN. Famine relief. In: Garrow JS, James WPT, Ralph A. eds. *Human nutrition and dietetics*. London: Churchill Livingstone, 2000: 501-13.
9. Marumo K. Perceived needs of low-income urbanised consumers for food product attributes that guide purchase choice. BTech research project report. Vaal University of Technology, 2006.
10. Bureau for Food and Agricultural Policy. *South African Agricultural Baseline*. June 2007.
11. Duvenage SS, Schönfeldt HC. Impact of South African fortification legislation on product formulation for low-income households. *Journal of Food Composition and Analysis* 2007;20:688-95.
12. Oldewage-Theron WH, Dicks EG, Napier CE, Rutengwe R. A community-based integrated nutrition research programme to alleviate poverty: baseline survey. *Public Health* 2005;119:312-20.
13. Nel JH, Steyn NP. Report on South African food consumption studies undertaken amongst different population groups (1983-2000): average intakes of foods most commonly consumed. Pretoria: Directorate Food Control, Department of Health, 2002.
14. Brunsø K, Fjord TA, Grunert KG. Consumers' food choice and quality perception. The Aarhus School of Business. Working paper 77. June 2002.
15. Grunert KG. Current issues in the understanding of consumer food choice. *Trends in Food Science & Technology* 2002;13:275-85.
16. Lundahl D. A holistic approach to product development. *Food Technology* 2006;11:28-33.

17. Young JA. Marketing the intrinsic quality of the product. In: Global quality assessment in Mediterranean aquaculture; proceedings of the workshop of the CIHEAM networks on technology of aquaculture in the Mediterranean (TECAM) and socio-economic and legal aspects of aquaculture in the Mediterranean (SELAM). Barcelona, Spain, 29 November 1999.
18. Cagan J, Vogel CM. Creating breakthrough products: innovation from product planning to program approval. Upper Saddle River, NJ: Prentice Hall, 2002.
19. Sheth JN, Mittal B. Consumer behaviour: a managerial perspective. 2nd edn. Singapore: Thomson South-Western, 2004.
20. Griffin A, Hauser JR. The voice of the customer. In: Hart S. ed. New product development: a reader. Eastbourne: Thompson, 2004.
21. Earle M, Earle R, Anderson A. Food product development. Cambridge: Woodmead, 2001.
22. Ness MR, Gerhardy H. Consumer preferences for quality and freshness attributes of eggs. *British Food Journal* 1994;96(3):26-34.
23. Green PE, Srinivasan V. Conjoint analysis in consumer research: issues and outlook. *Journal of Consumer Research* 1987;5:103-23.
24. Van Kleef E, Van Trijp HCM, Luning, P. Consumer research in the early stages of new product development: a critical review of methods and techniques. *Journal of Food Quality and Preference* 2005;16(4):369-82.
25. Oude Ophuis PAM, Van Trijp HCM. Perceived quality: a market driven and consumer oriented approach. *Food Quality and Preference* 1995;3(6):177-183.
26. Henard DH, Szymanski DM. Why some new products are more successful than others. *Journal of Marketing Research* 2001;38:362-75 (August).
27. Conner M, Armitage CJ. The social psychology of food. Buckingham: Open University Press, 2002.
28. Costa AIA, Jongen WMF. New insights into consumer-led food product development. *Trends in Food Science & Technology* 2006.
doi:10.1016/j.tifs.2006.02.003. Available at:
http://www.sciencedirect.com/science?_ob=ArticleURL&aset=V-WA-A-W-A-MsSAY
29. Verdú A, Megias M, Vázquez-Araujo L, Pérez-López AJ, Carbonell-Barrachina AA. Differences in Jijona turrón concepts between consumers and manufacturers. *Journal of the Science of Food and Agriculture* 2007;87(11):2106-11.
30. MacMillan JH, Schumacher S. Research in education. New York: Longman, 2001.
31. Statistics South Africa. Statistics South Africa, 2005. Calculating the undercount in Census '96. Appendix E: Enumerator area type definitions. Available at:
http://www.statssa.gov.za/census01/census96/HTML/Metadata/Docs/Undercnt?appendices/appendix_e.htm. Accessed 7 July 2005.

32. Engelbrecht K, Du Rand P. Status of frail elderly black people in informal settlements, South Africa's continuing medical education monthly 2000;18(10):828-833.
33. Profile Data. Food & beverage – food producers. 7 February 2007.
34. SouthAfrica.info reporter. Published for the International Marketing Council of South Africa. Five SA retailers in world top 20. 19 January 2007.
35. Global Agriculture Information Network: Retail Food Sector Report 2003. GAIN Report Number: SF3043. USDA Foreign Agricultural Service: Republic of South Africa. Pretoria: US Embassy, 12 April 2003.
36. Garber LL, Hyatt EM, Starr RG. Measuring consumer response to food products. Food Quality and Preference 2003;14(1):3-15.
37. Mejia LA. Fortification of foods: historical development and current practices. Food and Nutrition Bulletin 1994;(15)4:278-81.
38. Republic of South Africa, 2003. Department of Health, Government notice. No. R2003. Regulations relating to the fortification of certain foodstuffs. Section 15(1) of the Foodstuffs, Cosmetics and Disinfectants Act, No.54 of 1972. Available at: <http://www.doh.gov.za/search/default.aspS>.
39. Foodprocessing-technology.com. Spray drying. 2010. Available at: <http://www.foodprocessing-technology.com/glossary/spray-drying.html>
40. Wikipedia. Flavor. 2010. Available at: <http://en.wikipedia.org/wiki/Flavour>
41. Furst T, Connors M, Bisogni CA, Sobal J, Falk LW. Food choice: a conceptual model of the process. Appetite 1996;26:247-66.
42. Shepherd R. Social determinants of food choice. Proceedings of the Nutrition Society 1999;58:807-12.
43. Regmi A, Dyck J. Cross-country analysis of food consumption patterns. In: Regmi A ed. Changing structure of global food consumption and trade. United States Department of Agriculture, Agriculture and Trade Report WRS-01-1. Economic Research Service, 2001.
44. ACNielsen. 2005. A country divided: consumer spending trends in a dual economy. *Food Review* 2005;April.
45. Hughes D. Consumer interests and the reform of the CAP: a review of relevant documentation and research. Briefing points consumer interests and reform of the CAP. 2002.
46. Farm Foundation Food Marketing Analysis. Consumer demand issues. 2006;April.
47. Higgs N. The state of South Africans as we start 2007. TNS Research Surveys, 2007;February.
48. Joseph Rowntree Foundation. Eating on a low income. Social Policy Research 66, 1994.
49. Gray J, Armstrong G, Farley H. 2003. Opportunities and constraints in the functional food market. Nutrition and Food Science 33(5):213-8.

50. Report of the Institute of Grocery Distribution / PIC Industry Nutrition Strategy Group. Working Group on Micronutrients. 2007.
51. Donnelley RR. Food, nutrition, physical activity and the prevention of cancer: a global perspective. World Cancer Research Fund/American Institute for Cancer Research. United States of America, 2007.

FOOD PRODUCT ATTRIBUTES GUIDING PURCHASING CHOICE OF MAIZE MEAL BY LOW-INCOME SOUTH AFRICAN CONSUMERS: A QUANTITATIVE APPROACH

Sara S Duvenage^{1,2}, Hettie C Schönfeldt³ and Rozanne Kruger^{1,4}

¹Department Consumer Science, University of Pretoria, South Africa

²Department Hospitality, Tourism & PR Management, Vaal University of Technology,
South Africa

³School of Agricultural and Food Sciences, University of Pretoria, South Africa

⁴Massey University – Albany Campus, Auckland, New Zealand

The article presented in this chapter was prepared for publication in Development Southern Africa, and therefore abides to the prescribed editorial guidelines of the indicated journal.

ABSTRACT

The focus of this study was to ascertain the food product attributes prioritised by (very) low-income consumers during purchasing choice of their staple food, maize meal. Three informal and one urbanised settlement were included, where approximately 70, 55, 44 and 22 percent of the respective respondent groups were living below the household poverty line of R800/ month. Survey results obtained from 502 respondents reported the level of importance perceived for 14 different pre-determined food product attributes.

Satiety value and affordability were identified as the most important attributes of maize meal to (very) low-income consumers. Values perceived for taste, product acceptability and convenience were more closely matched between the consumers from the informal and formal urbanised settlements but the more affluent group indicated a higher level of importance for each food product attribute. For appearance, product quality, nutrient content, texture, product safety and brand loyalty, a higher and mostly significant similarity in value was indicated between the two groups of higher income, but also between the lower values of the two (very) low-income groups.

1. SETTING AND PROBLEM

The agglomeration of poor household slums on peripheries of cities is a feature of urbanisation in developing countries (Hubbard & Onumah, 2001:433). Approximately 28 million South Africans (66 percent) live in urbanised areas, of which the majority is accommodated in informal settlements. Urbanised informal settlements, also referred to as squatter areas, are situated within the boundaries of municipalities/ local authorities (Statistics South Africa (SSA), 2005a:1; Brits, 2002:2) and accommodate informal dwellings that do not conform to municipal building regulations. Inexpensive materials such as corrugated iron, cardboard, plastic and mud are often utilised to erect these structures (Engelbrecht & Du Rand, 2000:830).

The poverty levels in urbanised areas are increasing worldwide (Haddad et al., 1999:1891). In South Africa (SA) residential location is one of the important factors in the determination of income distribution (McDonald et al., 2000:423). It is therefore not uncommon that the inhabitants of urban squatter shacks experience severe poverty levels (Higgs 2007:1; Hubbard & Onumah, 2001:433; United Nations Children's Fund (Unicef), 1998:4). These areas often contain a sizeable population of which only a few inhabitants contribute to their own food needs through food production. In consequence, most of the urbanised consumers depend on the market system for their food supply (Hubbard & Onumah, 2001:433; Den Hartog et al., 1995:24, 32). The cosmopolitan character of urban populations often culminates in a complex diversity of food needs influenced by ethnicity, religion and income background (Hubbard & Onumah, 2001:434).

The reality in which these consumers live includes constraints such as limited local shopping and transport facilities, which create a problem of physical access to the range and quality of food products that are commercially available in the marketplace. Consequently, these consumers often patronise poorly organised and resourced micro-traders (e.g., spaza shops) to make their purchases. In comparison with the large retail chains, food prices can be as much as double in price. This aggravates the problem of purchasing appropriate food, forces the living standards even lower and influences even further the economising practices followed by the poor (Leibtag & Kaufman, 2003:1-2; Watkinson & Makgetla, 2002:45-6; Fisher, 1999:3; Dowler, 1997:5).

Poor households economise on their food purchases to limit spending (Leibtag & Kaufman, 2003:1) in order to meet various needs and wants with their scarce resources (Steward & Blisard, 2008:1). Although a larger share of the income in poorer households is allocated to food than is the case in wealthier households (Nord et al., 2007:1), low-income consumers

usually spend less in total on food purchases (Stewart & Blisard, 2008:1). Food choice is influenced by individual knowledge on what constitutes a healthy diet or by cultural practice, but the critical determinants for (very) low-income consumers are the amount of money available to allocate to food, the type of food readily available in local shops, and the cost of the food (Dowler, 1997:2).

A direct link has been found between increase in income and demand for various food product attributes. Higher income culminates in a demand for luxuries such as convenience and health-promoting foods (Painter, 2007:14; Hughes, 2002:10). As the low-income consumers face monetary restrictions that reflect in food choice, they do not want price benefits built into the food products they purchase (Hughes, 2002:11).

Because of a cost barrier to increased food consumption, low-income consumers cannot afford to make mistakes during purchasing. Concerns experienced by low-income consumers in their constrained financial situation also warrant attention to possible consequences, such as risk-aversion and possible wastage and spoilage when trying new kinds of food products (Treiman as quoted by Fisher, 1999:2). Wastage needs to be prevented at all costs and no food is purchased that will possibly not be eaten, as no margin for error exists. Purchases are made according to what experience has proven will be consumed, if not enjoyed, and sacrifices are made for taste as needed (Walker et al., 1995:8).

A product comprises core and augmented characteristics. Core characteristics, such as taste, quality and nutrient content, provide the impetus for the purchasing decisions made by consumers, while the augmented product characteristics indicate product guarantees and additional benefits. Consumers will not give attention to augmented characteristics if the core characteristics have not been considered (Painter, 2007:14). The products purchased by target consumers display a mix of quality attributes reflecting both budget and non-monetary preferences of importance within their own reality (Hughes, 2002:3, 5).

Low-income consumers consider numerous factors during the purchase selection process of a food product, including quantity, price, quality, and nutritional content (Leibtag & Kaufman, 2003:1). The functional, technical and emotional benefits of products are carefully compared during the choice process (PSD, 2007:1). The most important factor during food purchasing, however, is to reconcile cost with the taste and attitude of the family, which leaves nutrition as a subsidiary consideration (Walker et al., 1995:8).

The choices that consumers make within a food product category are influenced by the consumer's prior knowledge of the category (Alba & Hutchinson 1987 as quoted by Malaviya & Sivakumar, 1998:95). A high level of product knowledge thus creates the option of making meaningful product choices based on quality assessment for value maximisation. On the other hand, consumers regularly make product decision choices within a product category by using trade-off contrasts (Malaviya & Sivakumar, 1998:95-6). During decision-making, consumers make a trade-off between taste, preference, and quality factors within their own specific perceptions and reality (Leibtag & Kaufman, 2003:1). Situational influences include aspects such as the financial condition of the consumer, household size and urban/ rural setting, while individual characteristics relate to aspects such as education, emotions and perceptions. The cumulative effect of these aspects is of importance to food product producers as the impact thereof relates to the consumer perception of the product (Von Alvensleben, 2002:218, 223).

During product selection, consumers often rank food product criteria in order of importance to them and then select the product that performs best on the attribute (cue) perceived as most important (lexicographic decision rule) (Todd & Dieckmann, 2004:2, 6). If a decision is tied, the next attribute of most importance to the consumer will guide the choice outcome. The search for cues stops as soon as a decision can be made based on the presence of one discriminating cue (Hawkins et al., 1998:562-3). The application of this simple process, requiring an integration of information, has been indicated as both accurate and frugal in use of information (Todd & Dieckmann, 2004:7).

When the target population follows this decision-making rule, the importance awarded to specific food product attributes is of key value. The presence of these attributes, indicated as target attributes, indicate the superiority of a product (brand) to consumers in contrast with other product/s (brand/s) (Malaviya & Sivakumar, 1998:98). Even when involved in trade-offs, the presence of the target attribute/s increases attraction. These target attributes then become key criteria in providing a "quality product" to the specific consumer group (Hart, 2004:224). Consumers purchase products to obtain the highest level of satisfaction as related to the combination of attributes, perceiving the value of the product as the sum of the values of each (target) attribute it contains (Round & Tustin, 2004:4, 6). Desirable product attributes can therefore be perceived as buying goals (Hornibrook & McCarthy, 2004:10).

The "voice of the consumer" is reported by a hierarchical set of "customer needs" where each need, or set of needs, is depicted by a priority value. These values indicate the importance of the specific attributes that meet the needs of the specific consumer (Hart, 2004:224), and are reported in terms of (food) product attributes (Kaul & Rao, 1995:296).

The characteristics of consumers influence what satisfies them (Mittal & Kamakura, 2001:132). In application, perceptions of what product quality means incorporates different viewpoints. Usually, a quality specification is developed as a guideline to create a common understanding of quality standards between suppliers and users. In order to be meaningful, these specifications need to be realistic, attainable and sufficiently strict (Fowler & Priestley, 1990:54). This information regarding preferred attributes can guide food product producers in a less biased manner to exceed or at least equal the performance of competitors' products. Performance on the lesser criteria is not of importance if outstanding performance is maintained on the most important criteria (Hawkins et al., 1998:562-3). For consumers to be fully engaged during the purchasing process, the specific attributes that add value to a particular product need to be integrated and to offer a point of difference from the competition (Groves, 2003:17).

Although many substitutable products within each of the broad food product categories are available for purchase consideration to meet spending constraints (Leibtag & Kaufman, 2003:1), it is not clear if the needs of (very) low-income consumers for specific food product attributes are met. Very often, more affordable products are just watered-down versions of the original product, containing cheaper and /or lower quality ingredients.

For the delivery to the user of real and unique benefits that meet consumer needs better than competitive products do, provision of higher relative product quality by solving the problems consumers have with the competitive product, reduction of total cost for the consumer and innovation represent key issues of core importance. A clear description of the target market, which includes the needs, wants and preferences of the target consumers, plays an important role in defining the product concept, specifications and requirements during product development (Cooper, 1990:27).

Low-income consumers, also known as "the next billion", constitute the world's largest untapped consumer segment, contributing more than US\$1 trillion in expenditure a year (PSD, 2007:1). In South Africa, a market expenditure of ZAR129 billion (US\$12.6 billion) is reported for these consumers (Prahalad & Hart, 2006:1).

Food consumption patterns (and therefore food product attributes needed) differ in South Africa between consumers with middle and high income (modern economy) and those with (very) low income (marginalised economy) (ACNielsen 2005:1; Bureau for Food and Agricultural Policy (BFAP), 2007:52). Although low-income households are representative of 35 percent of the South African consumers, this group contributes only 22 percent of the total spending (ACNielsen 2005:1).

With an average monthly income of only ZAR1222 (US\$120) per household of five (ZAR244 (US\$24)/capita/month (ACNielsen 2005:1; Oldewage-Theron et al., 2006:800), or as little as R695 (US\$68) (ZAR139 (US\$14)/capita/month (Amuli, 2006:57), the importance of food product attributes that meet the needs of (very) low-income consumers in their main food purchase, starch-based staple foods, is undeniable.

Accordingly, the purpose of this study was to identify and compare the food product attributes that low-income consumers from four urbanised settlements, of which three were informal, perceive as important in meeting their purchasing needs for their starch staple food, maize meal.

2. METHODS

2.1 Surveys

In a prior baseline investigation conducted amongst (very) low-income consumers in an urbanised informal settlement, fourteen food product attributes were identified as possible contributors to the value that (very) low-income consumers perceive as important during their purchasing choice of maize meal (Duvenage, 2008). These attributes are in descending order of perceived importance: satiety value, affordability, packaging size, value for money and taste (followed by acceptability, appearance/ colour, product quality, convenience/ ease of preparation, nutrient content, texture, product safety/ shelf life, brand name loyalty/ satisfaction and household structure).

In order to substantiate the external validity of the original baseline findings, a more extensive explorative survey was conducted in three urbanised informal settlements (Boipatong, Eatonside and Alexandra). These areas are in the proximity of a town (Vanderbijlpark), a city (Vereeniging) and a metropolis (Johannesburg) respectively, and meet the criteria for being urbanised and informal (Brits, 2002:2; SSA, 2005b; Engelbrecht & Du Rand, 2000:830; Oldewage-Theron et al., 2005:22-4). The survey was further extended to include a directly adjacent urbanised metropolitan, but not informal, area (Tsutsumani) (SSA, 2005b). All these settlements are situated within the broader Johannesburg - Vaal geographical area of Gauteng, South Africa. Demographic information is available for all four settlements (SSA, 2005b) which supported the relation of survey results to the different geographical settings, average household income and the generalisation of results (Torjusen et al., 2001:214).

2.2 Procedures

A purposive sample of at least 110 marginalised consumers classified within the SU-LSM 1 level for average monthly household income (\leq R1003) (US\$98) (South African Advertising Foundation (SAARF), 2006), was recruited within each of the four settlements. Volunteers were screened on the basis of habitual consumption of maize meal as staple food (at least twice /day) and being the main food purchaser for that particular household. As consumers were reluctant to provide information regarding household income in some instances, respondents were screened on the basis of living in shacks (informal settlements) and/ or being unemployed (in the formal settlement). Information on average household income was obtained from the 2001 census survey for the specific areas, more recent census data not yet being available (SSA, 2005b).

Utilising a format similar to the questionnaire of the baseline investigation but incorporating only the fourteen food product attributes indicated as of highest importance in that study, an extended survey was conducted within the four identified areas ($n = 502$). As before, the responses were reported by a six-point hedonic rating scale, recording the importance of the respective food product attributes to the target consumers during the purchasing choice of their starch staple food, maize meal. The options for rating each of the listed food product attributes on the scale included the following: don't know, not important, slightly, fairly, and very important to extremely important. The data were gathered by trained field workers during one-on-one interviews. An explorative approach was followed in this study in order to identify/ imply trends and differences.

For further clarification of the meaning of the terminology used and to support consistency during comparison of findings (Cardello, 2005:203-4), one focus group was conducted within each of the four settlements (Babbie & Mouton, 2002:123; Cooper & Schindler, 2003:231-2). The aim was to describe and compare the inherent meaning and content of the respective food product attributes to identify differences in meaning for validation purposes. This information was also applied to partially confirm the results of the survey.

2.3 Data analysis

Applying quantitative statistical procedures, a frequency table incorporating three categories (1=don't know + 2=not important; 3=slightly important + 4=fairly important; and 5=very important + 6=extremely important), was prepared from the responses accumulated from each of the informal settlements and the urbanised metropolitan area. To facilitate the comparison of the importance of the different food product attributes to most of the respondents in each of the

participating settlements (Berk & Carey, 2000:123-8), line graphs were developed to guide the explorative process.

The strategy followed incorporated the viewing of the graphs to suggest comparison of findings between groups for the same food product attribute, and to test for comparison of two (or more) percentages. As this study followed an exploratory approach, formal multiple comparison statistical procedures were not used. Instead, a mild 10 percent level of significance was applied to pairwise comparisons. It was important not to use extreme criteria in indicating a trend/ difference, as the aim was to explore and formulate (De Wet, 2008). When the standard error of difference between two scores (from different respondent groups) for the importance of a specific food product attribute is calculated and then compared to the norm for comparison (standard error of difference x 1.64), it can be determined whether it is possible to distinguish between the responses.

For the qualitative data, concept analysis was applied using a descriptive style (Punch, 2005:205; Robson, 2002:83). Operational definitions were compiled and compared between the four different groups (Marumo, 2008). The information was applied to screen the data gathered during the quantitative survey for this study, to ensure consistency of meaning for the same term among the groups (validity) and to support comparability. These results will be reported as a separate article.

3. RESULTS AND DISCUSSION

3.1 Demographic profile

In South Africa, areas are defined in terms of geographical locality and described in the context of 'main place'. The context is further indicated by the size of the locality population and the population density (Table 1) (Brits, 2002:5). The population density of the two informal settlements near a town and a city, Boipatong and Sebokeng Unit 6 (incorporating Eatonside), and the metropolitan formal settlement Tsutsumani, all urbanised, are quite similar. Of interest is the fact that the density within the metropolitan informal settlement is about 6.7 times higher (SSA, 2005b). Of further importance are the enumeration area type and the kind of dwelling predominant within the specific area (Table 2) (SSA, 2005b; Brits, 2002:7). From the information displayed in Tables 1, 2 and 3, it is clear that the major differences between the respondent settlements are based on geographical area, population density, average household income and availability of commercial enterprises in the area. From maps of the respective settlements, the observation can be made that Eatonside (a sub-section of Sebokeng Unit 6) has no noted business enterprises nearby, Boipatong has a few within



TABLE 1 Geographical description of the urbanised settlements

District community	Municipality name	Main place	Subplace	Locality population	Area size (km ²)	Population density (people/ km ²)
Sedibeng District Municipality	Emfuleni	Boipatong	Boipatong ²	3 840	0.56	6 901.8
City of Johannesburg Metropolitan	City of Johannesburg Metro	Sebokeng	Sebokeng Unit 6 ³	15 588	2.28	6 841.4
City of Johannesburg Metropolitan	City of Johannesburg Metro	Alexandra	Alexandra ⁴	21 613	0.48	45 326
City of Johannesburg Metropolitan	City of Johannesburg Metro	Alexandra	Tsutsumani ⁵	4 900	0.76	6 405.7

¹SSA 2005b SP_code 70401001², 70406015³, 77401001⁴, 77401003⁵



TABLE 2 Dwelling types predominant in the settlements

Type of dwellings ^{1,2}	Settlements				
	Sebokeng Unit		Eatonside ³	Alexandra ¹	Tsutsumani ¹
	Boipatong ¹	6 ¹			
Formal	%	%	%	%	%
House or brick structure on a separate stand or yard	30	36		21	91
Flat in block of flats	0	0		2	6
Town/cluster/semi-detached house (simplex; duplex; triplex)	0	2		0	0
House/flat/room in back yard	1	4		1	0
Subtotal	31	42		24	97
Informal					
Traditional dwelling/hut/structure made of traditional materials	2	2		1	2
Informal dwelling/shack in back yard	3	18		10	0
Informal dwelling/shack NOT in back yard	65	38		58	0
Room/flatlet not in back yard but on shared property	0	1		2	0
Caravan or tent	0	0		1	0
Total % of informal dwellings²	70	59	90	72	2
Not applicable (living quarters are not a housing unit)	0	0		4	0
Total of dwellings	1 217	4 128	1 260	8 432	1 448
Enumeration area type¹	Informal settlement	Informal settlement	Informal settlement	Informal settlement	Urban settlement

¹SSA, 2005b

²Engelbrecht & Du Rand, 2000:830

³Oldewage-Theron et al., 2005:316-7

walking distance, while the inhabitants of Alexandra and Tsutsumani experience a far greater ease of access to shops (SSA, 2005b). The implied importance of this situation is related to transport costs to reach shops and the availability of variety during purchasing choice. Unfortunately, no data is available for the prevalence of spaza shops in the selected areas (SSA, 2005b). In Table 2, the predominance of dwellings that do not conform to municipal building regulations (Engelbrecht & Du Rand, 2000:830) in the informal settlements (70, 90 and 72 percent respectively), stand in stark contrast to the situation in the urban settlement (2 percent) (SSA, 2005b). Of notable interest is the close similarity in geographical setting between Alexandra and Tsutsumani, with differences in the average household income (Table 3) and the type of dwellings (Table 2).

The first section of Table 3 indicates the distribution of the households in the different settlements according to household income. In Boipatong, the level of no income is indicative of the situation of about half of the population (51 percent), while 70 percent of the population in total live below the household poverty line of R800/ month/ household. Having an average of three members/ household, the implication is that approximately 51 percent of this population (very poor) exist on less than R200/ capita/ month, and between 19-39 percent (poor) on R201 to R333/ month (SSA, 2005b; SSA, 2000:6). In Eatonside, 58 percent of the population have about the same income/ capita as Boipatong, and therefore live under the poverty line (SSA, 2000:6). In comparison, substantially fewer households were indicated as very poor or poor in Alexandra (perhaps because more employment opportunities are available?) and even fewer such cases were indicated in Tsutsumani. With regard to the education level, it is noticeable that the distribution between the settlements for the lower levels of education is quite similar, but the indication of grade 12 and higher qualifications is much stronger in the areas with higher income (Table 3).

3.2 Meanings of the food product attribute terminology

From the focus groups conducted, no clear differences were indicated between the meanings of terms perceived for the respective food product attributes (Marumo, 2008). However, occasional differences occurred between the groups, reflecting the depth of importance of a food product attribute, for example, purchasing the cheapest maize meal for the quantity that can be afforded versus purchasing of the cheapest product from the set of brands that meet the consumers' needs for quality. In most cases, a link was demonstrated between the differences in household income and the perceived meaning of the terminology. A separate article will be published to report the results of this study in full.



TABLE 3 Situation analyses for household income and education level

		Settlements				
		Boipatong ¹	Sebokeng Unit 6 ¹	Eatonside ³	Alexandra ¹	Tsutsumani ¹
Annual household income (R)¹	Poverty indicator²	%	%	%	%	%
SU-LSM 1	No income	42	29		28	14
SU-LSM 1	1 – 4 800	9	10		5	8
SU-LSM 1	4 801 – 9 600	19	16	58	11	7
	/month					
SU-LSM 1, 2, 3	9 601 – 19 200	20	19		27	27
Very poor		51	39		± 33	± 22
Poor		>19 - <39	>16 - <35	58?	> 11 - <38	> 7 - <34
Total living below household poverty line of R800 /month³		70	55		44	29
Household size¹		3	4	5	3	3
Approximate income / capita/ month		51% <R200 19-39% <R333	39% <R150 16-35% <R250	58% <R200	33% <R200 11-38% <R333	22% <R200 7-34% <R333
Literacy level (highest completed or in process)¹		%	%		%	%
No schooling		14	10		10	12
Primary school Grade 7		10	7		7	5
High school Grade 9		8	6		8	6
High school Grade 12		6	13		17	22
Post-grade 12 qualification		1	2		2	4
Total population		100	100		100	100

¹SSA, 2005b

²SSA, 2000:6

³Oldewage-Theron et al., 2005:317

3.3 Rating of the importance of food product attributes in meeting the needs of (very) low-income consumers

The level of importance (need) that the respondent groups attached to the respective food product attributes, were calculated. As the “very important + extremely important” category reports the results for most of the respondents for each of the food product attributes, further discussion will pertain only to this category (Table 4).

TABLE 4 Ranked importance of food product attributes by (very) low-income consumers

Food product attributes	Score of food product attribute importance			
	Boipatong	Eatonside	Alexandra	Tsutsumani
	n = 140 %	N = 130 %	n = 131 %	n = 101 %
Satiety value	94	92	92	90
Affordability	86	78	76	82
Packaging size	86	72	73	88
Value for money	73	80	66	69
Taste	84	82	82	91
Acceptability	81	83	78	86
Appearance/colour	80	76	90	89
Product quality	73	77	86	86
Convenience/ease of preparation	80	79	81	87
Nutrient content	59	65	81	87
Texture	69	72	89	83
Product safety/shelf life	69	62	86	80
Brand name loyalty/satisfaction	69	61	74	82
Family structure	76	79	83	82

Reported as a line graph (Figure 1), the respective values allocated to the different food product attributes by the different respondent groups for the indicate category were clearly depicted.

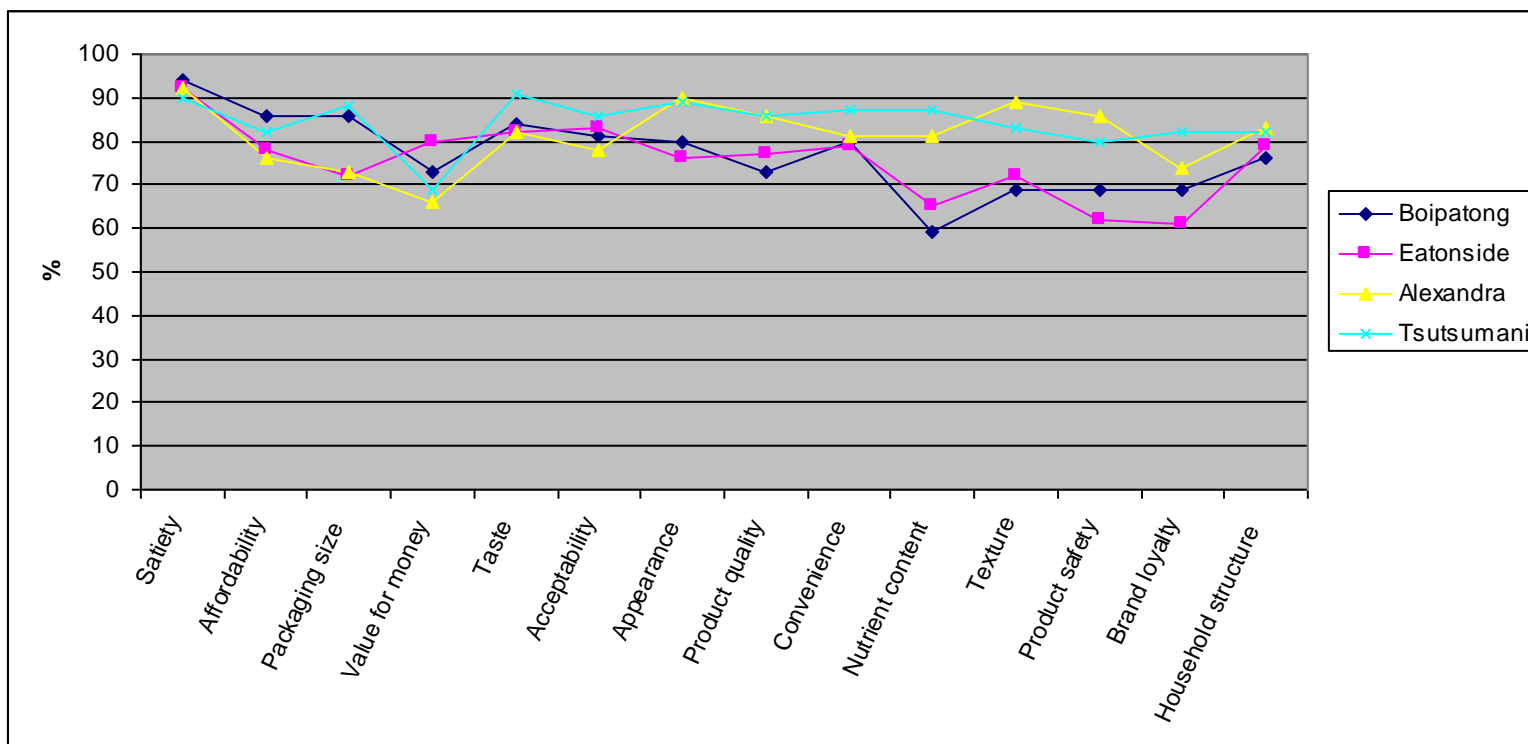


FIGURE 1 Comparison of the importance of food product attributes to (very) low-income consumers

From viewing Figure 1 and based on an approximation approach (Porkess, 2005:9), the following comparisons were suggested as reasonable (Table 5):

TABLE 5 Suggested comparisons between the ratings of the different respondent groups

Food product attribute	Suggested comparisons
Satiety value	The four respondent groups do not differ
Affordability	The four respondent groups do not differ
Packaging size	Alexandra and Eatonside display a lower rating when compared to the rating of Boipatong and Tsutsumani. The positions of Alexandra and Eatonside do not differ, as is the case with Boipatong and Tsutsumani
Value for money	The four respondent groups do not differ
Taste	Alexandra, Boipatong and Eatonside are the same, while Tsutsumani is higher
Acceptability	The four respondent groups do not differ
Appearance	Boipatong and Eatonside are the same, while Alexandra and Tsutsumani are the same, but higher
Product quality	Boipatong and Eatonside are the same, while Alexandra and Tsutsumani are the same, but higher
Convenience/ ease of preparation	Alexandra, Boipatong and Eatonside are the same, with Tsutsumani higher
Nutrient content	Boipatong and Eatonside are the same, while Alexandra and Tsutsumani are the same, but higher
Texture	Boipatong and Eatonside are the same, while Alexandra and Tsutsumani are the same, but higher
Product safety/ shelf life	Boipatong and Eatonside are the same, while Alexandra and Tsutsumani are the same, but higher
Brand loyalty	Alexandra and Boipatong are about the same, with Eatonside the lowest and Tsutsumani the highest
Household structure	The four respondent groups do not differ

The significance of difference between the different combinations of respondent scores was calculated for all the food product attributes by comparing the maximum with the minimum. The results contributing to the research argument were reported in summary in Annexure 1.

No significant difference existed between the importance indicated by the four respondent groups regarding the need for satiety value, product acceptability, convenience and household structure. The implication is that neither average household income, nor geographical area, lessens the importance of these food product attributes as food product (maize meal) quality indicators for (very) low-income consumers. For taste, no significance in difference was indicated between the values reported by the three informal settlements, but these values were significantly lower than for the formal settlement. The values reported between the two poorest informal settlements (Boipatong and Eatonside), and between the more affluent informal (Alexandra) and formal (Tsutsumani) settlements respectively, indicated no difference, but were significantly different between the two sets of groups. The values for the former were consistently lower than for the latter for the food product attributes of appearance, product quality, nutrient content, texture, product safety and brand loyalty.

Overall, satiety value has been indicated as the food product attribute of highest importance to the informal settlements (94, 92, 92 percent respectively), and a close second place for the formal settlement (90 percent versus 91percent for taste) (Table 4). This aspect is important to (very) low-income consumers as satiety value is related to energy, absence of hunger and a sense of well-being (Marumo, 2008) reported as ...'you know you are going to be all right' (Dobson et al., 1994:32).

The difference in the importance allocated to affordability and packaging size by the two (very) low-income groups, Boipatong and Eatonside, is of interest. Boipatong, one of the poorest informal settlements, regards affordability (86 percent) as of significantly more importance than do the other respondent groups. It is not clear why the other poorer informal settlement (Eatonside) regarded affordability as of lesser importance (78 percent), but it can be speculated that affordability is perceived to be linked to packaging size (refer to discussion on packaging size). It is recommended that, based on the supportive results for this food product attribute from the specific focus group and the baseline study (96 percent), that the value reported by Boipatong should be seen as indicative of the importance of this food product attribute to (very) poor income consumers. Both Boipatong (86 percent) (very low-income) and Tsutsumani (88 percent) (higher income) indicated packaging size as being of high importance. Of interest is the fact that the results from

both focus groups indicated that it is of importance to have no wastage, and that the amount purchased corresponds only to what is to be consumed within an expected period. On the other hand, the focus group conducted in Eatonside reported that you purchase the amount of maize meal for which money is available, with further purchasing when more money is available (Marumo, 2008). The latter approach implies that packaging size is not optional, as you can purchase only the size for which money is available. In the baseline study, the perception of the importance of packaging size was indicated as 91 percent, which supports the findings from Boipatong in this study.

No significant difference was indicated in the importance that the two poorest informal settlements allocated to the value for money (Boipatong, 73 and Eatonside, 80 percent). These figures were also significantly higher than those reported by the more affluent settlements, which indicate the relative importance of this food product attribute to the (very) low-income consumers.

No significant difference was indicated between the respondent groups in the importance indicated for food product convenience, although the more affluent Tsutsumani attached a substantially higher importance (87 versus 80, 79, 81 percent respectively) to this attribute.

The food product attributes related to economic factors include satiety value, affordability, packaging size, value for money, convenience and household structure. For all of these food product attributes, excluding affordability and packaging size, no significant differences were indicated between the two poorest informal settlements in the importance that was attached to these attributes. It is of interest to observe that all the food product attributes for which no significant differences were measured between all four respondent groups, namely satiety value, product acceptability, product convenience and household structure, are imbedded in this category. Of further interest is the fact that the sequence of importance indicated by the three informal settlements for these attributes corresponds to the sequence reported by the baseline study, namely satiety value, affordability and packaging size.

A quite different picture arises for the importance of the non-economic food product attributes to (very) low-income and not so (very) low-income consumers. Figures reported for the attributes related to sensory aspects (taste, appearance and texture), culture (consumer acceptability including social, cultural and religious aspects), health (nutrient content, product safety/ shelf life) and status (product quality and brand loyalty), indicate the significantly lower level of importance allocated by the two poorest informal settlements to food product attributes that are not related to

economic factors. For all of these food product attributes, no significant difference in importance was indicated between the two poorest informal settlements; however, a significantly lower level of importance was indicated by the two poorest informal settlements in comparison with the groups with slightly higher and substantially higher expendable incomes (see Table 4).

In overview, it is notable that the difference in the importance allocated to appearance, product quality, nutrient requirements, texture and product safety by the two more affluent settlements versus the two less affluent settlements, was established without any doubt (Figure 1, Annexure 1).

The 'nice to have' (Hughes, 2002:11) food product attributes, particularly, such as brand loyalty and product safety, were indicated as of much less concern to the (very) low-income consumers. Although the literature indicates that consumers 'at the bottom of the pyramid' perceive brands as critical owing to an aspiration for a new and enhanced quality of life (Prahalad, 2006:14), this was not the case for the settlements at the lower end of the (very) low-income scale, where mere survival was at stake.

However, the very low importance that these consumers allocated to the nutrient content of food is alarming. This incidence concurs with findings by the baseline study and other researchers (Joseph Rowntree Foundation (JRF), 1994:1; Walker et al., 1995:8; Nord et al., 2007:1). The link between expendable income and food security has also been indicated in the past, stating, *inter alia*, that typical food-secure households spent 31 percent more on food than the typical food-insecure household of the same size and composition (Nord et al., 2007:1).

Of the two metropolis-based settlements, Alexandra, the informal settlement of highest affluence, has a much higher prevalence of (very) low-income households (± 33 percent) (Table 3), than the formal settlement, Tsutsumani, the most affluent settlement (± 22 percent); yet significant differences in the importance allocated to food product attributes were reported only for packaging size and taste. This can possibly be ascribed to the fact that better taste costs money, and to the difference in interpretation of the need for specific packaging sizes (Marumo, 2008).

For Alexandra, the food product attributes related to economic constraints, excluding satiety value and brand loyalty, were indicated as being of less importance than the sensory, acceptance and health-related attributes. Further notable differences were indicated for appearance, product quality, nutrition, texture, and product safety/ shelf life. These values were indicated as being of much higher importance to this metropolis-based informal settlement than to the other two poorer

informal settlements, Boipatong and Eatonside (town- and city-based respectively) and were more similar to the responses by the formal settlement Tsutsumani. The challenge to producers to deliver 'aspirational goods' meeting the demands for quality at affordable prices (Prahalad, 2006:14) as indicated for consumers 'at the bottom of the pyramid', is therefore more applicable to those consumers with slightly higher income, at the higher end of the (very) low-income bracket.

4. CONCLUSIONS

The perception of food quality is a complex issue open to various approaches, of which only one has been applied in this study. The quality of a food product is subjectively based on the perception/s of consumers and is related to the reality of the specific consumer during purchasing choice (Brunsø et al., 2002:6-7, 52). Food product attributes are perceived as critical factors during this process, and constitute a major instrument in food marketing strategies (Kupiec & Revell, 2001:8). The ideal is, therefore, to combine the most preferred attributes (Kaul & Rao 1995:298) in order to enhance the competitiveness of the product in the marketplace for the specific consumer group.

From the systematic exploration ($p \leq 0.1$) of the importance of specific food product attributes to (very) low-income consumers during the purchasing of maize meal as staple food in this study, a specific trend was implied. Overall, a higher importance was indicated for satiety value, affordability and value for money by the (very) low-income consumers than by the more affluent respondent groups. This finding is supported by the literature, indicating the cost of food and the money available as the determining factors in what to eat (Dobson et al., 1994:33). For the importance of taste, food product acceptability and convenience, a closer match is observed between the (very) low-income and slightly more affluent informal settlements than between these and the higher-income formal settlement. The importance of taste as a food product attribute is very clearly indicated as being related to household income (84, 82, 82, and 91 percent respectively for the four settlements). It is important also to link taste to the fact that wastage is prevented by buying only the food that household members will eat. The purchasers themselves had often lost interest in food (Dobson et al., 1994:31).

The rest of the food product attributes (appearance, product quality, nutrient requirements, texture, product safety, brand loyalty and, to a lesser extent, household structure) indicate a higher level of importance allocated to food product attribute value by the two slightly higher-income groups,

along with, in most cases, a significant similarity of importance, which also applies between the lower values for the two (very) low-income groups.

In contrast with 'nice to have' food product attributes such as taste, quality and nutrient content (Painter, 2007:14), (very) low-income consumers consider food product attributes that are manipulated by economic restrictions, especially satiety value and affordability, as important attributes in combination with taste and acceptability (Table 4) as core product characteristics (Painter, 2007:14). Only thereafter do other attributes, such as appearance and ease of preparation, come into play as augmented product characteristics. The food product attributes reported can therefore be indicated as representative key buying goals in the minds of the (very) low-income consumers to obtain the highest level of product satisfaction (Malaviya & Sivakumar, 1998:98).

From these results, a margin is implied beyond which the lack of expendable income differentiates between food product attributes that can influence purchase choice to a higher or lower extent. For the (very) low-income consumers, little margin exists between the choice for quality and what price dictates – the poorer you are the more important price becomes. From these results, it can be inferred that even a little extra expendable income may assert an influence in relation to the food product attributes considered when making food-purchasing decisions (Dobson et al., 1994:34; CA, 1997:10).

5. RECOGNITION

Financial support for the work: National Research Foundation and Vaal University of Technology.

Guidance and input in article (based on a section of a PhD Consumer Science study at the University of Pretoria): Promoter, Prof HC Schönfeldt, co-promoter, Dr R Kruger & statistical advice, Prof D de Wet.

Respondents from the food environment and settlements: for valuable input.

REFERENCES

- ACNIELSEN, 2005. A country divided: consumer spending trends in a dual economy. *Food Review*, April.
- ALWITT, F & DONLEY, TD, 1996. *The low-income consumer: adjusting the balance of exchange*. Thousand Oaks: Sage.
- AMULI, DJ, 2006. *Purchasing patterns of major plant staples in low-income households in the Vaal Triangle*. MTech dissertation, Vaal University of Technology.
- BABBIE, E & MOUTON, J, 2002. *The practice of social research*. Cape Town: Oxford University Press.
- BERK, KN & CAREY, P, 2000. *Data analysis with Microsoft Excel*. Canada: Duxbury Thomson Learning.
- BFAP (BUREAU FOR FOOD AND AGRICULTURAL POLICY), 2007. *South African agricultural baseline: consumer trends and analysis*.
<http://www.bfap.co.za/reports/BFAP%20Baseline%20June%202007.pdf> Accessed 16 July 2007.
- BLISARD, N & STEWART, H, 2007. *Food spending in American households, 2003-04*. Economic Information Bulletin, EIB-23. <http://www.ers.usda.gov/Publications/EIB23/>
Accessed 10 January 2008.
- BRITS, I, 2002. *Investigation into density criteria as part of defining urban and rural areas for South Africa*. Statistics South Africa
<http://66.249.93.104/search?q=cache:0FLTgsnrYsQJ:population.pwv.gov.za>
Accessed 7 July 2007.
- BRUNSØ, K, FJORD, TA & GRUNERT, KG, 2002. *Consumers' food choice and quality perception*. The Aarhus School of Business. Working paper, 77. Bureau for Food and Agricultural Policy.
- (CA) CONSUMERS' ASSOCIATION, 1997. *The food divide – eating on a low income*. Policy paper.
- CARDELLO, A.V. 2005. Terminology, reliability, validity, and subjectivity in the search for the 'voice of the consumer'. *Food Quality and Preference*, 16:203-205.
- COOPER, RG, 1990. New products: what distinguishes the winners? *Research Technology Management*, 33:27-31, November/December.
- COOPER, R & SCHINDLER, PS, 2003. *Business research methods*. 8th ed. New York: McGraw Hill.
- DE WET, A, 2008. Personal discussion on the role of statistics in determining trends, 17 June.
- DEN HARTOG, AP, VAN STAVEREN, WA & BROUWER, ID, 1995. *Manual for social surveys on food habits and consumption in developing countries*. Weikersheim: Margraf Verlag.

- DOBSON, B, BEARDSWORTH, A, KEIL, T & WALKER, R, 1994. *Diet, choice and poverty: social, cultural and nutritional aspects of food consumption among low-income families*. Centre for Research in Social Policy. Loughborough University of Technology, London: Family Policy Studies Centre.
- DOWLER, E, 1997. *Food access – whose responsibility?* Briefing paper. New Policy Institute. <http://www.npi.org.uk/reports/food%20access.pdf> Accessed 11 January 2008.
- DUVENAGE, SS, 2008. *Development of a food product concept formulation framework for (very) low-income households in urbanised informal settlements in Gauteng South Africa*. PhD thesis (in progress), University of Pretoria.
- ENGELBRECHT, K & DU RAND, P, 2000. Status of frail elderly black people in informal settlements. *South Africa's Continuing Medical Education Monthly*, 18(10):828-33.
- FISHER, A, 1999. Consumer preferences and farmer's markets. *World Hunger Year*. http://www.worldhungeryear.org/why_speaks/ws_load.asp?file=52&style=ws_table Accessed 17 March 2007.
- FOWLER, AA & PRIESTLEY, RJ, 1990. Raw material quality as perceived by the customer. In Smith, MF, Kort, MJ, Clarke, IR & Bush, PB (Eds), *Proceedings of the second national bakery symposium*. Technikon Natal.
- GROVES, A, 2003. Consumer Watch. *Institute of Grocery Distribution Consumer Tracker*, February. <http://www.igd.com/consumer> Accessed 17 March 2007.
- HADDAD, L, RUEL, MT & GARRETT, JL, 1999. Are urban poverty and undernutrition growing? *World Development*, 27(11):1891-1904.
- HART, S, 2004. *New product development: a reader*. Eastbourne: Thompson.
- HAWKINS, DI, BEST, RJ & CONEY, KA, 1998. *Consumer behaviour: building market strategy*. 7th ed. Boston, MA: McGraw-Hill.
- HIGGS, N, 2007. *The state of South Africans as we start 2007*. TNS Research Surveys. <mhtml:file:///F:/The%state%20state%20of%20South%20Africans%20as%20we%20start%202007.mht> Accessed 12 September 2007.
- HORNIBROOK, S & MCCARTHY, M, 2004. *Consumer behaviour and supermarket strategies: understanding the market for beef in Ireland*. Working Paper, 70. Kent Business School: University of Kent.
- HUBBARD, M & ONUMAH, G, 2001. Improving urban food supply and distribution in developing countries: the role of city authorities. *Habitat International*, 25(3):431-46.
- HUGHES, D, 2002. *Consumer interests and the reform of the CAP: a review of relevant documentation and research*. http://ec.europa.eu/consumers/reports/rep02_en.pdf Accessed 27 August 2006.

- (JRF) JOSEPH ROWNTREE FOUNDATION, 1994. *Eating on a low income*. Social Policy Research, 66. <http://www.jrf.org.uk/knowledge/findings/socialpolicy/SP71.asp> Accessed 19 February 2008.
- KAUL, A & RAO, VR, 1995. Research for product positioning and design decisions: an integrative review. *International Journal of Research and Marketing*, 12^{**}:293-320.
- KUPIEC, B & REVELL, B, 2001. Measuring consumer quality judgements. *British Food Journal*, 103(1):7-22.
- LEIBTAG, ES & KAUFMAN, PR, 2003. *Exploring food purchase behaviour of low-income households: how do they economize?* Economic Research Service Report, AIB-747-07.
- MALAVIYA, P & SIVAKUMAR, K, 1998. The moderating effect of product category knowledge and attribute importance on the attraction effect. *Marketing Letters*, 9(1):93-106.
- MARUMO, K, 2008. *Food product attributes of importance to low-income households during purchasing*. MTech dissertation (in progress). Vaal University of Technology.
- MCDONALD, S, PIESSE, J & VAN ZYL, J, 2000. Exploring the distribution of household income in South Africa. *The South African Journal of Economics*, 68(3):423-54.
- MITTAL, V & KAMAKURA, WA, 2001. Satisfaction, repurchase intent, and repurchasing behaviour: investigating the moderating effect of customer characteristics. *Journal of Marketing Research*, XXXVIII:131-42, February.
- NORD, M, ANDREWS, M & CARLSON, S, 2007:1. Household food security in the United States, 2006. Economic Research Report, EER-49. <http://www.ers.usda.gov/Publications/ERR49> Accessed: 20 November 2007.
- OLDEWAGE-THERON, WH, DICKS, EG, NAPIER, CE & RUTENGWE, R, 2005. Situation analysis of an informal settlement in the Vaal Triangle. *Development Southern Africa*, 22(1):13-26.
- OLDEWAGE-THERON, WH, DICKS, EG & NAPIER, CE. 2006. Poverty, household food insecurity and nutrition: coping strategies in an informal settlement in the Vaal Triangle, South Africa. *Public Health*, 120:795-804.
- PAINTER, K, 2007. *An analysis of food-chain demand for differentiated farm commodities: implications for the farm sector*. Centre for Sustaining Agriculture & Natural Resources. Washington State University.
- PORKESS, R, 2005. *Collins dictionary of statistics*. 2nd ed. Glasgow: HarperCollins.
- PRAHALAD, CK, 2006. *The fortune at the bottom of the pyramid: eradicating poverty through profits*. Wharton: Wharton School Publishing.
- PRAHALAD, CK & HART, S, 2006. Making a market among the poor. *Food & Beverage Reporter*, August. <http://www.developotechnology.com/web/content/blogcategory/18.31> Accessed 17 September 2008.

PSD (PRIVATE SECTOR DEVELOPMENT) BLOG, 2007. World Bank Group. *World's largest untapped consumer segment*.

<http://psdblog.worldbank.org/psdblog/2007/12/the-largest-unt.html> Accessed 10 January 2008.

PUNCH, KF, 2005. *Introduction to social research: quantitative and qualitative approaches*. 2nd ed. London: Sage.

ROBSON, C, 2002. *Real world research*. Oxford: Blackwell.

ROUND, DK & TUSTIN, J, 2004. *Consumers as international traders: some potential information issues for consumer protection regulation*. International Trade Law Conference, 23 September, Canberra, South Australia.

SAARF (SOUTH AFRICAN ADVERTISING RESEARCH FOUNDATION), 2006. *Segmentation handbook – based on AMPS 2005 and AMPS 2006*. Johannesburg.

SSA (Statistics South Africa), 2000. Measuring poverty in South Africa. *RDP (Reconstruction and Development Programme) Development Monitor*, 16(12):5-7, December. <http://statssa.gov.za> Accessed 19 February 2008.

SSA (STATISTICS SOUTH AFRICA), 2005a. *Calculating the undercount in Census '96*. Appendix E: enumerator area type definitions.

http://www.statssa.gov.za/census01/census96/HTML/Metadata/Docs/Undercnt?appendices/appendix_e.htm Accessed 7 July 2008.

SSA (STATISTICS SOUTH AFRICA), 2005b. *Census Survey 2001*.

<http://www.statssa.gov.za> Accessed 25 March 2008.

STEWART, H & BLISARD, N, 2008. *Are lower income households willing and able to budget for fruits and vegetables?* Economic Research Service Report, ERR-54.

<http://www.ers.usda.gov/Publications/ERR54/> Accessed 10 Jan 2008.

TODD, PM & DIECKMANN, AJ, 2004. *Heuristics for ordering cue search in decision making*.

http://books.nips.cc/papers/files/nips17/NIPS2004_0292.pdf Accessed 22 January 2008.

TORJUSEN, H, LIEBLEIN, G, WANDEL, M & FRANCIS, CA, 2001. Food system orientation and quality perception among consumers and producers of organic food in Hedmark County Norway. *Food Quality and Preference*, 12:207-216.

UNICEF (UNITED NATIONS CHILDREN'S FUND), 1998. *The state of the world's children*. New York.

VON ALVENSLEBEN, R, 2002. Consumer behaviour. In Padberg, DI, Ritson, C & Albisu, LM (Eds). *Agro-food marketing*. Wallingford: CAB.

WALKER, R, DOBSON, B, MIDDLETON, S, BEARDSWORTH, A & KEIL, T, 1995. Managing to eat on a low income. *Journal of Nutrition & Food Science*, 3:5-10, May/June.



WATKINSON, E & MAKGETLA, N, 2002. Cosatu looks at the food security crisis. *South African Labour Bulletin*, 26(2):45-8.

ANNEXURE 1 Exploratory comparison of the importance of food product attributes to (very) low-income consumers with different expendable incomes

Score of food product attribute importance¹

Food product attributes	Boipatong %	Eatonside %	Alexandra %	Tsutsumani %	Scores compared	Motivation for choice of scores	Difference of scores vs norm %	Significance in difference
Satiety value	94	92	92	90	Boipatong & Tsutsumani	Highest & lowest	4 < 9.899	No
Affordability	86	78	76	82	1. Boipatong & Alexandra 2. Tsutsumani & Alexandra 3. Weighted mean (Alexandra + Eatonside + Tsutsumani) & Boipatong	Highest & lowest Second highest & lowest Weighted mean & outlier	10 > 7.783 6 < 8.761 7.608 > 5.976	Yes No Yes
Packaging size	86	72	73	88	1. Alexandra & Eatonside 2. Tsutsumani & Boipatong 3. Weighted mean (Alexandra + Eatonside) & weighted mean (Tsutsumani + Boipatong)	Close scores but lower Close scores but higher Lowest & highest	1 < 9.066 2 < 7.159 14.338 > 5.771	No No Yes
Value for money	73	80	66	69	1. Eatonside & Alexandra 2. Boipatong & Alexandra 3. Weighted mean (Boipatong + Tsutsumani + Alexandra) & Eatonside 4. But: Eatonside & Boipatong	Highest & lowest Second highest & lowest Weighted mean & outlier Highest scores	14 > 8.899 7 < 9.163 10.55 > 6.96 7 < 8.425	Yes No Yes No
Taste	84	82	82	91	1. Tsutsumani & Eatonside 2. Boipatong & Eatonside 3. Weighted mean (Boipatong + Alexandra + Eatonside) & Tsutsumani	Highest & lowest Second highest & lowest Weighted mean & outlier	9 > 7.236 2 < 7.508 8.302 > 5.604	Yes No Yes
Acceptability	81	83	78	86	Tsutsumani & Alexandra	Highest & lowest	8 < 8.203	No
Appearance	80	76	90	89	1. Boipatong & Eatonside 2. Eatonside & Tsutsumani 3. Alexandra & Tsutsumani 4. Weighted mean (Boipatong + Eatonside) &	Close scores but lowest Lowest & second highest Very close highest scores Weighted means of lower &	4 < 9.028 13 > 7.988 1 < 6.675 11.495 > 8.459	No Yes No Yes



					weighted mean (Alexandra + Tsutsumani)	higher scores		
Product quality	73	77	86	86	1. Eatonside & Boipatong	Close scores but lowest	4 < 8.631	No
					3. Weighted mean (Eatonside + Boipatong) & Tsutsumani (Tsutsumani & Alexandra = similar)	Weighted mean but lower & highest	11.074 > 7.126	Yes
Convenience	80	79	81	87	1. Alexandra & Eatonside	Highest and lowest scores of cluster	2 < 8.12	No
					2. Weighted mean (Alexandra + Boipatong + Eatonside) & Tsutsumani	Weighted mean of lower cluster & outlier with higher score	6.998 < 8.029	No
Nutrient content	59	65	81	87	1. Eatonside & Boipatong	Close scores but lowest	6 < 9.671	No
					2. Tsutsumani & Alexandra	Two highest scores, quite different from lower scores	6 < 7.856	No
					3. Weighted mean (Eatonside + Boipatong) & weighted mean (Alexandra + Tsutsumani)	Weighted means of lower & higher cluster	21.723 > 6.275	Yes
Texture	69	72	89	83	1. Eatonside & Boipatong	Close scores but lowest	3 < 9.1	No
					2. Alexandra & Tsutsumani	Two highest scores, quite different from lower scores	6 < 7.593	No
					3. Weighted mean (Eatonside + Boipatong) & weighted mean (Alexandra + Tsutsumani)	Weighted means of lower & higher cluster	15.944 < 5.863	Yes
Product safety	69	62	86	80	1. Boipatong & Eatonside	Close scores but lowest	7 < 9.479	No
					2. Alexandra & Tsutsumani	Two highest scores, quite different from lower scores	6 < 8.205	No
					3. Weighted mean (Boipatong + Eatonside) & weighted mean (Alexandra + Tsutsumani)	Weighted means of lower & higher cluster	17.758 > 6.207	Yes
Brand name loyalty	69	61	74	82	1. Boipatong & Eatonside	Close scores but lowest	8 < 9.504	No
					2. Tsutsumani & Alexandra	Two highest scores but quite different	8 < 8.877	No
					3. Alexandra & Boipatong	Two middle scores	5 < 8.977	No
					4. Weighted mean (Boipatong + Eatonside) & weighted mean (Tsutsumani + Alexandra)	Weighted means of lower & higher cluster	12.305 > 6.544	Yes
Composite family structure	76	79	83	82	Alexandra & Boipatong	Highest & lowest scores	7 < 8.002	No

¹ As reported in Figure 2

6

FOOD PRODUCT ATTRIBUTES GUIDING PURCHASING CHOICE OF MAIZE MEAL BY LOW-INCOME SOUTH AFRICAN CONSUMERS: A QUALITATIVE APPROACH

6.1 INTRODUCTION

In a baseline survey (Phase 1 of this study), the food product attributes (concepts) perceived as most important by low-income consumers during the purchasing choice of the starch staple-type food mostly consumed, maize meal, were identified (Chapter 4). The food product attributes, in sequence of importance to the target population, were reported as satiety value, affordability, packaging size, value for money, taste, acceptability, appearance/ colour, product quality, convenience/ ease of preparation, nutrient content, texture, product safety/ shelf life, brand name loyalty/ satisfaction, and the influence of the household, suggesting the design parameters for the food product concept formulation framework (Chapter 4 Table 2).

Phase 2 of this study consisted of two parallel approaches, comprising an extended survey to validate the suggested design parameters in the target market against an established product (quantitative approach) (reported in Chapter 5), and the description of the identified food product attributes (concepts) to reveal embedded concept elements to clarify terminology use (qualitative approach). The latter approach is reported in this chapter.

The informal urbanised settlements of Boipatong (near a town, Vanderbijlpark), Eatonside (near a city, Vereeniging), and Alexandra (near a metropolis, Johannesburg), and the urbanised formal settlement Tsutsumani (adjacent to Alexandra) (Statistics South Africa (SSA), 2005), were included in both investigations.

Household poverty was reported by all the respondents groups, but was more pronounced in two of the informal settlements, namely Boipatong and Eatonside. Approximately 70 percent (Boipatong), 55 percent (Eatonside), 44 percent (Alexandra) and 29 percent (Tsutsumani) of the inhabitants of the respective areas were living below the household poverty line of R800 (US\$78)/ month/ household (Chapter 4 Table 3; SSA, 2005).

The possible relationship between the level of (lack of) household income on the level of importance perceived for the need of specific food product attributes, are integrated in this chapter. However, this criterion needs to be validated.

A multi-pronged approach has been applied during this phase of the investigation. The aims were firstly to understand the concepts being tested, and then to apply this understanding during screening of the data from the quantitative survey (reported in Chapter 5) to ensure consistency in the meaning of terminology between the different respondent groups (internal validity) (Bless, Higson-Smith & Kagee, 2007:93).

Next, a brief synopsis of the literature describing the different food product attributes was compiled. The aim was to develop an understanding of the meanings reported for the identified food product attributes that guide purchasing choice from the view points of both the low-income consumer and as based on literature (and as such applied by the food industry). The investigation into the similarities and differences between the meaning of the different food product attributes (concepts) and revealed concept elements, as reported by the different participating groups and the literature, contribute to the applicability of the research findings to the real world.

6.2 METHODS

6.2.1 Focus group discussions

The research team consisted of the principal investigator, one researcher and a field worker. The team was familiar with the aim of the research and the purpose of the focus group discussions. The researcher is fluent in several indigenous languages and acted as a facilitator during the focus group discussions. The principal investigator and the field worker were responsible for the writing of supportive field notes and reporting observations as recommended by Finch and Lewis (2005:182).

During the fieldwork conducted for the parallel quantitative survey (reported in Chapter 5 of this thesis), suitable participants were recruited to participate in the respective focus group discussions. They had to meet the screening criteria stipulating the habitual consumption of maize meal, being the main food purchaser for that household, and living in a shack. These respondents were not included in the quantitative survey in order to prevent influencing focus group discussion results.

One focus group discussion was conducted in each of the respective settlements, giving four group discussions, with between five and ten participants each (Morgan, 1996:17; Finch & Lewis, 2005:191-192). The option to conduct more focus groups was kept open if the derived results would indicate discrepancies or unsatisfied findings.

To keep the environment as natural and emotionally comfortable as possible (Finch & Lewis, 2005:195), the focus group discussions were conducted within the home of a willing collaborator in each of the respective settlements. When participants were welcomed and comfortably seated, the procedures for the focus group discussion and the use of the transcriber were explained. To ensure anonymity and confidentiality of data, participants were numbered.

Discussions were initiated by describing to respondents that they are within their usual shopping situation, making a choice for the purchasing of their starch staple-type food, maize meal. Probing questions (Finch & Lewis, 2005:171), based on the food product attributes (concepts) already indicated as important by these low-income consumers, were used to stimulate further discussion. Participants were encouraged to explain what they mean when a term was used. When spontaneous discussion ceased to reveal new information and time allowed, explanatory questions based on the food product attributes already introduced by the respondents, were applied as probes to facilitate further discussion. The viewpoints and experiences of the different participants were aired, and interaction between participants took place, stimulating further discussion and comments, until saturation was met.

The researchers listened to what the respondents were saying and doing, and allowed enough time for clarification and dispute in the discussion. Care was taken to involve as many of the respondents as possible during the discussions.

For the purpose of accuracy and inherent content, the mother language used by the respective respondents was employed as far as possible. The focus group discussions in Boipatong, Eatonside and Alexandra were conducted mainly in Sotho, with Zulu inputs from time to time. The focus group discussion in Tsutsumani was conducted in English as all participants were comfortable with the language.

During the focus group discussions data were captured using a transcriber to record the actual words being said, and field notes were taken by the researchers to report interesting or unusual observations for follow-up during the discussions as recommended by Corbin and Strauss

(2008:66). As soon as possible after the focus group discussions the researchers sat together to work through and assimilate information.

6.2.2 Data analysis

A comparative study (Corbin & Strauss, 2008:143) was conducted to derive a clearer understanding of the meaning of the identified attributes as perceived by the respective target population groups. A researcher needs to develop an understanding of how respondents relate to events, and should meet the continuous demand to reinterpret and increase insight during the analysis process (Corbin & Strauss, 2008:48, 50). In order to enhance reliability of findings, two researchers were involved in this section of the study (Duvénage and Marumo).

The mode of inquiry followed involved the narrative descriptions of phenomena within an interpretivist framework to accommodate different views (Taylor-Powell & Renner, 2003:1; Henning, Van Rensburg & Smit, 2004:19). Theoretical sampling (Corbin & Strauss, 2008:143) refers to a method of data analysis during which concepts (concept elements in this study) or themes are derived from textual data.

Data was transcribed word by word and then translated into English by one of the researchers, focussing on capturing the essence of what was reported. The field notes written during the respective focus group discussions assisted in this process, especially with the linking of responses with the numbering of participants. A letter indicated the geographical area, e.g. B if a participant was from Boipatong, and a numeral indicated the respondent number e.g. 2. The respondent was then indicated as B2 and the response was quoted. Respondents were numbered to prepare for the eventuality if it was necessary to trace an argument for a specific respondent.

Top-down analysis was applied through the application of the preset categories for analysis according to the food product attributes (concepts) identified in the earlier phase of this study (Chapter 4), but keeping the possibility of emergent categories in mind as indicated by Babbie and Mouton (2002:492) and Taylor-Powell and Renner (2003:3). In order to examine the data for identification of the major common properties and dimensions thereof (Corbin & Strauss, 2008:45, 231), conceptual content analysis was applied.

Colour coding was applied to aid in the identification of specific words or key phrases describing the food product attributes (concepts) (Babbie & Mouton, 2002:492) as well as

additional food product attributes as revealed. Concepts were described through the concept elements revealed by the data obtained from the respective focus group discussions.

In order to identify the descriptive concept elements within each of the concepts for each of the respondent groups, the reported responses in each category were grouped to reveal themes (Taylor-Powell & Renner, 2003:2; Corbin & Strauss, 2008:76-77), often using in-vivo coding. So doing the existing concepts was described through properties and dimensions. If needed, existing concepts were revised and adjusted to accommodate the revealed understanding. This method assisted in the identification of general patterns as well as variations.

In order to provide deeper insight from the perspective of the different respondent groups, the richness of the textual data was further exploited through a horizontal perusal of the data between the different respondent groups (Gaede, 2008). The concepts and concept elements derived from the data obtained from each of the respondent groups were compared for similarities and differences (Corbin & Strauss, 2008:57). In order to support analysis and interpretation, independent analysis was conducted by both of the researchers (Duvenage and Marumo). Results were compared and discrepancies in meaning resolved (Taylor-Powell & Renner, 2003:9). From the links revealed between the concepts, a better understanding of the interrelationship between the concepts were developed, revealing core categories of the greatest explanatory relevance to which the other concepts were related (Corbin & Strauss, 2008:104, 106). The derived knowledge could subsequently be applied to indicate inferences about the object as a whole.

The findings for the formal settlement Tsutsumani have been reported for the purpose of “prompting” the identification of similarities and differences and to support the identification of possible suggested meanings in the data from the informal settlements that would otherwise have been lost. Results obtained for the formal settlement group were, however, reported separately and not embedded in the derived final results.

Following, the perceived inherent characteristics of the respective food product attributes are reported, as extracted from the original data captured for the different respondent groups. The food product attributes (concepts) reflect the different categories, and the concept elements represent the themes describing each of the categories.

6.3 RESULTS AND DISCUSSION

To ensure the validity of content (Babbie & Mouton, 2002:275; Bless *et al.*, 2007:157), a comparison was drawn. The comparison involved the operational understanding of the concepts (food product attributes) as described through concept elements by the target groups, as well as the content that literature (and, by extension, industry) associates with these terms. This approach supports the applicability of terminology during food product development by the industry for low-income consumers.

For all tables in this chapter the abbreviation “B” is indicative of the responses of the Boipatong, “E” of the Eatonside, and “A” of the Alexandra informal settlement respondents respectively. “T” is indicative of the responses of the respondents of the Tsutsumani formal settlement, and the number is indicative of the individual respondents in each of the focus groups.

6.3.1 Satiety value

The respective respondent groups in the study described the satiety value of maize meal (Chapter 6 Table 1) in terms of the provision of energy, a feeling of fullness, the absence of hunger and a feeling of well-being. All four groups highlighted the provision of energy, but one of the lower income informal settlements, Eatonside, did not report a feeling of fullness as indicative of satiety value and a prolonged period of not needing to eat. This settlement was also the only one to indicate an emotional link to satiety value: “I feel good” and “I feel right”.

When viewing this situation within the context of the Kinsey’s consumer food demand pyramid (Painter, 2007:15), it is clear that the struggle for sufficient kiloJoules (lower-priced foods and foods that are not spoiled) is representative of the lowest level in the hierarchy of consumer food preferences. Only when the basic physiological and safety needs are acceptably met, can consumers strive towards the next level. This is assumedly the case with the respondent group of lowest income, Eatonside, who indicated a feeling of wellness originating from the meeting of bare basic needs. In contrast, the formal settlement, the group of highest income, reported a feeling of heaviness in the stomach resulting from “...eating more than enough maize meal”.

Table 1: Satiety value as concept

Concept elements	Statements from respondent groups
Provision of energy	<p>B7: It gives you energy and you become active.</p> <p>B5: It gives you more energy than when you have eaten bread.</p> <p>E4: I like maize meal that gives me energy and I am satisfied with that.</p> <p>A9: It gives energy. After eating maize meal, you feel you can work.</p> <p>A7: I like the fermented maize meal porridge because it gives me energy.</p> <p>T2: ...you feel energetic...</p>
Feeling of fullness	<p>B4: When you are full like this, e.g. you have eaten at 10:00 and you eat again at 16:00, it means you are full.</p> <p>B6: Once you are full, you don't long for another meal.</p> <p>B2: ...when I cook it, it becomes thick quickly and it also makes us full.</p> <p>B4: When you are full like this, e.g. you have eaten at 10:00 and you eat again at 16:00, it means you are full.</p> <p>A5: Your stomach becomes full.</p> <p>T3: You feel full, it is heavy in the stomach from eating more than enough maize meal.</p>
Absence of hunger for a longer period of time	<p>B5: It lasts longer in the stomach.</p> <p>B2: Mostly I like it for the children. If you give them the porridge with milk, they play the whole day without complaining about hunger.</p> <p>A7: You will want food after a longer time when you have eaten maize meal.</p> <p>A1: The one I grew up eating was too soft and weak, I had to eat a lot of it – five times per day. With Ace¹, I eat only once.</p>
Feeling of well-being	<p>E6: I feel good.</p> <p>E6: I feel right.</p> <p>T2: Satisfactory. You feel full and it's healthy...</p>

¹Maize meal trade mark

These statements are supported by literature that indicates hunger as the key driver for eating, influencing all consumers to react to the stimuli of hunger and satiety value (European Food Information Council (EUFIC), (2005:1)). Satiety value represents the degree to which foods give a sense of well-being or satisfaction of appetite (Satiety value, 1929:1), including the state of no hunger between two eating occasions (EUFIC, 2005:1). The volume of food/ portion size consumed plays a role in obtaining satiety value. The highest satiety value is provided by foods that remain the longest in the stomach and produce the greatest functional activity (Satiety value, 1929:1). Accordingly, hunger relates to the sensation experienced when a lack of food

produces a rhythmic contraction of the stomach, whereas, a full stomach provides a feeling of gratification (Satiety value, 1929:1; EUFIC, 2005:1).

The filling capacity of a food product, as related to satiety value, is of great importance to low-income consumers and foods with this attribute are purchased over other foods that are liked or can be afforded (Dobson, Beardsworth, Keil & Walker, 1994:31). Food products of lower energy density produce greater satiety value (EUFIC, 2005:1), but maize meal is an energy-dense food item high in refined grains (Drewnowski & Darmon, 2005:900; Oldewage-Theron, Dicks & Napier, 2006:798), which can easily lead to unintentional over-consumption (EUFIC, 2005:1).

6.3.2 Affordability/ price

The qualitative data revealed that affordability/ price is described through three concept elements namely the availability of enough money, that price determines package size, and also as the prevention of waste (Chapter 6 Table 2).

Only the two poorest informal settlements, Boipatong and Eatonside, indicated the availability of enough money as a prerequisite for, and determinant of, the package size of maize meal being purchased, indicating a higher level of financial constraint than for Alexandra, the informal settlement of highest income. This group also mentions size of the family and the period for which provisioning is to be made as indicators for package size, as well as a willingness to pay for preferred qualities, e.g., to obtain a maize meal with a familiar taste, as price is perceived as an affordable quality indicator.

Tsutsumani, the group of highest income, indicated it as “affordable” to pay for a specific brand to obtain the preferred taste. It is of interest that all groups except Eatonside mentioned the prevention of wastage as an indicator for the affordability of a maize meal product, although different techniques are reported. The lower-income informal settlement of Boipatong indicated the purchasing of smaller packaging sizes to prevent spoilage and the suitability of leftovers for consumption the following day as important; while Alexandra, which is in an area of higher affluence, indicated that an acceptable maize meal choice for all household members was important. The area of highest income, Tsutsumani, perceives the choice of brand with suitable characteristics to meet household preferences, as a method of preventing wastage.

Table 2: Affordability/ price as concept

Concept elements	Statements from respondent groups
Availability of enough money	<p>B5: As for me, it depends on the money I have for that month.</p> <p>E2: I like Mamas¹, but mostly my purchases rely on the money available. That is why I buy the one on special price.</p> <p>A7: You buy the maize meal you are used to, whatever the price may be, it does not matter.</p> <p>T3: For me if the price is a bit higher, maybe I can't afford.</p>
Price determines packaging size	<p>B3: I buy that size because we are many in the household and I get money per month and I buy once.</p> <p>B4: Sometimes I can buy looking at the size of the family and sometimes I compare the prices and buy the large size if I find it cheap.</p> <p>E4: I buy 12,5 kg, but when I don't have enough money, I buy 5kg.</p> <p>E4: ...but sometimes when I don't have enough money for one of them, I just buy the one I find on special so that at least I can have something to eat for the day.</p> <p>A5: ...when you buy a particular size, you consider the size of the family and how long it will last.</p>
Prevention of waste	<p>B4: But I prefer buying small sizes to avoid spoilage.</p> <p>B5: I once bought an Impala¹ maize meal and a lot was left in the pot and it had a bad smell.</p> <p>B6: We can have leftovers and eat them the following day.</p> <p>B7: Most of the time we eat it in the evening and the leftovers in the pot we eat them the following day in the afternoon.</p> <p>A9: ...we cannot cook two pots of different maize meal.</p> <p>T3: But sometimes it happens that the brand you were using has changed...everyone in the house was complaining. So I changed to a new brand.</p> <p>T2: It is important because if I use two 12,5kg a month it is too much for me, and then if I use one 12,5kg it's OK.</p>

¹Maize meal trade mark

These results accord with the literature, which describes affordability as the extent to which consumers can meet the expense of a product, as measured by its cost relative to the amount that the purchaser can or is able to pay (Reader's Digest Universal Dictionary, 1988:35). Dobson *et al.* (1994:31) point out that low-income consumers give preference to quantity over quality, while a slightly higher income gives the opportunity to prioritise quality over quantity. If the assumption is made that maize meal quality is directed by price, as is perceived by these consumers, then it is true for the Boipatong and Alexandra informal settlements that the best quality that can be afforded for the quantity needed, is purchased. For the Eatonside informal

settlement, as well as for some respondents from Boipatong, it was reported that the cheapest product is purchased for the quantity needed.

6.3.3 Taste

The three concept elements, namely familiarity/ acceptability of taste, versatility of use and willingness to pay, were indicated as descriptors for taste (Table 3).

The perception of the importance of taste (Chapter 6 Table 3) differs between the respondent groups, specifically in relation to the willingness to pay for a specific taste. The two informal settlements of lower income, Boipatong and Eatonside, indicated a conservative approach. Boipatong indicated the familiarity of taste as linked to brand as important, but it is also perceived as linked to financial constraints like the degree of thickening provided by the product. Eatonside reported a preference for taste, but purchases rely on the money available – indicating the priority of financial constraints in product choice for this informal settlement. Alexandra, the informal settlement of highest affluence, links taste to brand, but also indicates familiarity of taste as a key factor that guides the purchasing choice of maize meal. The respondents in Alexandra link the quality of taste to the whiteness of the maize meal and to the price paid for the product. Taste preferences learned in childhood are perceived as important. Tsutsumani, the settlement of highest affluence in the study, links taste to brand but perceives taste as more important than brand. The link to other food product attributes like smell, texture, and mouth feel are also of importance.

Taste is also linked by all respondent groups to the versatility of the use of the maize meal, indicating the consumption of the soft or stiff product as such, with milk, tea, soup, spinach, meat, as a braai accompaniment and as macheu (a traditional drink based on fermented thin maize meal porridge) (see Chapter 6 Table 3).

According to the literature, taste is the most important determinant of food choice (Bogue, Delahunty, Henry & Murray, 1999:313), including all sensory stimulation produced by the ingestion of food (EUFIC, 2005:1). Harker (2001:4) indicates that all ethnicities perceive similar taste sensitivities. In the current study, each of the four groups was comprised of a variety of different ethnic groups.

Table 3: Taste as concept

Concept elements	Statements from respondent groups
Familiarity/ acceptability of taste	<p>B3: The taste, the texture, the smoothness.</p> <p>B4: I will tell you about Iwisa¹ maize meal. I like it and it is tasty. When I use two or two and a half cups, it becomes thick. Therefore, it can last for three weeks.</p> <p>E5, E6, E7: My children are so used to Ideal maize meal, if I buy a different brand they will complain that this maize meal is not good.</p> <p>A10: ...if the taste has changed I try another brand.</p> <p>A1: I like the white maize meal because the yellow maize meal does not have a good taste like the white one.</p> <p>A5: I am so used to the maize meal that I buy, so I buy that one because other brands I don't know how they taste like. Sometimes you will find that the taste is worse with other brands.</p> <p>T1: It is flavourful like mealies.</p> <p>T3: Its taste is not like the other maize meal that I used before, because it is nice in the mouth and even when you chew, you smell that maize. So that is why I said it is tasty to me.</p> <p>T3: But now when I taste, Ace has changed...everyone in the house was complaining. So I changed to a new brand.</p> <p>T5: If I go to buy Papa¹ and it is not there I also buy Ace because I grew up eating Ace and the taste is similar.</p>
Versatility of use	<p>B4: When I cook Iwisa¹ maize meal, I don't add salt, I just eat it the way it is and it's smooth. I enjoy it like someone who adds salt to it.</p> <p>B7: Iwisa¹ is very tasty and you can just eat it without accompaniments.</p> <p>B5: Iwisa¹ is tasty. We eat it with milk, spinach and meat.</p> <p>E4: We can also have maize meal porridge with tea, soup and meat.</p> <p>A3: I ferment the maize meal to prepare sour porridge.</p> <p>T5: I buy Papa maize meal because it has a nice taste, you can even eat it with milk, it's very nice with meat, everything.</p> <p>T3: You can make a lovely pap for braai.</p>
Willingness to pay	<p>E7: It depends which maize meal is on special... For example Ideal is the same as Iwisa¹. So if Ideal is on special I take ideal and leave Iwisa¹.</p> <p>A10: ...if the taste has changed I try another brand. I will look at the price because it means the price I was paying for the old brand does not suit it because of the changed taste. If the price is high in the new one, it means it is a quality product.</p> <p>A9: The price issue is confusing because you cannot follow the price whereas you don't get the taste that you like.</p>

¹Maize meal trade mark

Taste preference is related to experience, as indicated by familiarity with various types of food and the existing diet, and is influenced by attitudes, beliefs and expectations (Harker, 2001:4; EUFIC, 2005:1). As the major starch staple food for all the participating groups in this study is maize meal (Nel & Steyn, 2002:136-142, 48-49; Oldewage-Theron *et al.*, 2006:800) the respondent groups have an experience-based knowledge of the product, which contributes to the internal validity of the study (Babbie & Mouton, 2002:122). Financial constraints demand that individual taste preferences are accommodated as far as possible to ensure product acceptance and limit wastage (Dobson *et al.*, 1994:32). In the current study, the influence of the money available on purchasing choice is clearly illustrated. The more confining the financial constraints a consumer experiences, the less influence taste exerts as parameter during starch staple food choice.

6.3.4 Convenience/ ease of preparation

According to the perceptions of the different respondent groups convenience/ ease of preparation was described through two concept elements, namely preparation time and usability of leftovers (Table 4).

Table 4: Convenience/ ease of preparation as concept

Concept elements	Statements from respondent groups
Preparation time	<p>B4: ...thickens quickly and when we eat it in the household, we really feel we have eaten a good maize meal.</p> <p>B2: ...it becomes thick quickly and it makes us full.</p> <p>B7: ...I look at how easily it thickens...</p> <p>E8: I use Ideal because it becomes thick (more) quickly that the other maize meals.</p> <p>E1: ...thickens quicker when cooking it.</p> <p>E7: It depends which maize meal is on special and which maize meal thickens quicker.</p> <p>A5: Ace¹ gets cooked easily...</p> <p>A9: It gets cooked faster.</p> <p>T1: It doesn't take too long to cook.</p>
Usability of leftovers	<p>B6: In the morning the leftovers in the pot are still white, no discolouration.</p> <p>B7: Most of the time we eat it in the evening and the leftovers in the pot we eat them the following day in the afternoon.</p> <p>T3: ...even if you don't have bread in the house and the kids are crying, you just make tea and take the previous night's stiff porridge and they drink tea with it and things go well.</p>

¹Maize meal trade mark

Convenience/ ease of preparation were described by the respondent groups in terms of preparation time, usability of leftovers and texture characteristics. All four of the groups perceived preparation time as highly important, especially Eatonside, - identifying the ability to thicken quickly as a purchasing choice indicator.

The duration of the cooking period is judged in terms of cost implications, and is further linked to the feeling and duration of fullness (satiety value) obtained from the thickness of the porridge. Linked texture indicators included the absence of lumps, not too soft a texture (a medium texture provides a thicker porridge with better satiety value), and ease of thickening (a limited amount is needed to obtain the preferred thickness). All these indicators have economic roots, referring to the reality of these low-income households. The usability of leftovers the following day was indicated as a priority by Boipatong, Alexandra and Tsutsumani respondents. It was not explored as part of this studies whether an excess of porridge was prepared deliberately and the purposes thereof.

The layman perceives convenience as referring to food products being quick and easy to prepare or ready to eat (Silayoi & Speece, 2004:605; Jaeger, 2006:133). The first of these aspects is addressed in the section dealing with the concept texture (§6.3.8).

All of the aspects relating to simple convenience, including the time and energy allocated to meal preparation, are imbedded in the findings. Complex convenience refers to the skills required to produce food, and includes planning, shopping, storage, preparation, consumption and cleaning, and is more time and energy intensive (Candel, 2001:17; Grunert, 2003:3).

Jaeger (2006:133) also regards product availability out of season, extended shelf life and the ability to consume a product without utensils, as aspects of convenience. As maize meal is available on the shelves throughout the year in South Africa, this aspect was not specifically addressed in the current study. Maize meal is widely consumed in South Africa in different forms according to taste and culture, and selection for the various uses is imbedded in product choice. Therefore, no attention was given to the use of utensils as part of this study. However, the aspect of extended shelf life was discussed in the current study within the context of affordability (as prevention of waste, in Chapter 6 Table 2), and product safety/ shelf life (Chapter 6 Table 9) as managed by packaging size.

6.3.5 Household influence

Two concept elements, preferences of household members and money available, were indicated as descriptors for household influence (Chapter 6 Table 5):

Table 5: Household influence as concept

Concept elements	Statements from respondent groups
Preferences of household members	<p>B5: If it is not available I would rather buy bread because I know my children won't eat any other maize meal</p> <p>B6: I do ask them how is the pap and they will tell me.</p> <p>B7: I do ask them because children like pap and if you change, they complain.</p> <p>E5: My children are so used to Ideal maize meal, if I buy a different brand they will complain that this maize meal is no good.</p> <p>E6: Same applies to my children.</p> <p>E7: Even my children will tell me that.</p> <p>A9: I listen to what other household members want, but the problem is we cannot cook two pots of different maize meal.</p> <p>A6: I buy the maize meal that my husband likes and if I don't like it, I just eat and I will get used to it.</p> <p>A10: I prefer that we buy 5kg of Ace and 5kg of another brand that is liked by the household members and we can all have a share of the brands we like sometime.</p> <p>A7: I grew up eating Ace¹ and my children are also eating it and I will not listen to any complaints about Ace¹.</p> <p>A5: If you have children in your household, you raise them eating a certain brand and they get used to it, so there is no way that they will want a different brand.</p> <p>T1: I just buy according to my children, if they will like it.</p> <p>T2: With me, I always do things the way I see will suit everyone. Like my children, they don't know the difference between Ace¹ and whatever, and my husband, as long as it is pap, nicely done, it is OK. As the wife and mother, I know what's right or wrong for my family.</p> <p>T4: For me it is the brand name because I buy the one that I get satisfied with when I am using it.</p>
Money available	<p>B5: As for me, it depends on the money I have for that month.</p> <p>E2: I like Mamas¹, but mostly my purchases rely on the money available. That is why I buy the one on special price.</p> <p>A7: You buy the maize meal you are used to, whatever the price may be, it does not matter.</p> <p>T3: For me if the price is a bit higher, may be I can't afford.</p>

¹Maize meal trade mark

The elements identified for the description of the concept of household influence include preferences of household members, money available and household size (Chapter 6 Table 5). The acceptance of the maize meal by the children was indicated as important to all the respondent groups, but for both Boipatong and Eatonside, the two informal settlements of lower income, the choice is finally determined by the money available for purchasing. In Alexandra and Tsutsumani, the settlements of higher income, the children's choices were perceived as important, but the husband's preferences were also indicated as important (and overriding). In some households, smaller packages of different brands are purchased so that "...we can all have a share of the brands we like sometime".

Household size, money available and the period for which provisioning should be made, impact directly on the packaging size of the maize meal purchased. Please see the section on packaging size (Chapter 6 Table 7).

In general, household composition, including family size, presence or absence of a male partner and availability of additional income, influence food product purchase (Dobson *et al.*, 1994:31). The household composition influences the amount of food purchased, with larger households purchasing more food but less variety (Guthrie, Lin, Reed & Steward, 2005:38).

Usually one person is responsible for the purchasing for a low-income household in order to limit spending and arguments (Dobson *et al.*, 1994:13). Preferences of children and/ or partners are considered during food purchasing, often with different brands purchased in turn so that preferences can be met (Dobson *et al.*, 1994:19), as was also found by this study for the slightly higher income groups.

6.3.6 Appearance/ colour

The concept appearance/ colour was described in terms of whiteness and the perception that colour infers quality (Chapter 6 Table 6).

The whiteness of the maize meal and inferred quality attributes describe the need for the food product attribute of appearance/ colour. The white colour of the maize meal was emphatically indicated as preferred by all the settlements.

Table 6: Appearance/ colour as concept

Concept elements	Statements from respondent groups
Whiteness	<p>B4: I like Iwisa¹ because when I cook it, it becomes very white...</p> <p>B5: In my household, we like Iwisa¹ and Papa¹ maize meal because they are white...</p> <p>B6: I like Papa¹ because looking at it, it is white...</p> <p>E5: Ideal was very white and I continued buying it.</p> <p>A10: I like white maize meal...</p> <p>A1: I like white maize meal...</p> <p>A5: I like the white maize meal...</p> <p>A2: I like the white maize meal...</p> <p>A7: I get satisfied with a white maize meal.</p> <p>T1: I like the Iwisa¹ maize meal because of its whiteness...</p> <p>T2: I look at the price first and my second choice is always White Star¹ ...and it is white.</p>
Colour infers quality	<p>B4: I like Iwisa¹ because when I cook it, it becomes very white and thickens quickly and when we eat it in the household, we really feel we have eaten a good maize meal.</p> <p>B5: In my household, we like Iwisa¹ and Papa¹ maize meal because they are white and soft.</p> <p>B6: I like Papa¹ because looking at it, it is white, it becomes thick and makes me full. In the morning, the leftovers in the pot are still white with no discolouration.</p> <p>E5: At first, I used Pride¹, but one day I bought Ideal and found a big difference between the two. Ideal¹ was very white and I continued buying it.</p> <p>A10: I like white maize meal because it makes the relish look attractive in the plate and the white maize meal makes it easy for you to see if it is contaminated.</p> <p>A1: I like white maize meal because the yellow maize meal does not have a good taste like the white one.</p> <p>A5: I like the white maize meal because it is easy for you to identify the texture.</p> <p>A2: I like the white maize meal because it is the colour we are used to and at home we eat the white maize meal.</p> <p>T1: I like the Iwisa¹ maize meal because of its whiteness and others are brownish and I like this one because it is white and soft.</p> <p>T2: I look at the price first and my second choice is always White Star. It gets thick very easily and it is white.</p>

¹Maize meal trade mark

Interestingly, the whiteness of the colour is also linked to other specific attributes of maize meal quality, as described in the following statements:

- White and soft.
- Become very white, thickens quickly ...we feel we have eaten a good maize meal.
- It becomes thick and makes me full.

- In the morning the leftovers in the pot are still white with no discolouration.
- It makes the relish look attractive in the plate.
- It is to see if the maize meal is contaminated.
- Yellow maize meal does not have a good taste like the white one.
- Easy to identify the texture.
- White is the colour we are used to, and at home we eat the white maize meal.

The attribute characteristics that are related to economy, including the ability to thicken quickly, softness, feeling of fullness and usability of leftovers, were indicated by Boipatong, one of the informal settlements of lower income. The hedonic-related characteristics were noted by the settlements of higher income.

According to the literature, appearance relates to the visual properties of a product, including basic attributes such as size, visual shape, colour, visual texture, gloss, transparency, cloudiness and perceived flavour (Lawless & Heymann, 1998:796; Imram, 1999:227). Most of these attribute characteristics (concept elements) were noted by the respondents in the current study. Imram (1999:227) observed that appearance attracts consumer attention during food choice decision-making, and is accordingly used as a screening mechanism by consumers, which is true for all these settlements, although for different reasons, as indicated.

6.3.7 Packaging size

The elements to describe the packaging size concept were indicated as provisioning of maize meal for a specific period, household size, affordability and product safety/ shelf life. To prevent repetition, the latter was described as part of the concept of product safety/ shelf life (Chapter 6 Table 7).

It was indicated that purchases were made mostly for the period of a month at a time, although purchases for a day (“...I just buy the one I find on special so that at least I can have something to eat for the day”), a week and two weeks were indicated by Eatonside, one of the lower-income informal settlements. In this informal settlement, packaging size is determined by the money available (affordability) for purchasing at that stage, while in Boipatong, more economical choices are considered, e.g., the purchasing of larger sizes if available at a cheaper price. In all the settlements a relationship is suggested between the packaging size of maize meal purchased and the size of the household.

Table 7: Packaging size as concept

Concept elements	Statements from respondent groups
Provisioning for a specific period	<p>B1: ...and 5kg can last for three weeks...</p> <p>B3: ...25kg is the only size which will manage the whole household for a month.</p> <p>B5: I buy 5kg... and it lasts the whole month.</p> <p>E6: I buy 12,5kg because I have many children, but the 12,5kg gets finished within a week.</p> <p>B7: We buy 12,5kg ...and it lasts the whole month.</p> <p>E4: Sometimes when I don't have enough money for one of them, I just buy the one I find on special so that at least I can have something to eat for the day.</p> <p>E7: I buy 12,5kg so that it can last the whole month.</p> <p>E8: I buy 12,5kg and it lasts two weeks.</p> <p>A2, A4, A5, A10: I buy 12,5kg. It lasts for a month.</p> <p>A1: I buy 5kg. It lasts for a month.</p> <p>A5: When you buy a particular size, you consider the size of the family and how long it will last.</p> <p>A9: I buy 12,5kg. It lasts for a month.</p> <p>T1: I buy 25kg so that it can last, maybe three to four months in case I can't get it again in the store.</p> <p>T3: I buy 10kg for the whole month.</p>
Household size	<p>B1: I buy smaller sizes and in the household we are not many.</p> <p>B3: We are nine in the household so 25kg is the only size which will manage the whole household for a month.</p> <p>B4: Sometimes I can buy looking at the size of the family... buy the large size if I find it cheap.</p> <p>B5: I buy 5kg. We are five in the household and it lasts the whole month.</p> <p>B7: We buy 12,5kg because we are eight in the household.</p> <p>A5: When you buy a particular size, you consider the size of the family...</p> <p>A7: You look at the size of the family and buy that size.</p> <p>T2: I use to buy 10kg. My younger brother moved in with me, so I changed from 10kg to 12,5kg. If I have an extra family member, I always go for a larger size.</p>
Affordability	<p>B4: Sometimes I can buy looking at the size of the family... buy the large size if I find it cheap.</p> <p>B8: I buy 12,5kg because I don't work and I want it to last.</p> <p>E2: ...25kg and it depends on the money I have.</p> <p>E4: ...12,5kg, but when I don't have enough money I buy 5kg.</p>

Please take note that the respondent groups apply regulation of packaging size as a procedure to manage product safety/ shelf life (please consult Chapter 6 Table 7 for application).

In general, consumers appreciate a good deal such as the purchasing of a generic product, which is usually packed in larger sizes (Silayoi & Speece, 2004:621). According to Leibtag and Kaufman (2003:2), low-income consumers often take advantage of the benefits linked to volume discounts where a lower price per unit is obtained. In contrast, the Joseph Rowntree Foundation (JRF) (1994:1) points out that low-income consumers buy smaller sizes on a more frequent basis. From the current study, it is clear that the benefits of volume discounts are not obtainable by households with strict financial constraints but only when more lenient circumstances prevail. It is clear that purchases are guided by what is affordable to the low-income households, as decided by the packaging size, and not necessarily by what is cheaper per unit, as in volume discounts.

6.3.8 Texture

From the textual data obtained from the focus group discussions, the complexity of the perceptions for texture is indicated by the identification of seven describing concept elements. The elements to describe texture have been indicated as texture quality, quick thickening ability, good thickening ability, satiety value, versatility of texture, affordability and convenience (Chapter 6 Table 8).

All three of the informal settlements indicated the ability of maize meal to thicken quickly during cooking as an important quality indicator. Eatonside, one of the lower income groups, indicated this characteristic as a screening mechanism to guide purchase choice.

The ability of a maize meal to become suitably thick during cooking was indicated as important by all respondent groups. This property allows the use of smaller quantities of maize meal to obtain the required thickness, which has implications for affordability for these low-income households. This product characteristic was also indicated as an important discriminator for purchasing choice. The thickness of the cooked product links directly to the satiety value obtained through consumption. Further indicators for texture quality included softness and smoothness. However, texture was indicated as being of less importance than taste by one respondent from the more affluent Alexandra informal settlement, while several respondents from the Tsutsumani formal settlement indicated taste as a more important attribute than texture.

Table 8: Texture as concept

Concept elements	Statements from respondent groups
Texture quality	<p>B5: In my household, we like lwisa¹ and Papa¹ maize meal because they are soft and white.</p> <p>A9: From way back, as I compare the thickening ability of lwisa, currently it takes time to thicken. This does not make me change to another brand because I am so used to lwisa. Changing to another brand, you find that the taste is different from the one I am used to.</p> <p>A5: The maize meal should cook the way I like it and I should enjoy it.</p> <p>A5: I like the white maize meal because it is easy for you to identify the texture.</p> <p>T1: ...because I like the texture and the softness of the maize meal.</p> <p>T2: ...and the texture is nice and the taste is also nice.</p> <p>T3, T5: It is soft and smooth.</p> <p>T3: The taste, the texture, the smoothness.</p>
Quick thickening ability	<p>B2: I like lwisa because when I cook it, it becomes thick quickly...</p> <p>E1: I use Ideal because... and it thickens quicker when cooking it.</p> <p>E4, E6: I use Ideal because it thickens quickly when I cook it.</p> <p>E8: I use Ideal because it becomes thick (more) quickly than the other maize meals.</p> <p>A5: The soft texture does not thicken quickly.</p> <p>A7: The soft texture does not thicken quickly; the medium texture will be fine.</p>
Good thickening ability	<p>B2: I like lwisa because when I cook it, it becomes thick quickly and it also makes us full.</p> <p>B5: They become thick easily...</p> <p>B6: I like Papa because... and when I cook it, it becomes thick...</p> <p>B6: ...2 cups are enough to make it thick.</p> <p>E5: I get satisfied with Ideal maize meal... and thicken easily when cooking.</p> <p>A10: The maize meal should be thick when cooking pap.</p> <p>A5: In my culture (Sepedi) it is nice when it is thick.</p> <p>T3: I like Shaya¹ because it is tasty, and you do not have to use more maize meal to cook.</p> <p>T3: ...but some maize meal when you put in the boiling water, it doesn't become a bit harder. You keep on putting, putting it doesn't become hard and you know which one is good for your family.</p>
Satiety value	<p>B2: I like lwisa¹ because when I cook it, it becomes thick quickly and it also makes us full.</p> <p>B6: I like Papa because... and when I cook it, it becomes thick and makes me full.</p> <p>A1: I also use Ace because it is good for me, it gives me energy and lasts longer.</p>

Versatility of texture	<p>B3: I also like Iwisa¹, more especially that when you make soft porridge it becomes like Mageu² drink.</p> <p>B5: ...we like cooking soft porridge with them (Iwisa¹ and Papa¹).</p> <p>T3: ...and even in the soft porridge with milk, it is very nice, and it is a bit coarse. You can make a lovely pap for braai.</p>
Affordability (use of smaller quantities)	<p>B4: ...5kg can last for three weeks because the maize meal is thick. When I use two or two and a half cups it becomes thick, therefore it can last for three weeks.</p> <p>A1: I also use Ace¹ because it is good for me... it does not get finished faster like other maize meals</p> <p>T2: I like Ace¹ because it is strong, you don't have to use more maize meal and it also helps me to save because you don't have to use lots and lots of it when you cook.</p> <p>T3: I like Shaya¹ because... and you do not have to use more maize meal to cook.</p>
Convenience	<p>B1: ...good texture.</p> <p>E5: ...thickens easily when cooking.</p> <p>A2: It does not form lumps when cooking.</p> <p>A7: The sot texture does not thicken quickly and medium texture will be fine.</p>

¹Maize meal trade mark

²Traditional sour maize meal based drink

Texture, an attribute perceived by visual or tactile senses, varies widely between food products (Lawless & Heymann, 1998:808). Consumers have clear expectations regarding product texture, in which memory plays an important role. Any changes from the expected are noted immediately, and regarded as a defect in quality (Mojet & Köster, 2005:251, 264), which is directly confirmed by the results of the current study. Visually perceived texture includes smooth, lumpy, rough, flaky, crystalline and viscose properties (Tuorila, 2007:35).

The findings from the two higher household income groups, Alexandra and Tsutsumani, correlate with the fact that texture is usually regarded as of less importance than taste as these two attributes are perceived in an integrative manner. However, this was not true for the two informal settlements of lower income, Boipatong and Eatonside. Texture is perceived as more pronounced when flavour is mild, or when not meeting expectations (Tuorila, 2007:35), which confirms the importance of this characteristic for maize meal.

6.3.9 Product safety/ shelf life

Several concept elements, including sensory attribute indicators, expiry date/ freshness and limited packaging size, were indicated as descriptors for the concept product safety/ shelf life (Table 9):

Table 9: Product safety/ shelf life as concept

Concept elements	Statements from respondent groups
Sensory attribute indicators	<p>B5: I once bought Impala¹ maize meal. A lot of it was left in the pot and it had a bad smell.</p> <p>No comments from Eatonside regarding product safety/ shelf life.</p> <p>A10: I like white maize meal because... it makes it easy for you to see if it is contaminated.</p> <p>T3: It tastes like it is old maize meal.</p> <p>T3: ...when I taste Ace¹ it has change, it has a bad smell like it has expired even if it has not expired. ...everyone in the house was complaining, so I changed to a new brand.</p>
Expiry date/ freshness	<p>B4: I once looked at the expiry date and the date was still new, and I bought the maize meal but when I got home and used it, the maize meal was not fresh.</p> <p>B7: The same thing happened to me.</p> <p>A7: If the maize meal has expired we do not buy it.</p> <p>A9: I go to another shop to look for a fresh one.</p> <p>T2: It is like the expired one, stored for ages.</p>
Packaging size limited	<p>B1: I use 5kg because we are three in the household. I don't buy 12,5kg because I think it will get spoiled/ rot because you know that when maize meal stays for a long time it developed moulds.</p> <p>B1: I don't want it to stay for a long time.</p> <p>B4: But I prefer buying small sizes to avoid spoilage.</p> <p>A7: I buy 5kg. I buy the maize meal that does not stay for a long time. I want it to get finished and buy another one.</p>

¹Maize meal trade mark

The indicators reported for product safety/ shelf life include sensory attributes, limitation of packaging size and adherence to expiry date. It is notable that the Eatonside informal settlement did not indicate product safety/ shelf life as an important factor during maize meal purchasing choice. Whether this can be ascribed to the quick rotation of maize meal (this settlement indicated the purchasing of the smallest packaging sizes) (Chapter 6 Table 2), or consumption in disregard of product safety, is not known. The following discussion pertains therefore only to the other three settlements.

Taste and smell are perceived as important discrimination tools for maize meal quality, using descriptors such as “bad smell” for the raw as well as cooked product, and “taste like old maize meal”. The whiteness of the maize meal was also indicated as a quality indicator (Chapter 6 Table 6) as any contamination is easily visible.

The purchasing of limited package sizes is indicated as a general procedure to prevent maize meal spoilage. By limiting the package size to ensure consumption within a limited period, even the absence of ideal storage conditions will not compromise the quality of the product. The purchasing of larger packaging sizes is indicated only on a few occasions. The product expiry date is simultaneously applied as an indicator of freshness, and if it is not satisfactory, purchasing will take place elsewhere. From the literature, it is clear that food freshness is often used as an indicator of food quality (Young, 1999:2-3), just as it is by the settlements in the current study through application of sensory attributes, limiting of the packaging size purchased and adherence to the product expiry date.

Consumers worldwide are becoming more aware of food safety risks such as allergies due to genetic modification (Yeung & Morris, 2001:170), through food scares (Dobson *et al.*, 1994:32), and contamination (Yeung & Morris, 2001:179). Consumers tend to exclude or limit consumption of what they perceive as potentially contaminated products through not purchasing the product, changing the brand or changing to similar products (e.g. from poultry to fish), absorbing the risk because of the importance of product, or reducing consumption (Yeung & Morris, 2001:179). The references to these aspects in this study are in relation to contamination that could be detected because of the whiteness of the maize meal (presence of moulds), a bad smell of leftovers, an old taste and the lapse of the expiry date (§ 6.3.9).

6.3.10 Brand loyalty

The concept brand loyalty is described by the respondent groups in terms of strength of brand loyalty, set of preferred brands, willingness to pay for brand, and links with other attributes (Chapter 6 Table 10).

Silayoi and Speece (2004:609) reported brand loyalty as having a direct correlation with product involvement, indicating that the higher the involvement level of the consumer with a product, the stronger the brand loyalty, owing to product knowledge and benefits perceived for the product. For this study, all the respondents participating in the current study have been screened for habitual maize meal consumption on a daily basis, in addition to being the person responsible for the purchasing of maize meal for the households.

Table 10: Brand loyalty as concept

Concept elements	Statements from respondent groups
Strength of brand loyalty	<p>B4: I will tell you about Iwisa¹ maize meal, I like it and it is tasty.</p> <p>B2: I go to the next shop to look for it.</p> <p>B6: ...if the maize meal is not available, I wait until it is available and meanwhile I use mabela.</p> <p>B8: If it is not available, I cook rice.</p> <p>B5: If it is not available I would rather buy bread because I know my children will not eat another maize meal.</p> <p>B7: I do ask them because children like pap, and if you change they complain.</p> <p>B11: ...you cannot buy a cheaper product which will not satisfy you.</p> <p>E2: I just buy any maize meal that is cheap that I find in the shop.</p> <p>E5: I'm satisfied with Iwisa¹ maize meal.</p> <p>E1: I'm satisfied with Ideal¹ maize meal.</p> <p>E5, E6, E7: My children are so used to this maize meal, if I buy a different brand they will complain that this maize meal is not good.</p> <p>A5: If you have children in your household you raise them eating a certain brand and they get used to it, so there is no way that they will want a different brand.</p> <p>A7: I grew up eating Ace¹ and my children are also eating it and I will not listen to any complaints about Ace¹.</p> <p>A1, A2, A4, A5, A7, A9: If I do not find the brand I always buy, I go to the next shop.</p> <p>A5: I you have children in your household, you raise them eating a certain brand. They get used to it, so there is no way that they will want a different brand.</p> <p>A1-5, A7, A9: I buy the one that I am used to.</p> <p>A1: I buy only Iwisa¹.</p> <p>A1: I am so used to the maize meal that I buy, so I buy that one because other brands I don't know how they taste like. Sometimes you will find that the taste is worse with other brands.</p> <p>A5: I don't change the brand if some characteristics of the product are different.</p> <p>A7: I always stick with the brand I am used to. I don't change to a different brand.</p> <p>T1: I go to another shop if Iwisa¹ is not available.</p> <p>T1: I buy 25kg, so that it can last, may be three to four months in case I can't get it again in the store.</p> <p>T3: It is the brand, but if it happens that the brand is not available I buy the other brand but just 1kg for that night. The next day I will go and search for Shaya¹ maize meal.</p>
Set of preferred brands	<p>B1: I like Iwisa¹ and Ideal¹ maize meal.</p> <p>E1: I only buy either Ideal or Iwisa¹ maize meal.</p> <p>E5: When Ideal is not available I buy Iwisa¹.</p> <p>E7: Ideal¹ is the same as Iwisa¹. So if ideal¹ is on special I take Ideal¹ and leave Iwisa¹.</p>

Buy most affordable (in set)	<p>B1: When I go into the shop I compare the prices for the two maize meals, because this month Iwisa¹ will be cheap and the following month Ideal¹ is the one cheaper. These two brands are the same to me.</p> <p>B7: When I go into the shop and buy Iwisa¹, I look how cheap it is... Even the children like Iwisa¹ and Papa¹ maize meal because these two are the same.</p> <p>E2: I buy Mamas¹ because it is the cheapest.</p> <p>E6: I look for Ideal¹ because it is cheaper.</p> <p>E7: It depends on which maize meal is on special...</p>
Willingness to pay for brand	<p>B11: You cannot buy a cheaper product which won't satisfy you.</p> <p>A7: You buy the maize meal that you are used to, whatever the price it may be, it does not matter.</p> <p>T2: I look at the price first...</p> <p>T2: The difference is the price. That's why I am saying between Ace¹ and White Star¹ I would choose Ace¹ maize meal because they are nearly the same to me.</p> <p>T3: Because if I can check the prices I will choose the one I don't want.</p>

¹Maize meal trade mark

Nearly all the respondents from the four groups indicated distinctive preferences, although more adamantly so in the slightly higher income groups. If the brand preferred is not available, the respondents either go to a different shop in order to obtain the product, or postpone purchasing and use product replacements like bread, rice or mabela (sorghum porridge) in the interim. It is often noted that the children will complain if the brand is changed. In Alexandra, the informal settlement of higher income, brand loyalty is so strong that it is indicated that even if some of the brand characteristics change, the same brand will still be purchased. Sometimes maize meal is purchased in bulk to ensure household availability for a longer period. In this settlement, it is noted that tradition in product use is important, and is transferred from the mother to the children. These results are a confirmation of the findings of Silayoi and Speece (2004:609), indicating that if a product is not available, the purchaser displays a willingness to postpone purchase or to travel to another store to obtain a specific brand (Silayoi & Speece, 2004:609).

It is of interest that several of the respondents, especially those from the two informal settlements of lower income (Boipatong and Eatonside), indicated a set of preferred brand options, from which the cheapest is then purchased. This approach was also indicated by one respondent from Tsutsumani, but none from Alexandra. Overall, a willingness to pay for a certain brand in order to obtain specific characteristics was indicated by respondents from both Alexandra and Tsutsumani.

It seems that various respondents prefer a certain brand, but do not buy blindly. Brand is often linked with a need for additional attributes or product characteristics, e.g., the cheaper product that thickens more quickly is chosen. Freshness, whiteness, and a texture that is not so soft (satiety value), is also linked with brand.

Although brand loyalty reports the degree of conscious or unconscious commitment of a consumer to consistently repurchase the same brand within a product class, even to the point where the consumer is willing to pay more for the product (Bitpipe, 2009), the low-income consumers are mostly price conscious.

The literature iterates that few consumers make specific brand choices before entering a store. Consumers are loyal to a small number of brands only, but several brands can be acceptable to a consumer. Experience with different brands creates the possibility that a brand will be found that meets the demands of the consumer, who will tend to remain satisfied with the product (Silayoi & Speece, 2004:609).

6.3.11 Nutrient content

The perceptions of the respective respondent groups regarding nutrient content are indicated by the concept elements energy, nutrients and additional benefits (Table 11).

Nutrient content is perceived mainly as providing energy, with slight reference to other nutrients. Several benefits are noted in this context. Carbohydrate-rich foods are the main source of nutrition for low-income households (Sosa & Hough, 2006:591) to ensure the provision of energy, which is paramount for survival. Within the South African context, it refers to the consumption of bread and soft or stiff maize meal porridge on a regular basis (Bureau for Food and Agricultural Policy (BFAP, 2008:59). These energy-dense diets high in refined grains are often followed, being less expensive and more affordable (Drewnowski & Darmon, 2005:900).

Low-income consumers often follow a monotonous diet “to keep them not hungry” (Ballantine, Rousseau & Venter, 2008:5). Fruits and vegetables are more expensive and therefore not included to the extent necessary in the diet (Oldewage-Theron *et al.*, 2006:800), but these foods are also less available in low-income communities.

Table 11: Nutrient content as concept

Concept elements	Statements from respondent groups
Energy	See satiety value (§1.1 in this table)
Nutrients	T2: Calcium for the bone and iron for the blood. T1: It also helps with their sight. T3: As it is a carbohydrate by itself, it also has vitamins and calcium. T5: I eat Papa maize meal because it has calcium and iron and it can boost someone's immune system when it is low.
Additional benefits	B7: When I go into the shop and buy Iwisa ¹ ... and it gives me energy to be strong. B4: My child is diabetic. If the maize meal is not available she eats sorghum (mabela). A1: I also use Ace ¹ because it is good for me, it gives me energy. T2: ...and it is healthy... T3: To grow up big and strong. T5: There are all kinds of goodness in it.

¹Maize meal trade mark

Some of the nutrients that maize meal is perceived to contain are misconceptions. Benefits noted for the nutrient intake include energy “to grow up big and strong”, and “all kinds of goodness”.

6.3.12 Combined concepts

Three concepts, product acceptability, value for money and product quality, were indicated as food product attributes of importance to low-income consumers (Chapter 4). Although none of these concepts were discussed during any of the focus group discussions, it is of interest to note that literature describe these concepts through the combination of other concepts.

6.3.12.1 Product acceptability

Consumers use food product information selectively during the purchasing evaluation process. This approach relates to meeting needs for specific beliefs and predispositions. The acceptance or rejection of a food product is therefore determined by the compatibility of consumer needs and the food product attributes provided by the product (Earle, Earle & Anderson, 2001:201; Sheth & Mittal, 2004:3, 4).

Taste acceptance by all household members is important, especially in a low-income household, to prevent food wastage. Only when no other food is available in the household, will foods of very low status of which the taste is perceived as not acceptable, be consumed (Dobson *et al.*, 1994:32). Literature relating to low-income households further indicates that foods with a good filling quality, or those perceived as good value for money, are preferred to other liked and affordable foods. Dobson *et al.* (1994:31) further report that low-income consumers give preference to quantity over quality.

6.3.12.2 Value for money

Modern consumers prefer value-added food products to greater quantities of food (Imram, 1999:224). This approach stands in direct contrast to the preference for quantity over quality reported for the low-income consumers (Dobson *et al.*, 1994:31).

Cant, Brink and Brijball (2002:28) mention four options through which consumers obtain value:

- Product purchased at low price;
- Obtaining a product that is highly valued for the benefits represented;
- Obtaining a quality product at an agreed price based on a trade-off between a benefit and a cost component;
- Obtaining total benefits for the price paid, or sacrifice made.

As the reality of the low-income consumer contains monetary restrictions that reflect in food choice, these consumers often do not want price benefits built into the food products they purchase (Alwitt & Donley, 1996:81; Hughes, 2002:11). The products purchased by these consumers display a mix of quality attributes matching the available food budget and non-monetary preferences (Hughes, 2002:3, 5). Food that is less prone to quick deterioration is perceived by low-income consumers as better value for money, because of lack of refrigerated storing space (Dobson *et al.*, 1994:13-14), and is managed by attention to the expiry date and limiting of the packaging sizes for maize meal purchased.

6.3.12.3 Product quality

Food quality can be defined as (i) objective quality as pertaining to the chemical analysis of the product, and (ii) subjective quality, which includes taste, product enjoyment and satisfaction of consumer experiences. Further criteria applicable to food evaluation include freshness and absence of toxic agents, which can be assessed in an objective and subjective manner (Young, 1999:2-3; Altmann, 2002:287).

Consumers apply criteria for product quality in a subjective manner, with different meanings and importance to individuals. Quality reports a summary of all product characteristics including the nature of the product, packaging, labelling and branding, and the warranties and legal protection (Altmann, 2002:286-287).

In a setting of higher affluence, more importance is attached to ecology and conservation, health, and luxury needs and pleasure. This includes aspects such as concern about environmental problems, diminishing natural resources and recycling; youthfulness and health food; and self-satisfaction and fulfilment through increased attention to high quality, brand loyalty and fun experiences during shopping and eating. Following this trend, successful new food products need to be ...”associated with health, taste well and give enjoyment, and at least be neutral to ecology and natural resources” (Altmann, 2002:287).

6.3.13 Linking between various concepts and concept elements

It is of interest to explore the interrelatedness of the concepts/ elements describing the food product attributes (concepts) satiety value and affordability, as indicated of high importance to low-income consumers in informal settlements (Chapter 5), excluding the combined concepts product acceptability, value for money and product quality.

To reduce the complexity of the analysis, the concepts were reported in a similar sequence as applied earlier in this document, based on the results from Chapter 5. In order to obtain a clear picture, only responses from the urbanised informal settlements were inculcated into these tables. To sustain the focus of this study, an exhaustive analysis of embedded descriptors is not pursued.

6.3.13.1 Satiety value and affordability

From the summary presented in Table 12, the link between satiety value (the feeling of fullness and the absence of hunger for a longer period of time that limits the amount of meals that have to be taken and cooking fuel needed), and texture (including satiety value provided by the thick texture of the cooked maize meal), is clear. Based on these findings it can further be argued that as it is important to the low-income consumers to use the smallest amount of maize meal to obtain the desired thickness which will provide satiety value, a link exist between satiety value and affordability.

The perceptions reported for affordability seems to be imbedded in nearly all the food product attributes (Table 12), with texture playing a surprisingly important role.

Table 12: Describing satiety value and affordability from revealed food product attribute links

Refer Table	Concepts	Elements	Insights by principal investigator
1	Satiety value	Feeling of fullness Absence of hunger for a longer period of time	Necessitating only one or two meals/ day (saving maize meal, cooking fuel)
2	Affordability/ price	Price determines packaging size Prevention of waste	Expendable money available for food used to purchase the packaging size to meet needs (e.g. household size) for a specific period Smaller packaging to prevent spoilage of product Purchase just enough for the period (money available for other purposes) Acceptability of leftovers Acceptability of product characteristics to all household members/ take turns to eat favourite maize meal If product attributes change, and not acceptable, brand is changed
3	Taste	Familiarity/ acceptability of taste Versatility of use	If product taste change, and is not acceptable, brand purchased is changed to ensure that product will be consumed by household members Can use maize meal as accompaniment to various side dishes, no other product needed to be purchased
4	Convenience/ ease of preparation	Preparation time Usability of leftovers	As the product thickens quickly, less time is needed for preparation, saving cooking fuel The acceptability of the leftovers for consumption provides convenience for not having to prepare additional food, saves cooking fuel, no wastage
5	Household influence	Preferences of household members Money available	Preferences should be met to ensure that no additional products have to be purchased Determine purchase choice Price determines purchase choice, especially by the two poorer informal settlements



6	Appearance/ colour	Colour infers quality	Quality perception is linked to the whiteness of the colour, quick thickening (convenience), satiety value, and no wastage as leftovers can be consumed, acceptable to all household members. Influence brand choice
7	Packaging size	Provision for a specific period Household size Affordability	A specific packaging size is purchased to meet the needs for household size for a specific period Respondents were sure of the quantity needed Aim is to buy enough for a specific period, but when money is insufficient, a smaller packaging size is purchased
8	Texture	Quick thickening ability Satiety value Convenience Good thickening ability Affordability (use of smaller quantities) Versatility of texture	Ability of the maize meal to thicken quickly is important, provides satiety value and energy, guiding brand choice. Texture should not be too soft To use the smallest quantity to obtain the needed thickness is of importance as the package size will meet needs for a longer period (more cost efficiency implied). Influence brand choice Brands linked to specific textures
9	Product safety/ shelf life	Sensory attribute indicators Expiry date/ freshness Packaging size limited	Changes in taste, smell, and colour are used as indicators to determine acceptability of the product. Linked to expiry date. Purchase packaging sizes that will be used within a reasonable period to prevent spoilage
10	Brand loyalty	Strength of brand loyalty Set of preferred brands Buy most affordable (in set) Willingness to pay for brand	Influenced by expendable income available for purchasing of food. If possible, a specific brand will be purchased, even if purchasing needs to be postponed due to non-availability. An alternative will be used for a limited period. See within context of "set of preferred brands" Low-income consumers indicated a set of acceptable brands of which the cheapest/ product on special will be purchased as available Influenced by expendable income available for purchasing of food
11	Nutrient content	Provision of energy	The feeling of fullness and absence of hunger for a longer period of time limits the amount of meals to be taken/ day

Affordability, relating to the expendable amount of money available for purchasing the starch staple-type food maize meal, is linked to:

- satiety value (limiting amount of meals to consumer / day) and energy provision,
- packaging size that can be purchased to meet household needs,
- preventing any wastage through acceptability of taste and leftovers by all household members,
- short preparation time,
- use of small quantities of maize meal due to good thickening ability (that extends the period for which provisioning is made by a specific packaging size, or that makes it possible to purchase package at a more affordable price to provide for the required period of time) and
- no spoilage.

The reported “set” of preferred brands from which the cheapest is purchased to best meet the needs of the target population, provide a good option to ensure that a product with standardised characteristics that would be acceptable to all household members, is obtained at the most affordable price.

6.3.13.2 Taste

As taste is recognised as generally exerting a major influence on food behaviour (EUFIC, 2005:2) and as the most important determinant of food choice (Bogue *et al.*, 1999:313), the findings in this thesis is of interest. As taste can be evaluated only after purchasing, various market signals such as brand, price and quality labels are applied as indicators for predicted taste experience (Brunsø, Bredahl, Grunert & Scholderer, 2005:86-87), as is memory (Harker, 2001:2). In order to understand the importance of taste to low-income consumers, the link between taste and other food product attributes are explored (Table 13).

Table 13: Describing taste from revealed food product attribute links

Refer Table	Concepts	Elements	Insights by principal investigator
2	Affordability/ price	Availability of enough money Prevention of waste	Money available determine brand purchased Product used to is purchased, disregarding the price Household members do not find it acceptable if the characteristics of the brand usually consumed has changed. Brand is changed
3	Taste	Familiarity/ acceptability of taste	Taste characteristics linked to a specific brand, taste



			of other brands not known
			Familiarity of taste is important, not acceptable if changed
		Versatility of use	Taste associated with colour of maize meal Can eat without accompaniments/ with variety of accompaniments (suitable for various occasions)
		Willingness to pay	Brand linked Taste is linked to price Price for taste is linked to quality Cheapest of set of brands is purchased (ensure taste acceptability)
4	Convenience/ ease of preparation	Usability of leftovers	Acceptance of leftovers important (implied)
5	Household influence	Preferences of household members	Familiarity of attributes important Attributes brand linked Brand loyal if attributes not changed Important that children are satisfied
		Money available	Implied: the smaller the amount of money available, the higher the influence of the purchasing price
6	Appearance/ colour	Colour infers quality	White maize meal taste better than yellow maize meal
8	Texture	Texture quality Good thickening ability	Quality implied as taste, texture, smoothness Acceptance indicated of taste + good thickening ability
		Versatility of texture	Implied as part of high level of product acceptance
9	Product safety/ shelf life	Sensory attribute indicators	Taste/ smell indicated as criterion to ensure quality
		Expiry date/ freshness	Implied: important to ensure good sensory attributes
10	Brand loyalty	Strength of brand loyalty	Taste is brand linked, taste of other brands not known Acceptability of product attributes brand linked If attributes of brand change, consumers change brand to maintain familiarity of attributes Traditional brand loyalty (few)
		Set of preferred brands	Set contain different brands with similar attributes
		Buy most affordable of set	Purchase cheapest one of the set

From Table 13 a double sided picture is emerging regarding the importance of taste to most of the low-income consumers:

- The familiarity of taste, over repeated purchases, is important;
- Familiarity of taste is perceived to be related to a specific brand/ set of brands, the brand will be changed if the taste of the product change;
- The colour of the maize meal is perceived as an indicator of the taste of the product and the higher level of acceptability thereof (yellow maize meal is perceived as less acceptable);
- Taste is perceived as an indicator of quality, and is linked to price;
- The brand purchased is related to the amount of money available for the purpose, stipulated as the cheapest of the set of preferred brands.

In only a few cases were brand indicated as receiving unqualified loyalty. Even taste, as linked to the choice of a specific brand/ set of brands, is regulated by the availability of money to purchase maize meal. It is clear from the foregoing why satiety value and affordability have been indicated as more important to low-income consumers than taste. In summary it can be noted that the less affluent low-income consumers will most probably purchase the product that is most affordable from the set of acceptable brands that provides the best thickening properties and the best taste.

6.3.13.3 Core and augmented food product characteristics

The interrelatedness between satiety value and affordability, as well as the integration thereof within the other investigated attributes, confirms the importance and relevance of these concepts to the formulation of food products for low-income consumers, as indicated by the quantitative findings in Chapter 5. Based on the work by Painter (2007:13-14), it can be argued that satiety value (imbedding texture), affordability and taste are functioning as core product characteristics during the purchasing choice for the starch staple-type food, maize meal, by low-income consumers. These attributes are driving the purchasing decisions of the target population, while the other food product attributes function as augmented product characteristics to provide product guarantees and additional benefits.

6.4 CONCLUSIONS

Overall, no distinctive inherent content differences in the way in which the different groups understood the different food product attributes (concepts) were revealed, indicating a similarity in meaning. Based on these findings, it was not necessary to relocate the quantitative data

obtained from the analytical survey (reported in Chapter 5) to alternative sections, as the requirements for content validity between groups had been met (Babbie & Mouton, 2002:123; Bless *et al.*, 2007:157). This is clear from the fact that the range of meanings within the individual concepts (food product attributes) had mostly been covered.

However, the combined food product attributes (concepts), including product acceptability (§6.3.12.1), value for money (§6.3.12.2) and product quality (§6.3.12.3), were not described during the different focus groups.

To address this aspect it is suggested that the respective individual concepts, as imbedded within the stated combined concepts, are identified from literature (Leire & Thidell, 2005:1068). These concepts could then be interpreted in terms of the meanings reported for the respective concepts and related concept elements from the developed textual data. This information can then be integrated to report the meaning of the “concept clusters”, relating directly to the target consumers’ understanding of the respective food product attributes (concepts) during the purchase of maize meal.

In application within the context of this study, the concepts indicated as important to low-income consumers to ensure product acceptability, as indicated by literature (see §6.3.12.1) and previous findings (Chapter 4), include the filling quality (satiety value) of maize meal (Chapter 6 Table 1), the ability to obtain an adequate quantity (of food) for a needed period (affordability) (Chapter 6 Table 2) and taste acceptance by all household members (Chapter 6 Table 3). These aspects are of significant value in supporting the integrated findings reported later in this study (Chapter 7).

Following a similar approach, value for money (§6.3.12.2) refers to obtaining products at low price (Chapter 6 Table 2), with valued product benefits, and the trade-offs made between these aspects. Low-income consumers prefer quantity over quality, a mix of attributes perceived as quality matching the available budget, and good shelf life (Chapter Table 8). Quality (§6.3.12.3), according to Altmann (2002:286-287) reports the sum total of the characteristics of a product for a specific target market.

The indicators of quality for maize meal, as perceived by low-income consumers in informal settlements, are reported by the outcome of this study. The sum total of the quality indicators (food product attributes indicated as needed, as embedded in the value attached to each) can therefore not be indicated at this stage, but will be visible from the integration provided in the following chapter (Chapter 7).

6.5 REFERENCE LIST

ALTMANN, M. 2002. Product policy. In PADBERG, DI, RITSON, C & ALBISU, LM. (Eds). *Agro-food marketing*. Oxon. CAB.

ALWITT, LF & DONLEY, TD. 1996. *The low-income consumer: adjusting the balance of exchange*. Thousand Oaks, CA. SAGE.

BABBIE, E & MOUTON, J. 2002. *The practice of social research. South African ed.* Cape Town. Oxford University Press.

BALLANTINE, N, ROUSSEAU, GG & VENTER, DJL. 2008. Purchasing behaviour as a determinant of food insecurity in Klipplaat. *Journal of Family Ecology and Consumer Sciences* 36:1-8.

BFAP (Bureau for Food and Agricultural Policy). 2008. *The South African agricultural baseline: part 2*. [WWWdocument – 27/06/2008].

URL <http://www.bfab.co.za/reports/BFAP%20Baseline%20%20-Consumer%20Economics%20June%202008%20part%202.pdf>

BITPIPE. 2009. *Brand loyalty*. [WWWdocument – 06/02/2009].

URL http://www.bitpipe.com/Brand_Loyalty.html

BLESS, C, HIGSON-SMITH, C & KAGEE, A. 2007. *Fundamentals of social research methods: an African perspective*. 4th ed. Cape Town. Paarl Press.

BOGUE, JC, DELAHUNTY, CM, HENRY, MK & MURRAY, JM. 1999. Market oriented methodologies to optimise consumer acceptability of cheddar-type cheeses. *British Food Journal* 101(4):301-316.

BRUNSDØ, K, BRED AHL, L, GRUNERT, KG & SCHOLDERER, J. 2005. Consumer perception of the quality of beef resulting from various fattening regimes. *Livestock Production Science* 94:83-93.

CANDEL, MJJM. 2001. Consumers' convenience orientation towards meal preparation: conceptualization and measurement. *Appetite* 36:15-28.

CANT, M, BRINK, A & BRIJBALL, S. 2002. *Customer behaviour: a South African perspective*. Cape Town. Juta.

CORBIN, J & STRAUSS, A. 2008. *Basics of qualitative research*. 3rd ed. Los Angeles. SAGE.

DOBSON, B, BEARDSWORTH, A, KEIL, T & WALKER, R. 1994. *Diet, choice and poverty: social, cultural and nutritional aspects of food consumption among low-income families*. Centre for Research in Social Policy. Loughborough University of Technology. London. Family Policy Studies Centre.

DREWNOWSKI, A & DARMON, N. 2005. Food choices and diet costs: an economic analysis. *Journal of Nutrition* 135(April):900-904.

EARLE, M, EARLE, R & ANDERSON, A. 2001. *Food product development*. Cambridge. Woodmead.

EUFIC (European Food Information Council). 2005. The determinants of food choice. *EUFIC REVIEW* 2005/04.

FINCH, H & LEWIS, J. 2005. Focus groups. In RITCHIE, J & LEWIS, J. (Eds). *Qualitative research practice: a guide for social science students and researchers*. London. SAGE.

GAEDE, R. 2008. Personal discussion with Prof Gaede on the extraction of richness from qualitative data. Vaal University of Technology. Vanderbijlpark. 17 September.

GRUNERT, KG. 2003. *How changes in consumer behaviour and retailing affect competence requirements for food producers and processors*. Denmark. The Aarhus School of Business. MAPP-Centre for Research on Consumer Relations in the Food Sector.

GUTHRIE, JF, LIN, B, REED, J & STEWARD, H. 2005. Understanding economic and behavioural influences on fruit and vegetable choices. *Amber Waves* 3(2):36-41.

HARKER, R. 2001. *Consumer response to apples*. Paper presented at the Washington Tree Postharvest Conference in Wenatchee, WA, March 13-14.

HENNING, E, VAN RENSBURG, W & SMIT, B. 2004. *Finding your way in qualitative research*. Pretoria. Van Schaik.

- HUGHES, D. 2002. *Consumer interests and the reform of the CAP: a review of relevant documentation and research*. [WWWdocument-27/08/2006].
URL http://ec.europa.eu/consumers/reports/rep02_en.pdf
- IMRAM, N. 1999. The role of visual cues in consumer perception and acceptance of a food product. *Nutrition & Food Science* 99(5):224-230.
- JAEGER, SR. 2006. Non-sensory factors in sensory science research. *Food Quality and Preference* 17:132-144.
- JRF (Joseph Rowntree Foundation). 1994. Eating on a low income. *Social Policy Research* 66(November):1-6. [WWWdocument-19/02/2008].
URL <http://www.jrf.org.uk/knowledge/findings/socialpolicy/SP66.asp>
- LAWLESS, HT & HEYMANN, H. 1998. *Evaluation of food: principles and practises*. New York. Chapman & Hall.
- LEIBTAG, ES & KAUFMAN, PR. 2003. *Exploring food purchase behaviour of low-income households: how do they economize*. Current issues in economics of food markets. United States Department of Agriculture. Economic Research Service. Agriculture Information Bulletin No 747-07. Washington DC.
- LEIRE, C & THIDELL, Å. 2005. Product-related environmental information to guide consumer purchases: a review and analysis of research on perceptions, understanding and use among Nordic consumers. *Journal of Cleaner Production* 13:1061-1070.
- MARUMO, K. 2008. *Food product attributes of importance to low-income households during purchasing*. MTech (Food & Beverage Management) dissertation. Vaal University of Technology. In progress.
- MOJET, J & KÖSTER, EP. 2005. Sensory memory and food texture. *Food Quality and Preference* 16:251-266.
- MORGAN, DK. 1996. *Focus groups as qualitative research*. 2nd ed. Thousand Oaks, CA. SAGE.

NEL, JH & STEYN, NP. 2002. *Report on South African food consumption studies undertaken amongst different population groups (1983-2000): average intakes of foods most commonly consumed*. Pretoria. Department of Health. Directorate Food Control.

OLDEWAGE-THERON, WH, DICKS, EG & NAPIER, CE. 2006. Poverty, household food insecurity and nutrition: coping strategies in an informal settlement in the Vaal Triangle, South Africa. *Public Health* 120:795-804.

PAINTER, K. 2007. *An analysis of food-chain demand for differentiated farm commodities: implications for the farm sector*. Centre for Sustaining Agriculture & Natural Resources. Washington State University.

READER'S DIGEST UNIVERSAL DICTIONARY. 1988. London. The Reader's Digest Association.

SATIETY VALUE. 1929. Old and Sold Antiques Digest. [WWWdocument-18/08/2007].
URL <http://www.oldandsold.com/articles27n/obesity-42.shtml>.

SHETH, JN & MITTAL, B. 2004. *Consumer behaviour: a managerial perspective*. 2nd ed. Singapore. Thomson South-Western.

SILAYOI, P & SPEECE, M. 2004. Packaging and purchase decisions: an exploratory study on the impact of involvement level and time pressure. *British Food Journal* 106(8):607-628.

SOSA, M & HOUGH, G. 2006. Sensory acceptability of menus and sweet snacks among children and adults for low- and medium-income households in Argentina. *Food Quality and Preference* 17:590-597.

SSA (Statistics South Africa). 2005. *Census survey 2001*. [WWWdocument - 25/03/2008].
URL <http://www.statssa.gov.za>

TAYLOR-POWELL, E & RENNER, M. 2003. *Analyzing qualitative data*. Programme development & evaluation No. G3658-12. University of Wisconsin-Extension. Madison, WI. Cooperative Extension Publishing Operations. [WWWdocument-20/03/2008].
URL <http://www1.uwex.edu/ces/pubs>

TUORILA, H. 2007. Sensory perception as a basis of food acceptance and consumption. In MACFIE, H. (Ed). *Consumer-led food product development*. New York. Woodhead.

YEUNG, RMW & MORRIS, J. 2001. Food security risk: consumer perception and purchase behaviour. *British Food Journal* 103(3):170-186.

YOUNG, JA. 1999. Marketing the intrinsic quality of the product. In Global quality assessment in Mediterranean aquaculture. Proceedings of the workshop of the CIHEAM networks on technology of aquaculture in the Mediterranean (TECAM) and socio-economic and legal aspects of aquaculture in the Mediterranean (SELAM). Barcelona, Spain, 29 November.

INTEGRATION AND APPLICATION

7.1 INTRODUCTION

The research aim of this study was to develop a food product concept formulation framework for low-income consumers in urbanised informal settlements in Gauteng, South Africa. The unique contribution of this approach is based on the depiction of the food product attribute needs perceived as most important by these respondents during purchasing choice of their staple food product, maize meal. The intention was to enhance the possibility of the skilful integration of knowledge of consumer needs, as portrayed by the need for specific food product attributes, with food product design and development (on industry level) for low-income consumers.

In order to achieve this aim, five sub-objectives were formulated, which were to:

- Identify concepts (food product attributes) of importance in food products purchased by low-income consumers;
- Select, organise (screen) and identify concepts applicable to low-income consumers;
- Formulate and develop design parameters for food products purchased by low-income consumers;
- Verify the design parameters through a test market evaluation of an established product and the description of the identified concepts;
- Formulate the process and modelling of a food product concept framework for the development of food products for low-income consumers.

These five sub-objectives were executed consecutively in three phases. The purpose of sub-objectives 1, 2 and 3 was to formulate and develop design parameters for the food product concept framework, as was reported in Chapter 4 of this study. Subsequently in Sub-objective 4, for verification, a quantitative-qualitative approach was applied in parallel initiatives. In Chapter 5 the developed design parameters were evaluated against an established product category and in Chapter 6 the description of the identified food product attributes are presented. Finally, a verified concept formulation framework was derived for food products to meet the

needs of low-income consumers (Sub-objective 5) as based on the foregoing processes (Sub-objectives 1 to 4), and is presented in this chapter.

The contributions made by the three consecutive phases are as follows:

7.2 PHASE 1: FORMULATION AND DEVELOPMENT OF DESIGN PARAMETERS

In order to develop a reference framework identifying the concepts (food product attributes) of importance in food products purchased by low-income consumers, an empirical and exploratory study approach was followed. This baseline investigation included two surveys in different populations to obtain a broader perspective of the reality of the situation. The viewpoints from both the food environment and low-income consumers were obtained.

The investigation conducted in collaboration with role players in the South African food environment (academics (n = 8), health practitioners (n = 11) and nationally established food producers and retailers (n = 17)), provided a holistic overview regarding existing policy guidelines, the range of products produced/retailed and food product attributes receiving attention during food product development/formulation. Further attention was devoted to the perceptions of the role players regarding food product attributes needed by low-income consumers, characteristics of and food intake by low-income households and the benefits low-income consumers expect from food products purchased.

Results revealed that very few of the food industries focussed on meeting the needs of low-income consumers in their research and development policy. At the time of the survey, no company policies had been formalised to address this specific issue. It came as no surprise that only six percent of the companies mentioned starch staple-type foods as being of importance in this regard. In contrast, the identification of this food category as the industry's main product range in food product development for low-income consumers is relevant.

Based on the reality of the low-income consumer and the importance of starch staple-type food products in food product development for this target population (Chapter 4 Figure 2), the focus of the remainder of the study was allocated to maize meal. The external validity of this study is strengthened by this approach (Bless, Higson-Smith & Kagee, 2007:93), anchoring it to the situation in the real world with a product familiar to the respondents.

In an attempt to identify the perceptions of the role players in the food environment (academics, health practitioners and nationally established food producers and retailers) regarding the characteristics of low-income consumers, no clear indicators could be identified on average from the data. Of importance is the fact that the most successful food industries in South Africa indicated substantial knowledge and understanding in this regard, but owing to confidentiality, results were not reported separately. While the perceptions of the academics and the health practitioners are of interest, it does not form part of the current research argument, and were therefore not further pursued as part of this study.

It is, however, of interest to note that the food product attributes that the food industry perceive as important for inclusion in food products for low-income consumers (Chapter 4 Figure 3) are different from what is at this stage provided by industry in developed food products available for purchasing by the target population. The food industry perceives satiety value and nutrient content (65 percent respectively) as the food product attributes most needed by the target population, followed by affordability, taste and meeting of aspirations through benchmarking (at 59 percent respectively) and product safety/ shelf life (47 percent).

Following, a survey was conducted to identify the level of importance low-income consumers perceived for food product attributes (concepts) during purchasing choice of maize meal. Information was sourced from the main food purchasers in households from the Eatonside informal settlement where poverty, malnutrition and chronic food insecurity were indicated as major problems (Oldewage-Theron, Dicks & Napier, 2006:798).

Rating was applied to select, organise (screen), and identify the concepts of importance. The derived results indicated satiety value, affordability, packaging size, value for money and taste, in the stated sequence, as the food product attributes perceived as most important by the target population. In contrast, affordability, nutrient content, taste and product quality, in that order, were indicated by the food industry as the food product attributes of most importance in food products currently produced for purchasing by low-income consumers (Chapter 4 Table 2). These findings report the design parameters for the formulation of the food product concept framework applicable to starch staple-type food products for low-income consumers.

These formulated design parameters confirm a discrepancy between the food product attributes currently provided by the food industry in food products available for purchasing by low-income consumers, and the food product attributes that the target population perceive as important in meeting their needs. These findings highlighted the difference between the needs of the modern consumers (SU-LSM 4 – 10) as reflected by the food product attributes provided by the

industry, and the marginalised consumers (SU-LSM 1 – 3), echoing the duality of the South African consumer market (Schwabe, 2005:2; BFAP, 2007:47, 52, 54).

7.3 PHASE 2: EVALUATION OF THE DEVELOPED DESIGN PARAMETERS AGAINST AN ESTABLISHED PRODUCT

During this phase a two-pronged approach was followed, comprising the test market evaluation of the identified food product concept framework against an established product and the description of terminology through the clarification of the meaning of food product attributes (concepts). The objective was to verify the design parameters derived by the baseline study, and to confirm that target consumers would most probably perform in the manner predicted by the developed research findings.

The extended project included respondents from three informal urbanised settlements, namely Boipatong (n = 140), Eatonside (130) and Alexandra (131), and the formal urbanised settlement adjacent to Alexandra, Tsutsumani (n = 101) which was included for comparison purposes. All settlements are situated within the broader Johannesburg – Vaal geographical area.

The approximate income/ capita/ month for the settlements were indicated as less than ZAR200 (US\$20) for 51 percent (Boipatong), 58 percent (Eatonside), 33 percent (Alexandra) and 22 percent (Tsutsumani) respectively (Statistics South Africa (SSA), 2005), or approximately ZAR7 (US\$0.70)/ capita/ day to meet all needs (Chapter 5 Table 3). When viewing these facts against the international poverty line indicator of ZAR10.22 (US\$1)/ capita/ day, the exceptionally marginalised conditions of the two informal settlements of lower income, Boipatong and Eatonside, is highlighted.

The possible relationship between the observations for household income and the importance attached to the need for specific food product attributes is integrated within the following discussions.

7.3.1 Test market evaluation

For the purpose of the test market evaluation, an extended survey was conducted (Chapter 5), including only the 14 food product attributes (concepts) identified as representing the design parameters (Phase 1) (Chapter 4). Due to the risk of jeopardising the identification of a trend during analysis, a lenient 10 percent level of significance was applied. Confirmation of the

findings through the incorporating of different groups and the critical evaluation of data generated, was therefore important.

The level of importance allocated to the different food product attributes during the test market evaluation is reported in Chapter 5 Table 4 of this thesis. When ranking the results proven not significantly different (Chapter 5 Annexure 1; Chapter 7 Annexure 1) in sequence of importance, an interesting trend is revealed (Chapter 7 Annexure 2; Chapter 7 Annexure 3).

In overview, no significant difference was revealed for the importance perceived for satiety value, product acceptability, convenience and household influence between the four groups of different income (Chapter 7 Annexure 2; Chapter 7 Annexure 3). Although all of these attributes suggest economic links, the assumption can be made that no external factors e.g., geographical location, level of low-income or the availability of shops in the direct area, influenced the level of importance of these attributes to the different respondent groups.

However, a different trend manifested for the rest of the food product attributes. No significant differences were indicated for appearance, value for money, product quality, texture, product safety/ shelf life, brand loyalty and nutrient content between the two informal settlements of lower income (Chapter 7 Annexure 2). The findings for the informal settlement of highest income, Alexandra, and the formal settlement Tsutsumani, of highest income, indicated a similar significance (Chapter 7 Annexure 3). These findings also imply that the health-related (nutrient content and product safety/ shelf life) and status (product quality, brand loyalty) attributes are of far less importance to the low-income consumers than to those with a slightly higher income. It can, however, not be inferred that the low-income consumers do not care about these food product attributes, but that, in severely constrained economic conditions, 'nice to have' attributes become secondary in importance to the food product attributes linked to survival.

Satiety value was indicated as the most important food product attribute to the three informal settlements (Boipatong, Eatonside and Alexandra) (of lower income) (Chapter 7 Annexure 2). In contrast, taste was indicated as the food product attribute of primary importance (91 percent) by the formal settlement, Tsutsumani (higher income), with satiety value very closely matched (90 percent) in the second place (Chapter 7 Annexure 3). The importance of taste was reported as higher and significantly different for this group in comparison with the three informal settlements. This implies a direct relationship between the level of income and the "luxury" of perceiving taste as of overriding importance during starch staple-type food choice, as is typical in consumer preferences (Shepherd, 1999:810).

The impact of the difference in (the lack of) household income is clearly indicated by the trend identified for the level of importance attached to the need for specific food product attributes by the three informal settlements and one formal settlement. Although it is not possible to calculate, from the available data, the critical point in (lack of) household income beyond which survival needs override “nice to haves”, a certain level of deprivation is suggested beyond which survival needs become of utmost importance. In the true sense, these households can be perceived as “survival households”. These low-income consumers, relying almost entirely on maize meal for survival, are aptly indicated as “survival users” of staple food (Makwetla International Communications & Fleishman-Hillard, 2002). The struggle to merely meet physiological needs, designated as the lowest level in the model for human motivation developed by Maslow, is supportive of this perception (Hughes, 2002:10).

In further application of this concept, Kinsey developed a consumer demand pyramid indicating a hierarchy for food preferences within the consumer choice process (Painter, 2007:15). At the lowest level, the quest to satisfy physiological needs to maintain life includes a struggle for sufficient kilojoules, lower-priced foods and foods that are not spoiled (Hughes, 2002:10; Kinsey as quoted by Farm Foundation (FF), 2006:4). These facts match very closely the realities of the survival households.

The food product concept formulation framework developed for low-income informal settlement dwellers, therefore, reports the concepts of satiety value, affordability, taste, product acceptability, convenience/ ease of preparation, household influence, appearance, value for money, product quality, packaging size, texture, product safety/ shelf life, brand loyalty and nutrient content, in order of importance, in meeting the needs of the indicated target population (Chapter 7 Annexure 2).

7.3.2 Description of terminology

A comparative study was conducted to describe the meaning of the identified attributes as perceived by the respective groups of the target population. Focus group discussions were applied as method to develop an understanding of the concepts being tested from the view point of the low-income consumers (Chapter 6) (Marumo, 2008).

The analysis disclosed the imbedded themes (concept elements) describing the respective concepts (Chapter 6 Table 1 to Table 11), highlighting comparison of similarities and differences between the different respondent groups (Corbin & Stauss, 2008:57; Gaede, 2008). So doing earlier findings indicating that the level of (lack of) household income impacts on the

level of importance perceived for the need of specific food product attributes (Chapter 5 Table 3; Chapter 5 Figure 1), were validated. This procedure was conducted independently by two participants (Duvenage and Marumo) to support analysis and interpretation (Taylor-Powell & Renner, 2003:9).

An operational understanding of the meaning of the different food product attributes that guide purchasing choice by low- income consumers was derived (Chapter 6 §6.3.1 to §6.3.12), correlating the interpretation provided by literature with the findings of the textual data. This process contributed to content validity and applicability of the findings in the real world (Babbie & Mouton, 2002:275; Bless *et al.*, 2007:157).

It is clear from Chapter 6 (§6.3.12) that the combined food product attributes (concepts), including product acceptability (§6.3.12.1), value for money (§6.3.12.2) and product quality (§6.3.12.3), were not described as such. It is of interest that this behaviour correlates with the application of the lexicographic decision rule (Hawkins, Best & Coney, 1998:562-3; Todd & Dieckmann, 2004:1) stipulating that certain groups of consumers rank criteria in order of importance. Brand choice is consequently determined by selecting the brand that performs best on the most important attribute. Only if a tie is experienced between brands on the most important attribute, will the second most important attribute come in to play. This process is applied until one brand outperforms another.

The indication of satiety value, affordability and taste as core concepts of most importance to low-income consumers in urbanised informal settlements, were confirmed (Chapter 6 Table 12; Chapter 6 Table 13). This implies that maize meal, as the starch staple- type food most often consumed by these respondent groups, needs to at least equal or exceed the performance of competitor products in the field on the most important criteria, namely satiety value, affordability and taste according to the perceptions of the target population.

The findings of the qualitative approach strongly support those of the quantitative approach, as regards both the focus on and level of importance allocated to satiety value, affordability and taste, but also for the difference observed in the perceptions of the two settlements of lower income and the two settlements of higher income (Chapter 6 Table 1 to Table 11; Chapter 7 Annexure 2; Chapter 7 Annexure 3).

Following, a collage is presented depicting scenes in each of the three urbanised informal settlements (Boipatong, Eatonside and Alexandra) and the formal urbanised settlement (Tsutsumani).



Figure 1: Collage of the Boipatong informal settlement indicating the different types of housing. Please take note of the spaza shops

Eatonside



Figure 2: Collage of the Eatonside informal settlement indicating the informal housing conditions

Alexandra

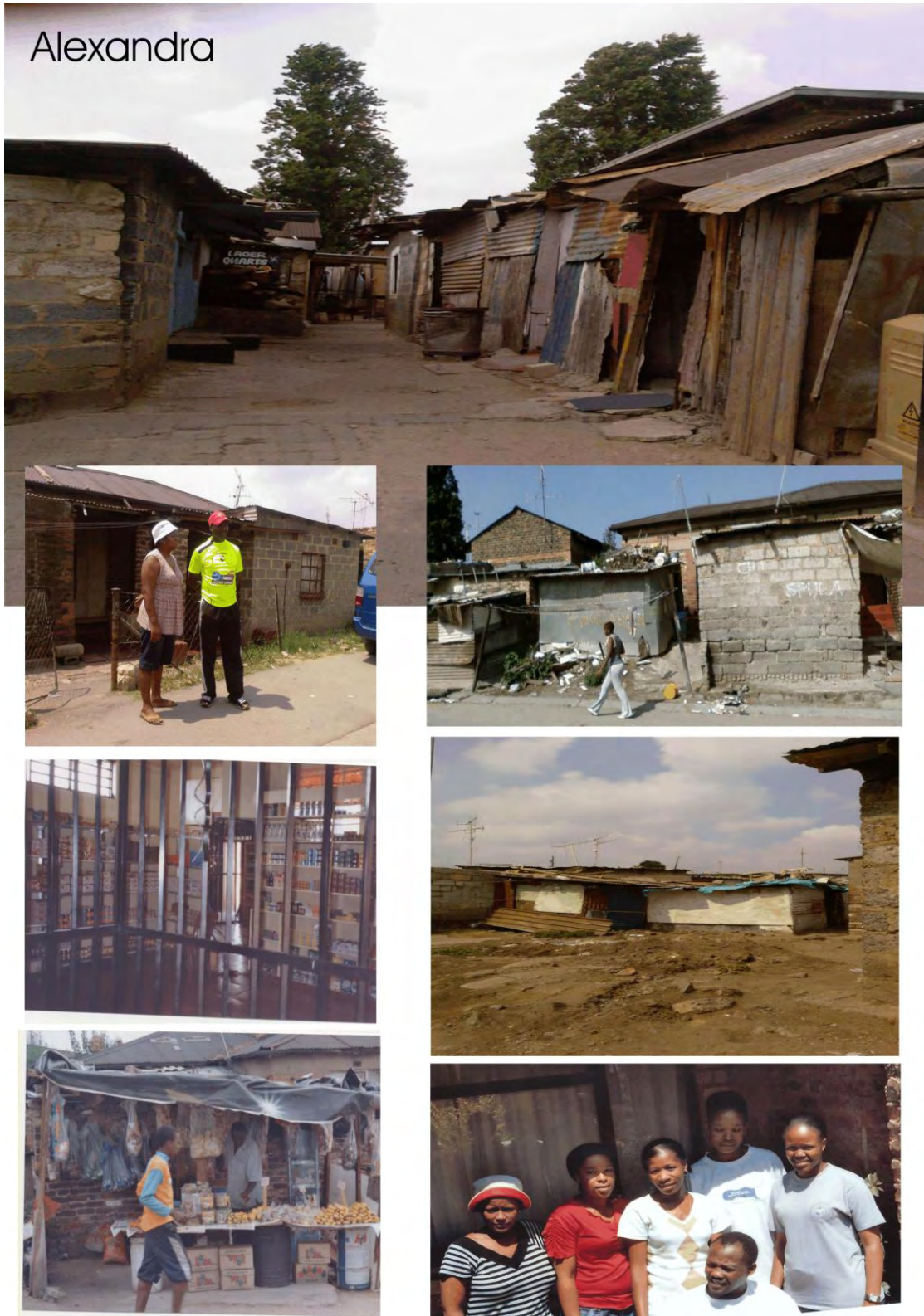


Figure 3: Collage of the Alexandra informal settlement, showing the hosts for the focus group (left), the fieldworkers (right) (ms Kuda Marumo far right), housing conditions and spaza shops



Figure 4: Collage of the Tsutsumani formal settlement, showing the researcher, the co-researcher (ms Kuda Marumo), the community representative and the field workers. Please note the difference in housing conditions.

7.4 PHASE 3: DEVELOPMENT OF A FOOD PRODUCT CONCEPT FORMULATION FRAMEWORK FOR LOW-INCOME CONSUMERS IN URBANISED INFORMAL SETTLEMENTS IN GAUTENG SOUTH AFRICA

The final phase of this study is based on the integration of the results generated in the prior two phases. In this process the external validity of the study is supported as indicated by the extent to which the results of the baseline study can be generalised (Bless *et al.*, 2007:93) to the broader population and the realities of the world, within the limitations of the social research context.

During this phase the integration of findings takes place from a triangular point of view, including two different quantitative surveys (baseline and test market evaluation, involving the food industry, three different informal settlements and a formal settlement) (Chapter 4 Table 1; Chapter 4 Table 2; Chapter 5 Table 4; Chapter 5 Figure 3; Chapter 7 Annexure 2; Chapter 7 Annexure 3; Chapter 7 Table 1). The qualitative findings from the focus group discussions in the respective settlements have already been indicated as relevant to the test market evaluation results, and are not discussed further.

7.4.1 Comparison of ranked importance of food product attributes

Due to the difference in the tools used for gathering data from the role players in the food industry and the low-income consumers, a comparison based on percentages will not suffice to indicate differences between the perceptions of the studied populations. The comparison is therefore based on the ranked level of importance perceived for the different food product attributes reported by the baseline investigation (food industry) (Chapter 4 Table 3), the test market evaluation (informal settlements) (Chapter 5 Table 4; Chapter 7 Annexure 2) as summarised in Chapter 7 Table 1.

Satiety value and affordability were confirmed as the food product attributes of utmost importance in meeting the needs of the low-income consumers during purchase choice of their staple food, maize meal. These economic-linked indicators correlate with the stringent financial realities of the target population. It therefore makes perfect sense that taste was identified as the most important hedonic food product attribute, but was perceived to be of lesser importance than the economic-related indicators.

Table 1: Comparison of the ranked importance for food product attributes according to the perceptions of low-income consumers and the food industry

Food product attributes	Perceptions of low-income consumers		Perceptions of food industry	
	Baseline ¹	Test market evaluation ²	Currently applied during food product development ¹	Needed by low-income consumers ³
Satiety value	1	1		1
Affordability	2	2	1	3
Value for money	4	6		
Taste	5	3	3	3
Product acceptability	6	4		
Convenience/ ease of preparation	8	5		6
Appearance	7	8		
Packaging size	3	10		
Product quality	8	9	4	
Texture	11	11		
Nutrient content	10	14	2	1
Product safety/ shelf life	12	12	5	5
Brand loyalty	13	12		
Household influence		6		

¹Based on data in Chapter 4 Table 1 & 2

²Based on raw data from which Chapter 5 Table 4 was calculated

³Based on data from which Chapter 4 Figure 3 was derived

On average, the food industries indicated a good understanding of the food product attributes needed by the low-income consumers. The three food product attributes indicated as priorities by the aggregated results of the low-income consumers, namely, satiety value, affordability and taste, as well as the food product attribute of concern, nutrient content, are reported within the scope of the five attributes perceived as needed by the target population (Chapter 7 Table 1). Two more food product attributes/ descriptors, food product safety/ shelf life and benchmarking (not listed) were also indicated. This viewpoint was strongly advocated by the marketing sections of the most successful food industries in South Africa.

However, the food product attributes provided in the starch staple-type food products available for purchasing by the low-income consumers are related to but quite different from the specific needs reported for food product attributes by the three respondent groups from the informal

settlements. Satiety value was indicated as the food product attribute of highest priority by the target population but was not perceived to be of any importance during food product development by the food industry. The implication is that the main needs of the target population are not prioritised by the South African food manufacturing industry during food product formulation and development. This difference confirms the need for this study to develop a food product concept framework to guide (starch staple-type) food product formulation to best meet the needs for food product attributes for low-income urbanised consumers living in informal settlements.

7.4.2 Reality of the low-income consumers

The full implication of these findings becomes clear only when seen within the context of the reality of the low-income consumers' existence. Currently, South Africa is experiencing an urbanisation growth rate unprecedented in the history of this country – culminating in urbanised mega-city growth rates that are amongst the highest in the world. The level of urbanisation in South Africa (57 percent) is representative of the situation in a third world country, and is expected to increase to a level of 73 percent by 2010. In Gauteng alone, the population is expected to double to approximately 14 million by 2011 (Pretoria News as quoted by Jenkins, 1997:4).

A significant proportion of the urban poor appear to be very poor (Mitlin, 2005:6), experiencing some of the worst poverty levels (Higgs, 2007:1). The situation is aggravated by poor food production and availability (Kruger, Schönfeldt & Owen, 2008:3), which pose an increasing challenge to food and nutrition security. Owing to poverty and, consequently, the importance of price to low-income consumers, the increased food demand is mainly for staple-type foods (Den Hartog, Van Staveren & Brouwer, 1995:25; Ellaway & Macintyre, 2000:55).

The European Food Information Council (EUFIC) (2005:2) poses the cost of food as the primary determinant of food choice, in direct relation to the income and socio-economic status of consumers. Food-secure households typically spend more on food in real terms than do food-insecure households (Nord, Andrews & Carlson, 2007:24; Donkin, Dowler, Stevenson & Turner, 2000:31). Therefore, the lower the income per capita, the higher the share of the average consumer budget allocated to necessities (Alwitt & Donley, 1996:72), and the greater the portion of the budget that is spent on staple-type starch food products such as cereals (Regmi, 2001:iii; ACNielsen, 2005:2). This culminates in an increasingly less diverse diet (Golden, 2000:502; FF, 2006:1-2), indicative of a market more vulnerable to food price and income changes (Regmi, 2001:iii).

The impact of the heightened level of food price inflation relates to a “silent Tsunami” of hunger (Markets and Economic Research Centre (MERC), 2008:1). As the household income of more than half of the South African households amounts to less than R2000 per month, with a reported median of R1083 (US\$106) for the lower 23 percent of the South African population, food security is threatened by the diminishing ability of marginalised households to meet food needs (MERC, 2008:5-6). The international maize price increased by 87 percent over the 2005 - 2007 period. As the net buyers of food, specifically of cereals, include various countries in Africa and millions of poor and food-insecure in our own country, the population most vulnerable to huge price increases will be adversely affected (MERC, 2008:83).

Within this context of chronic hunger, the importance of a high level of satiety value and affordability in the staple food mainly consumed, receives new meaning.

7.4.3 Food product attributes perceived as quality indicators

The derived set of key criteria (concepts) to provide a product perceived as quality by the target population, according to priority value, includes satiety value, affordability, taste, product acceptability, convenience/ ease of preparation, household influence, appearance, value for money, product quality, packaging size, texture, product safety/ shelf life, brand loyalty and nutrient content (Chapter 7 Annexure 2).

The interrelatedness of the concept elements describing satiety value and affordability, as well as the integration thereof within the rest of the food product attributes (concepts) (§6.3.13; Chapter 6 Table 12), in the derived context, confirms the importance and relevance of these concepts to the formulation of food products for the target population. It can therefore be deducted that satiety value and affordability, in combination with taste (as confirmed by product acceptability) (Chapter 6 Table 13), most probably represent the core food product attributes providing impetus for purchasing decisions by the low-income consumers.

The food product concept formulation framework therefore reports the tactical combination of the food product attributes (concepts) perceived as most important by the target population to meet their specific needs. The interrelatedness of these criteria is of further interest, as depicted by the respective describing concept elements for the core food product attributes (Chapter 7 Table 2):

Table 2: Food product concept formulation framework for starch-type staple foods for low-income consumers in urbanised informal settlements in Gauteng South Africa

Concepts	Ranked concepts		Low-income consumers in urbanised informal settlements					
	Industry ¹	Low-income consumers ²	Description of concepts through concept elements ³			Satiety	Affordability	Taste
Satiety value		1	<ul style="list-style-type: none"> Provision of energy Feeling of fullness Absence of hunger for a longer period of time Feeling of well-being 	←	←	←	←	←
Affordability	1	2	<ul style="list-style-type: none"> Availability of enough money Price determines packaging size (quantity more important than quality) Prevention of waste 	←	←	←	←	←
Taste	3	3	<ul style="list-style-type: none"> Familiarity/ acceptability Versatility of use Willingness to pay 	←	←	←	←	←
Product acceptability		4		←	←	←	←	←
Convenience/ ease of preparation		5	<ul style="list-style-type: none"> Preparation time Usability of leftovers 	←	←	←	←	←
Household influence		6	<ul style="list-style-type: none"> Preferences of household members Money available 	←	←	←	←	←
Appearance		7	<ul style="list-style-type: none"> Whiteness Colour infers quality 	←	←	←	←	←



Value for money	8		
Product quality	4	9	←
Packaging size	10		<ul style="list-style-type: none"> • Provisioning for a specific period ← • Household size ← • Affordability ←
Texture	11		<ul style="list-style-type: none"> • Texture quality ← • Quick thickening ability ← • Good thickening ability ← • Satiety value ← • Versatility of texture ← • Affordability (smaller quantities) ← • Convenience ←
Product safety/ shelf life	12		<ul style="list-style-type: none"> • Sensory attribute indicators • Expiry date/ freshness ← • Package size limited ←
Brand loyalty	13		<ul style="list-style-type: none"> • Strength of brand loyalty ← • Set of preferred brands ← • Buy most affordable (in set) ← • Willingness to pay for brand ←
Nutrient content	2	14	<ul style="list-style-type: none"> • Energy ← • Nutrients ← <p>Additional benefits</p>

¹ Chapter 4 Figure 1

² Chapter 7 Table 1

³ Chapter 6 Table 1 to Table 11

The portrayed framework revealed the complex and integrated nature of the illustrated food product attributes (concepts), confirming satiety value and affordability as closely related but separate in nature to taste. It is therefore recommended that satiety value (imbedding texture), affordability and taste, is applied as core food product attributes to ensure target consumer satisfaction. When these core food product attributes are satisfied, the remaining attributes can be perceived as additional benefits (as based on the concept of Painter, 2007:14).

By understanding the depth of meaning for each of the concepts, as well as the related nature between the concepts, product prototypes/ new products can be developed (formulated and tested) to possess specific levels of these characteristics. Existing products can also be adapted to meet the criteria for this target population. For example convenience/ ease of preparation are described by the two concept elements preparation time and usability of leftovers. The former is specified by the ability of the maize meal to thicken quickly using a short cooking time, while the latter is typified by affordability, taste and colour (Chapter 6 Table 4). If a food product developer understands what the terminology implies in the context of the target population, these characteristics can be “build into” a product to enhance to possibility to meet the needs of this specific target group.

The developed framework therefore facilitates the application of the insights derived by this study in the food industry through translation of the derived quality descriptors into product characteristics to meet the perceived needs of the low-income consumer for food product attributes during purchasing choice for maize meal. Following a similar approach, frameworks can be developed to derive formulation parameters for other food categories for a specific target population.

7.5 VALUE OF THE STUDY

Consumer research is complex, and food product formulation to meet consumer needs, even more so. The myriad of methods and procedures reported in literature is indicative of this dilemma. This study made a scientific contribution to the understanding of the specific needs for food product attributes during the purchasing choice of the starch staple-type food mostly consumed, maize meal by low-income consumers in urbanised informal settlements in Gauteng South Africa.

The current study confirmed that the consumer trends reported for medium- and high-income consumers (complex quality, convenience, product safety and health) are often of low or no

relevance to low-income consumers in South Africa (Chapter 7 Table 1; BFAP, 2007:52; Regmi, 2001:iii-iv). Literature indicated the main concern of this group as the provisioning of basic food security through the availability of an adequate quantity (satiety value) of affordable food to satisfy nutritional requirements, with focus on good shelf life under natural climatic conditions, inexpensive packaging and complementation to the traditional diet (Bachman, 1986:247; BFAP, 2007:52). However, this study revealed satiety value and affordability as priority food product attributes to (very) low-income consumers with limited consideration of product safety/ shelf life and nutritional content of food. The need for this study to develop a food product formulation framework for low-income consumers in urbanised informal settlements in Gauteng, South Africa, is therefore substantiated.

Through the development of the food product concept formulation framework, a set of food product attributes have been identified based on an understanding of the specific target population. So doing the product characteristics perceived to be desirable to most of the target population, have been described.

Consumers purchase food for the characteristics the food possess in a quest to meet their own specific needs. When the needs of a specific target population are known and have been interpreted into tactile food product attributes, a basis is created to define food products better prior to the development phase, e.g. by describing food product prototypes according to the levels of the set attributes. By better meeting the needs of specific target consumers, a food product that is perceived to be of higher relative quality, can be delivered.

The possibility to skilfully integrate knowledge on the food product attribute needs of this target population with food product design and development on industry level during the sensitive early phases of food product development, has been enhanced. Such a framework facilitates a more attainable and sustainable focus on the needs and preferences of the intended users, which enhances more effective control of food product costs and ease of product use.

In application of the findings of this study, starch staple-type foods that are formulated to accommodate the identified concept design parameters prior to the development phase, will have a much higher probability of meeting the perceptions for product quality by the specific target market. This focus on the needs of the target consumer allows the feasibility to develop products superior to that of competitors, with different and unique benefits, enhancing the probability of product success and market share substantially.

7.6 LIMITATIONS OF THE STUDY

- Consumer behaviour, within the milieu of social research, involves various influences which make it near impossible to account for all variables that may impact on a study, in spite of great care taken to support internal and external validity and reliability, as applicable in this study.
- Within this study an attempt was made to ensure population samples that were representative of the respective groups in the study in order to facilitate the applicability of the findings to the broader population. Possible influences on the validity of the study (number of respondents were limited to at least 100 respondents to each group for the quantitative surveys) were counteracted through the inclusion of four respondent groups.
- Due to the scope of this study, only one focus group discussion was conducted in each of the respondent groups which were sufficient for the purpose of this study as a process of triangulation was applied to support validity, but not conclusive on its own. Further supportive work can therefore be done in this regard to develop a more involved description of the food product attributes perceived as needed during the purchasing choice of maize meal.
- Although the developed design parameters stipulated by the food product concept formulation framework were verified against an existing product in the target market, the development of a new food product/ reformulation of an existing product according to the derived parameters did not form part of this study.

7.7 RECOMMENDATIONS

- The lack of priority guidelines in research and development for the formulation of food products for low-income consumers (Chapter 4 Figure 1) by food producers needs to be addressed and appropriate guidelines implemented. It seems that the marketing sections of major food producers have a good understanding of the need for food product attributes required by the low-income consumers, but this knowledge is not implemented during food product formulation and production. An ethical dilemma comes into play at this stage: if products with a high satiety value and more affordable prices are marketed, will company market share decrease, owing to the purchasing of fewer items by the target population as its need for satiety value is better met? Further work is recommended in this regard.
- The high priority assigned by the industry to addressing nutrient content (the attribute perceived as second most important during food product development), is commendable. This food product attribute was indicated as of very little importance by the low-income

consumers, aggravating an existing threat to food security. Whether the approach followed by the industry to enhance the nutrient content of the food is of a scientific nature and focussed on addressing the most stringent nutrient needs of the low-income consumer (in addition to the existing staple food fortification legislation), is not clear. Do the nutrients added to, or inherent in, the food product ingredients support food product quality (e.g., as an additive to maintain colour), without regard to the nutrient needs of the target population? If this aspect were to be approached with the necessary focus and dedication, a highly valued contribution could be made in addressing the dire need for specific nutrients in this marginalised sector of the community (Duvenage & Schönfeldt, 2007:694).

- The duality described for the South African market conveys the difference between the modern (SU-LSM 4 to 10) and marginalised (SU-LSM 1 to 3) market segments (ACNielsen, 2005:1; BFAB, 2007:47). From the findings of this study, however, it is clear that a further difference exists between the low-income and very low-income consumers in their perceptions of the depth of meaning for the concept elements describing the different concepts (food product attributes). The most deprived segment of the lowest income group (SU-LSM 1) focuses on the satisfaction of the direst, most immediate needs for survival (satiety value and affordability) and neglects the long-term consequences (as reflected in nutrient content), compromising the already precarious food security situation. It seems that a distinctive category, consisting of extremely low-income consumers with specific food product attribute needs, is emerging at the lower end of the income ladder, necessitating attention to specific food product attributes, including nutritional requirements. A rethinking of the current profile of the low-income consumer in South Africa is advisable. The division of the SU-LSM 1 group into two groups (very low-income and low-income), based on the (non-)availability of expendable household income, is suggested. Further research in this regard is advisable in order to substantiate this finding. It is most important that we do not turn our backs on the “survival” households of this world, but do whatever is possible to facilitate the meeting of their unique needs.
- With the world economy in a state of flux, food producers are facing huge challenges. Better knowledge regarding the unique needs of a target consumer group, the way in which these needs are changing and methods of addressing these needs timeously can contribute to success in maintaining a market niche.
- The way forward is to communicate the derived results to the role players in the food environment (including the National Department of Health) and the retail trade with the possibility of collaboration to implement the derived findings.

7.8 REFERENCE LIST

ACNIELSEN. 2005. A country divided: consumer spending trends in a dual economy. *Food Review* (April):1-3. [WWWdocument – 17/05/2007].

URL http://www.foodreview.co.za/index.php?option=3&id=9&com_task=2&x=110

ALWITT, LF & DONLEY, TD. 1996. *The low-income consumer: adjusting the balance of exchange*. Thousand Oaks, CA. SAGE.

BABBIE, E & MOUTON, J. 2002. *The practice of social research. South African ed.* Cape Town. Oxford University Press.

BACHMAN, MR. 1986. Milk – the vital force: specific aspects of milk processing in developing countries. In Proceeding of the XX11 International Dairy Congress, The Hague, Netherlands:243-250. Zürich. Reidel.

BFAP (Bureau for Food and Agricultural Policy). 2007. *South African agricultural baseline: consumer trends and analysis*. [WWWdocument – 16/07/2007].

URL <http://www.bfap.co.za/reports/BFAP%20Baseline%20June%202007.pdf>

BLESS, C, HIGSON-SMITH, C & KAGEE, A. 2007. *Fundamentals of social research methods: an African perspective*. 4th ed. Cape Town. Paarl Press.

CORBIN, J & STRAUSS, A. 2008. *Basics of qualitative research*. 3rd ed. Los Angeles. SAGE.

DEN HARTOG, AP, VAN STAVEREN, WA & BROUWER, ID. 1995. *Manual for social surveys on food habits and consumption in developing countries*. Weikersheim. Margraf Verlag.

DONKIN, AJM, DOWLER, EA, STEVENSON, SJ & TURNER, SA. 2000. *Public Health Nutrition* 3(1):31-38.

ELLAWAY, A & MACINTYRE, S. 2000. Shopping for food in socially contrasting localities. *British Food Journal* 102(1):52-59.

EUFIC (European Food Information Council). 2005. The determinants of food choice. *EUFIC REVIEW* 2005/04.

FF (Farm Foundation). 2006. Consumer demand issues. The changing global consumer: papers read at the IAMA World Food & Agribusiness Congress held in Chicago, IL. *Food Marketing Analysis* (April). [WWWdocument-27/02/2007].

URL <http://www.farmfoundation.org/projects/documents/ConsumerDemands.pdf>

GAEDE, R. 2008. Personal discussion with Prof Gaede on the extraction of richness from qualitative data. Vaal University of Technology. Vanderbijlpark. 17 September.

GOLDEN, MHN. 2000. Famine relief. In GARROW, JS, JAMES, WPT & RALPH, A. (Eds). *Human nutrition and dietetics*. London. Churchill Livingstone.

HAWKINS, DI, BEST, RJ & CONEY, KA. 1998. *Consumer behaviour: building marketing strategy*. Boston, MA. McGraw-Hill.

HIGGS, N. 2007. *The state of South Africans as we start 2007*. TNS Research Surveys. [WWWdocument-12/09/2007].

URL <mhtml:file:///F:\The%state%20state%20of%20South%20Africans%20as%20we%20start%202007.mht>

HUGHES, D. 2002. *Consumer interests and the reform of the CAP: a review of relevant documentation and research*. [WWWdocument-27/08/2006].

URL http://ec.europa.eu/consumers/reports/rep02_en.pdf

JENKINS, JW. 1997. Urbanisation and security in South Africa: the continuation of history. *African Security Review* 6(6):1-12. [WWWdocument-05/11/2008].

URL <http://www.iss.co.za/Pubs/ASR/6No6/Jenkins.html>

KRUGER, R, SCHÖNFELDT, HC & OWEN, JH. 2008. Food coping strategy index applied to a community of farm-worker households in South Africa. *Food and Nutrition Bulletin* 29(1):3-14.

MAKWETLA INTERNATIONAL COMMUNICATIONS & FLEISHMAN-HILLARD. 2002. *Draft National Food Fortification Programme: Communication Strategy*. 8th draft. Supported by Department of Health, United Nations Children's Fund & The Micronutrient Initiative. Unpublished.

MERC (Markets and Economic Research Centre). 2008. *The South African Food Cost Review*. Pretoria. National Agricultural Marketing Council & Department of Agriculture.

MITLIN, D. 2005. Understanding chronic poverty in urban areas. *International Planning Studies* 10(1):3-19, February.

NORD, M, ANDREWS, M & CARLSON, S, 2007:1. *Household food security in the United States, 2006*. Economic Research Report No. EER-49. [WWWdocument-20/11/2007].
URL <http://www.ers.usda.gov/Publications/ERR49>

OLDEWAGE-THERON, WH, DICKS, EG & NAPIER, CE. 2006. Poverty, household food insecurity and nutrition: coping strategies in an informal settlement in the Vaal Triangle, South Africa. *Public Health* 120:795-804.

PAINTER, K. 2007. *An analysis of food-chain demand for differentiated farm commodities: implications for the farm sector*. Centre for Sustaining Agriculture & Natural Resources. Washington State University.

REGMI, A. 2001. Changing structure of global food consumption and trade. Agriculture and Trade Report No. WRS-01-1. Economic Research Service. United States Department of Agriculture.

SCHWABE, C. 2005. Fact sheet: poverty in South Africa. Southern African Regional Poverty Network. Human Sciences Research Council. [WWWdocument-22/01/2005].
URL <http://www.sarpn.org.za/documents/d0000990/index.php>

SHEPHERD, R. 1999. Social determinants of food choice. *Proceedings of the Nutrition Society* 58:807-812.

SSA (Statistics South Africa). 2005. *Census survey 2001*. [WWWdocument - 25/03/2008].
URL <http://www.statssa.gov.za>

TAYLOR-POWELL, E & RENNER, M. 2003. *Analyzing qualitative data*. Programme development & evaluation No. G3658-12. University of Wisconsin-Extension. Madison, WI. Cooperative Extension Publishing Operations. [WWWdocument-20/03/2008].
URL <http://www1.uwex.edu/ces/pubs>

TODD, PM & DIECKMANN, A. 2004. *Heuristics for ordering cue search in decision making*.
Center for Adaptive Behaviour and Cognition. MPI for Human Development.
[WWWdocument - 26/06/2008].
URL http://www.books.nips.cc/papers/files/nips17/NIPS2004_0292.pdf



ANNEXURE 1 Exploratory comparison of the significance of difference between perceptions of the importance for food product attributes to low-income consumers with different expendable incomes ($p < 0.1$). Supplement to Chapter 5 Annexure 1.

Food product attributes	Score of food product attribute importance ¹				Scores compared	Difference of scores vs norm %	Significance in difference
	Boipatong %	Eatonside %	Alexandra %	Tsutsumani %			
Affordability	86	78	76	82	Boipatong & Eatonside	8 > 7.657	Yes
					Eatonside & Alexandra	2 < 8.54	No
Packaging size	86	72	73	88	Boipatong & Eatonside	14 > 8.052	Yes
					Tsutsumani & Alexandra	15 > 8.282	Yes
Value for money	73	80	66	69	Tsutsumani & Alexandra	3 < 10.15	No
Taste	84	82	82	91	Tsutsumani & Alexandra	9 > 7.236	Yes
Appearance	80	76	90	89	Tsutsumani & Boipatong	9 > 7.537	Yes

¹ As reported in Chapter 5 Table 4

ANNEXURE 2 Importance of the need for food product attributes as perceived by the low-income consumers from informal settlements during the test market evaluation (weighted) ($p < 0.1$)

Attributes	Boipatong n=140	Eatonside n=130	Alexandra n=131	Differences of scores vs. norm %	Average* %
Satiety value	94*	92*	92*	2<5.094	93
Affordability ¹	86	78	76		86
Taste	84*	82*	82*	2<7.491	83
Product acceptability	81*	83*	78*	5<8.026	81
Convenience/ ease of preparation	80*	79*	81*	2<8.12	80
Household influence	76*	79*	83*	7<12.989	79
Appearance	80*	76*	90	4<9.028	78
Value for money	73*	80*	66	7<8.425	77
Product quality	73*	77*	86	4<8.631	75
Packaging size	86	72*	73*	1<9.066	73
Texture	69*	72*	89	3<9.1	71
Product safety/ shelf life	69*	62*	86	7<9.479	66
Brand loyalty	69*	61*	74	8<9.504	65
Nutrient content	59*	65*	81	6<9.671	62

* Only values not significantly different included from informal settlements

¹ See rationalisation in text.

ANNEXURE 3 Importance of the need for food product attributes as perceived by the low-income consumers of slightly higher affluence during the test market evaluation (weighted) ($p < 0.1$)

Attributes	Alexandra n=131	Tsutsumani n=101	Differences of scores vs. norm %	Average* %
Satiety value	92*	90*	2 < 6.252	91
Affordability	76*	82*	6 < 8.761	79
Taste	82	91	7 > 7.219	
Product acceptability	78*	86*	8 < 8.203	82
Convenience/ ease of preparation	81*	87*	6 < 9.856	84
Household influence	83*	82*	1 < 8.262	83
Appearance	90*	89*	1 < 6.675	90
Value for money	66*	69*	3 < 10.15	68
Product quality	86*	86*	0 < 7.536	86
Packaging size	73	88	15 > 8.282	
Texture	89*	83*	6 < 7.593	86
Product safety/ shelf life	86*	80*	6 < 8.205	83
Brand loyalty	74*	82*	8 < 8.877	78
Nutrient content	81*	87*	6 < 7.856	84

*Values not significantly different between Alexandra (informal settlement) and Tsutsumani (formal settlement)

ANNEXURE 4

Certification of editing for language accuracy

Mary Hoffman
55 May Avenue
ARCON PARK
1939

Tel: 016 428 1577
Cell: 073 147 8764
E-mail: maryhof@absmail.co.za

12 January 2009

To Whom It May Concern

This certifies that the following thesis has been edited for language accuracy.
I trust that the corrections made in the text have been applied after due consideration by the author of the document:

**DEVELOPMENT OF A
FOOD PRODUCT CONCEPT FORMULATION FRAMEWORK
FOR LOW-INCOME CONSUMERS
IN URBANISED INFORMAL SETTLEMENTS
IN GAUTENG SOUTH AFRICA**

by

Sara Susanna Duvenage

Thesis submitted in fulfilment of the requirements for the degree

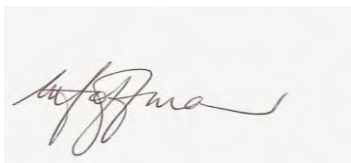
PhD CONSUMER SCIENCE

Department of Consumer Science

Faculty of Natural and Agricultural Sciences

University of Pretoria

January 2009



Mary Hoffman

(SATI Registration: 1001632)